

# SRI BALAJI VIDYAPEETH

(Deemed to be University Declared u/s 3 of UGC act 1956)

Accredited by NAAC with 'A' Grade

Pondicherry - 607402.

[www.sbv.ac.in](http://www.sbv.ac.in)

**MAHATMA GANDHI MEDICAL COLLEGE & RESEARCH INSTITUTE,  
PONDICHERRY**



**FACULTY OF ALLIED HEALTH SCIENCES**

**B.Sc. UROLOGY TECHNOLOGY**

**2019 -2020 ONWARDS**

**FIRST, SECOND & THIRD YEAR SYLLABUS AND REGULATIONS**

**CHOICE BASED CREDIT SYSTEM (CBCS) PATTERN SYLLABUS**

**(As approved in the Academic Council at the meeting held on 22-05-2019)**

**Revisit of the syllabus and Examination pattern**

**(As approved in the Academic Council at the meeting held on 28-09-2020)**

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## FOREWORD

In recent years, several innovative and need based undergraduate courses in the realms of Faculty of Allied Health Sciences have been promulgated. These courses are primarily oriented towards augmenting the Core academic courses in the Health Care sector.

Although, Allied Health Science courses are in place at several institutes county wide, mention must be made of the fact that only a few Health Science Universities offer courses in Allied Health Sciences under a holistic umbrella. It is in the fitness of things that Allied Health Science courses are being offered in Nodal and Thrust areas at Sri Balaji Vidyapeeth starting from Certificate programme through Doctoral studies.

The Undergraduate programme of Allied Health Science courses leading to B.Sc degree has been very carefully planned taking all the three components into due consideration, namely academics, patient care and research. Competency assumes great importance as the graduates coming out of these programmes would either directly or indirectly assist the Clinicians in day to day activities.

With this in view, the thrust has been laid on a common syllabus for all B.Sc programmes during the first year of study. These subjects offered in the first year are oriented Basic Medical Sciences, besides English as a mode of communication which is vital for affording Global Placements to our successful candidates. Furthermore all programmes are designed in Choice Based Credit System (CBCS) made to suit the convenience of the students. The proficiency and competence of the Undergraduates is fortified by the promulgation of a unique internship cum research programme.

I wish all students success in their studies and career.

**Prof. N. Ananthakrishnan**

*Dean - Faculty, SBV*

# **POLICY ON COURSES OFFERED UNDER FACULTY OF ALLIED HEALTH SCIENCES**

## **PREAMBLE**

Sri Balaji Vidyapeeth, Deemed to be University, established under Section 3 of UGC Act, 1956, Accredited by NAAC with A Grade offers various courses under the Faculty of Medicine, Faculty of Dentistry, Faculty of Nursing Sciences and Faculty of Allied Health Sciences.

"Allied Health Professions are a distinct group of health professionals who apply their expertise to prevent disease transmission, diagnose, treat and rehabilitate people of all ages and all specialties. Together with a range of technical and support staff they may deliver direct patient care, rehabilitation, treatment, diagnostics and health improvement interventions to restore and maintain optimal physical, sensory, psychological, cognitive and social functions." - Organization of International Chief Health Professions Officers (ICHPO).

In March 2011, the Ministry of Health and Family Welfare nominated the Public Health Foundation of India (PHFI) as its technical partner and constituted the National Initiative for Allied Health Sciences (NIAHS) secretariat with a mandate to develop a framework to improve allied health training, education and regulation in the country. (Yet to be notified by Government of India).

Sri Balaji Vidyapeeth has introduced several innovative need based courses under the Faculty of Allied Health Sciences at Undergraduate and Postgraduate levels keeping in mind the initiative of Ministry of Health & Family Welfare, Government of India. In an era marked by expanding global job opportunities, these courses are bound to create an awareness among the students to suit themselves in the Health Care Team. Curricula have been designed in an objective manner and are aimed at cognitive, affective and psychomotor domains of learning. Furthermore all courses are designed in Choice Based Credit System (CBCS) made to suit the convenience of the students.

The Undergraduate courses mainly concentrate in creating professionals who form the part of the Health Care Team. The role of these professional is to ably assist the doctor in treatment as well as prognosis and in many a times form the core professional of the team. The proficiency and competence of the Undergraduates is fortified by the promulgation of a unique internship cum research programme.

The Postgraduate courses mainly aim at shaping a graduate into a full professional. Also these postgraduate courses help the graduates as well as the postgraduates to acquire specific skills on various adjunct therapies and techniques.

## **SUPPLY AND DEMAND**

The starting of the new courses will entirely depend on

- a. Demand for the course as seen by the enrolment at other institutes.
- b. Employability after the qualification.

At present, the shortage of quality human resources is one of the major challenges faced by the public health domain in India. To redress the imbalance in human resources, the Working Group on Medical Education Training and Manpower Training of the Planning Commission (1984) prioritized training of para-professional and auxiliary personnel as follows:

- Training and development of auxiliary health professionals
- Training and development of para-health professionals
- Basic and pre-service/induction training in health care and health management
- Continuing education in health profession education.

Many new health occupations (Physician's Assistant, Optometrists, Medical Imaging Technologists, and Laboratory Technologists etc) have access over several common features in Allied Health Sciences including Basic Medical Sciences which are being effectively addressed. These processes have received support from administrators who are constantly searching for economic qualified and quality labor.

Service users are becoming more empowered through the consumerism of health, which has resulted in better access to information and user-consultation in service development and delivery. Each of these factors has the potential to influence the roles of existing professional groups and presents a challenge to workforce planners. In India, students are not aware of all the allied health courses available in the medical education system. Their career choices are generally influenced by their parents and peer groups, who themselves are unaware of the prospects in this area. By understanding that an entry-level position is just a first step, youth can realistically plan for their future and have a better understanding of what is needed for long-term success. This approach also benefits employers who need a steady inflow of workers at all levels of their organization.

#### **POLICY ON ELIGIBILITY, ADMISSION, & COURSE DURATION OF UG DEGREE COURSES**

At Sri Balaji Vidyapeeth, we empower the departments of all the constituent colleges to contribute to the development of innovative, need, value based and job oriented courses taking into considerations the interests of the stakeholders.

**The Undergraduate Degree courses (B.Sc.)** are presently being offered under the Choice Based Credit System (CBCS) mode as per the Guidelines of UGC. The duration of the course will be Three years with a compulsory internship of 1 year (Non Stipendiary) in any of the tertiary health care institute of the University/ Trust. The proficiency and competence of the Undergraduates is fortified by the promulgation mandatory for appearing at the University Examinations. The maximum time limit for completion of the course will be Six years. However, the Dean / Principal, AHS has the discretionary powers to extend the course duration on valid grounds (Health, Maternity, Natural Disaster, etc.).

The First year of B.Sc. (AHS) courses will be common for all the disciplines. Though the disciplines will be provisionally allotted at the time of admission itself, upon

successful completion of the First year the candidates may opt for a change in the discipline or the college which will be permitted depending on the vacancy and on merit based on the First year marks.

### **Fourth year - Internship Programme**

One-year compulsory internship in various intensive care units, outpatient departments, research center under Sri Balaji Vidyapeeth during which the students get to hone the skills and knowledge acquired in the three years of study. This year ensures their readiness to approach a patient in any setting. The students should also complete a short duration project (in their areas of interest) and also maintain and submit a log book. The degree will be awarded only upon the successful completion of the course including the internship period. The one-year compulsory internship includes postings at the respective department.

### **Eligibility for Admission**

A candidate seeking admission in the B.Sc. Allied Health Sciences courses shall be completing the age of 17 years as on December of the admission year. The candidate shall have passed the Higher Secondary Examinations conducted by the State Board or the Central Board or its equivalent. The candidate should have studied English as one of the papers and passed the same. The candidate should have had Biology, Physics & Chemistry and have passed the same in their qualifying Examinations. Mathematics as a subject is mandatory for B.Sc. Optometry, Medical Imaging Technology and Clinical Research.

The candidate should have secured 50 percent as aggregate in the subjects of English, Biology, Physics and Chemistry at the Higher Secondary Examinations. A relaxation of 5 percent in the minimum required (50%) shall be awarded to the candidates belonging to SC/ ST communities and physically challenged candidates (Disability more than 40%). The candidates seeking relaxation should necessarily submit the relevant certificates issued by the concerned Government authorities while applying for the course and mention about the same in their application.

### **Lateral Entry**

Candidates who have Diploma of Two years in the concerned subject from a recognized University can seek Lateral Entry to the second year of the concerned courses provided that they have studied Anatomy, Biochemistry, Physiology, Microbiology and Pathology as individual papers during their Diploma Course.

**Note:** The candidates who have completed their Diploma Course through Distance Education modes are not eligible to seek admission through Lateral Entry mode.

**Shorter intrinsic training programmes** of duration few weeks to a month or so will be conducted by the departments under the Supervision of the concerned HOD / Dean / Principal.

### **POLICY ON CHANGE OF NAME/DATE OF BIRTH**

The name and date of birth of candidates will be registered in the records of the University as given in their H.S.C. Mark Statement/Transfer Certificate only. No request will be considered later, to correct the spelling of the name of the candidates.

The parents and candidates are requested to verify and confirm these entries in the H.S.C. Mark Statement / Transfer Certificate at the time of receipt of the same. Once admitted to a course of study in the University, date of birth as furnished in the HSC/School record of student and submitted to the University at the time of admission, shall be taken as final proof and no subsequent request for change of date of birth will be entertained by the University at any time under any circumstance, either during the course of study or after the completion of such study. The student should take utmost care while entering their details in SBV GARUDA portal at the time of their registration. They are responsible for any data mismatch at later stage.

Every student shall give an undertaking to this effect duly countersigned by his/her parent or guardian at the time of admission.

### **PAYMENT OF TUITION AND OTHERFEES**

Every student shall pay tuition fee and other fee, as prescribed by the University, within the due date notified. The fees are subject to revision as per rules of the University. All fees, once paid to the University, will not be refunded or adjusted for any other purpose under any circumstance.

### **RULES FOR DISCONTINUANCE FROM COURSE OF STUDY**

Where any student applies for discontinuance, or without any application discontinues on his/her own, from the course to which he/she has been admitted to, for any reason, either after the cut-off date prescribed by the statutory authorities/ University for admission to the first year of the course concerned or where the seat is rendered vacant without having any chance of being filled up with any other candidate from waiting list etc., such students will have to remit the tuition fee and other applicable fees for the '**Entire/Remaining Course Period**'. Unless and until payment of all the prescribed fees for the entire/remaining course period is made to the University account, such student shall not be entitled to any certificate including transfer certificate, mark sheets etc., to be issued by the College/ University and to get back his/her original certificates deposited with the University at the time of admission. All students and parent will be required to furnish a declaration agreeing to the above said conditions at the time of admission.

### **POLICY ON RAGGING**

Ragging is strictly prohibited in the University Campus. Sri Balaji Vidyapeeth strictly enforces anti-ragging measures and the campus is free from any form of ragging. Any violation will be dealt with according to the law in force and as per directives of the Supreme Court of India. The University has adopted the –Medical Council of India (Prevention and Prohibition of ragging in Medical College / Institutions) Regulations, 2009 and –UGC Regulations on curbing the menace of Ragging in Higher Educational

Institutions, 2009 and these Regulations shall be applicable to all students. These Regulations are available in the University Website.

### **IMPORTANT NOTE**

All admissions are subject to fulfillment of all the prescribed eligibility conditions by the candidate. If it is found either at the time of admission or at a later stage, that the candidate has given false information/forged certificates or concealed material information, his/her admission shall be cancelled and the student shall be dismissed from the college immediately.

The University reserves the right to change the curriculum, course structure and the rules relating to admission, examinations, fee structure, refunds, etc.

All disputes arising in the interpretation and implementation of the provisions will be referred to the Vice-Chancellor of Sri Balaji Vidyapeeth and Vice-Chancellor's decision shall be final and binding.

In respect of matters relating to or arising out of this prospectus the jurisdiction shall lie in Puducherry alone.

### **FUTURE PLANS**

It is planned to conduct an informal market survey and start AHS Certificate & M.Sc courses.

## OUTLINE OF THE CHOICE BASED CREDIT SYSTEM (CBCS) FOR UNDERGRADUATE DEGREE PROGRAMME

**Credit System Credit System (CBCS):** The CBCS provides choice for students to select from the prescribed courses (core, elective or minor or soft skill courses). This is to enhance the quality and mobility of the students within and between the Universities in the country and abroad.

### Credit hours

16 Theory classes = 1 credit

32 Practical/Tutorial/Clinical training/Research project = 1 credit

Subjects	Credits
Each core subjects	6 Credits
Ability Enhancement Compulsory course (AECC)	2 Credits
Skill Enhancement course (SEC)	2 Credits
Generic Elective course ( GE)	4 Credits
Discipline Electives (DE)	4 Credits

**Core course:** A Hard core course may be a Theory, Practical (lab), clinical rotation/field work or Research Project Work which are compulsory component studied by candidate to complete the requirement of their programme.

**Discipline Elective (DE) Course:** An elective course which is supportive or related to the discipline/subject (i.e. supportive to core course) is called a Discipline Elective (DSE) Course.

**Generic Elective (GE) Course:** An elective course which is unrelated to the discipline/subject (i.e. unrelated to core course) to expand their knowledge chosen by a candidate is called a Generic Elective.

**Skill Enhancement Courses (SEC):** This course chosen by candidate which provides additional value-based and skill-based knowledge to increase their employability.

**NPTEL/ SWAYAM / MOOC/ Other value-added online courses**

COLLEGES	PROGRAMMES WHICH INVOLVE CREDIT TRANSFER
Mahatma Gandhi Medical College and Research Institute & Shri Sathya Sai Medical College and Research Institute	B. Sc. (AHS)

Each Undergraduate student of B.Sc (AHS) is recommended to earn a minimum of **EIGHT credits** from the online courses offered through SWAYAM - NPTEL - MOOCs platform during their Course period. It is to be noted that the student earns the credit prior to the starting of their internship.

PROGRAMME	DESIRABLE CREDITS	NUMBER OF COURSES
B.Sc. (AHS)	Minimum - 8 credits	Minimum - 4 Maximum - 6

It is required of the Undergraduate students (B.Sc - AHS) that in addition to their curricular requirement of the programme, it is recommended for enhancing job opportunities for the student to earn minimum of prescribed credits from the online courses offered through SWAYAN - NPTEL - MOOCs platform that will be transferred into the students' Statement of Marks, issued during the final year of their study. This has to be completed prior to the starting of their internship programme and students have to be informed that **those who do not earn the minimum credits prescribed by SBV, it will be mentioned NIL for the details on credits transferred from ONLINE courses in their FINAL year statement of marks issued by SBV.**

#### **Credit points during Internship**

For the 16 UG Internship programmes, there is a Minimum of 40 Credit points to a maximum of 45 Credit points which the students have to obtain. Credit points will be assessed based on the student's satisfactory attendance, performance in the Clinical /Camp postings / Seminars /Presentation of the logbook & Research project.

## **CRITERIA FOR UNIVERSITY EXAMINATIONS**

#### **Eligibility / Maximum Duration for the Award of the Degree**

- a) The candidates shall be eligible for the bachelor degree when they have undergone the prescribed course of study for a period of not less than four years (3 Years + 1 Year Internship) in an institution approved by the university and have passed the prescribed examination in all subjects.
- b) A student who does not meet the minimum attendance requirement in a year must compensate the inadequacies before appearing examination.

#### **To reaffirm the passing minimum in the University Examinations for all the Undergraduate courses offered under the Faculty of Allied Health Sciences.**

- A candidate shall secure a minimum of 50% aggregate in University Core theory/ Elective theory Exams and Internal Assessment put together.
- A candidate shall secure a minimum of 50% aggregate in University Practical and Internal Assessment put together.
- For Skill based electives, a candidate shall secure a minimum of 50% aggregate in University Practical cum Viva Exams and Internal Assessment put together.

#### **Retotaling / Revaluation and Grace Mark**

There is no provision for **Retotaling / Revaluation for AHS programme.**

**Grace marks** up to a maximum of five marks may be awarded at the discretion of the university to a student who has failed and shall be distributed among the failed subjects.

## SCHEME OF EXAMINATION

- 1) **Attendance Requirements:** 80% hours of learning in each Core Subjects / Electives / Practical's / Postings for appearing for the university exams.
- 2) **Minimum marks required to be eligible for University Examination:** 35% marks in the internal assessment (Theory / Practical) are required for the candidate to be eligible to appear in the University Examinations.
- 3) **Passing Minimum:** 50% aggregate both in theory and practical's including internal assessment marks is required for a candidate to pass in the University Examinations.
- 4) **Submission of Record Note Books for practical examinations**  
Candidates appearing for practical examinations should submit bonafide Record Note Books prescribed for practical examinations, otherwise the candidates shall not be permitted to appear for the practical examinations.

## GRADING

Marks obtained by candidate	Equivalent grade letter	Grade descriptor	Grade point
85 % & above	O	Outstanding	10
75-84	A+	Excellent	9
65-74	A	Very good	8
60-64	B+	Good	7
55-59	B	Above average	6
50-54	C	Average pass	5
49 & below	F	Reappear	0
	AB	Absent	0

A student obtaining **Grade F** shall be considered failed and will be required to reappear in the examination.

### Conversion formula for Percentage to CGPA

Percentage divided by 9.5 = CGPA

### Award of Class

#### Class division will be based on CGPA grade

- ≥ 7.8 grade point = Distinction Division
- ≥ 6.8 and < 7.7 grade point = First class Division
- ≥ 6.3 and < 6.7 grade point = Second class Division
- ≥ 5.2 and < 6.2 grade point = Third class Division
- < 5.2 and below - Fail

Computation of SGPA and CGPA will be in accordance with the UGC Guidelines & Recommendations. It is a measure of overall cumulative performance of a student over all exams. The CGPA is the ratio of total credit points secured by a student in various courses in all exams and the sum of the total credits of all courses in all the University exams. It is expressed up to two decimal places.

**Cumulative Grade Point Average (CGPA):** It is a measure of overall cumulative performance of a student over all exams. The CGPA is the ratio of total credit points secured by a student in various courses in all exams and the sum of the total credits of all courses in all the University exams. It is expressed up to two decimal places.

**Grade Point:** It is a numerical weight allotted to each letter grade on a 10-point scale.

**Transcript:** Based on the credits earned, a transcript shall be issued to all the registered students after the completion of the program indicating the hours of study and structure of the curriculum delivery as prescribed in his/her curriculum and completed by the student. The transcript will display the course details, including course code, title, and number of credits, hours and type of contact hours in a semester.

### INTERNAL ASSESSMENT

1. Continuous Internal Assessment (CIA) for all AHS programs with a minimum of 4 Assessments per year.
2. Internal Assessment will be done in each subject according to the scheme of examinations. The IA marks will be on the basis of performance in the assignment, class tests and practical test in the clinical areas.

### Evaluation of Clinical Rotation

Lab, Clinical cum Community postings - To conduct practical's or viva based on the Heads of the concerned department's decision and the total 100 marks to be sent to COE through proper channel to find a place in the transcript.

### Question Paper Pattern

The following question paper patterns shall be followed for CBCS pattern syllabi for the candidates admitted from the academic year 2019-20 onwards.

### CORE SUBJECTS

For **UG NON-SEMESTER COURSES** - Each Core Subjects University Exam carries -100 marks of 80(Theory) + 20 (IA marks) which consists of

Theory - 80 marks			
I	Essay-type questions of either / or type -(like 1.a (or) 1.b)	2 (of either / or type)	2 x 10=20
II	Short answer questions	6 ( *1 choice)	5 x 6=30
II	Very Short answer questions	12 ( *2 choice)	10 x 3=30

### The University duration of 80 marks - 3 Hours For courses having Section A & Section B Subjects

For **Section A & Section B Subjects** University Exam carries - 50 marks for each Section consisting of 40 (Theory marks) + 10 (IA marks)

Theory - 40 marks			
I	Essay-type questions of either / or type -(like 1.a (or) 1.b)	1 (of either / or type)	1 x 10 = 10
II	Short answer questions	5 ( *2 choice)	3 x 6= 18
II	Very Short answer questions	5 ( *1 choice)	4 x 3 = 12

## **ELECTIVE SUBJECTS**

For all UG NON SEMESTER **COMPULSORY, GENERIC & DISCIPLINE** Elective University Exam papers carries- 50 marks of 40 (Theory)+10 (IA marks) which consists of

<b>Theory - 40 marks</b>			
I	Short answer questions	5 ( *3 choice)	5 x 6=30
II	Very Short answer questions	5 ( *2 choice)	5 x 2=10

\* Number of choices given

- For **SKILL BASED ELECTIVES** from 2019-20 batch onwards all UG AHS courses will have 40 marks as university Practical cum Viva examination & 10 marks as Internal Assessment = 50 marks.
- 50 marks of the **COMPULSORY, GENERIC, DISCIPLINE & SKILL BASED ELECTIVES** which will be converted to 100 marks in the transcript.

### **CONDONATION FOR SHORTAGE OF ATTENDANCE**

Condonation of shortage of attendance in aggregate up to 10% in each Year may be granted by the college Academic Committee and as per regulations of university.

## **PROGRAM OUTCOME (PO) - B.SC UROLOGY TECHNOLOGY**

At the end of the 4 year of training B.Sc Urology technology students should be able to  
**UTPO1:** Performs the duty as an Uro-Technologist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library.

**UTPO2:** To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

**UTPO3:** Understanding the structure and functions of different organs in normal human body.

**UTPO4:** Phlebotomists are trained to draw blood primarily by performing venipunctures (for collection of minute quantities of blood and finger pricks).

**UTPO5:** Understanding the various method of sterilization used functional flow and maintenance of CSSD. Demonstrate the ability to sterilize urological instruments using physical and chemical method.

**UTPO6:** Learns about the theatre asepsis and its maintenance to manage indenting, record keeping and inventory maintenance.

**UTPO7:** To gain knowledge about the pharmacological aspect of some commonly used drugs and emergency medicine must be in position to list their indication therapeutic uses dilution, dosage and adverse effects.

**UTPO 8:** Able to assist urologist in surgical procedure like cystectomy, cystolithotomy, pyeloplasty, nephron-ureterectomy, nephrectomy, catheterization and stent replacement.

**UTPO9 :** Able to coordinate emergency resuscitative measures, administrate drug in various route and should provide adequate pre-operative, post-operative, and follow upcase of surgical patients.

**UTPO10:** Able to provide palliative care for Urological cancer patients and respond to emergency situation by providing CPR and assist in the provision of advanced cardiac life support.

**UTPO11:** Develop and carry out well-organized patient management plans that support

safe, effective and efficient care for both emergent and chronic condition as well as for preventive care.

**UTPO12:** To identify various life style disorders and with due counselling& guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behaviour healthy.

**I YEAR**

**FACULTY OF ALLIED HEALTH SCIENCES**

**SRI BALAJI VIDYAPEETH**

**(Deemed to be University)**

**Accredited by NAAC with 'A' Grade**

**COMMON SYLLABUS FOR ALL FIRST YEAR B.Sc. ALLIED HEALTH SCIENCES**

**CORE SUBJECTS**

1. Anatomy
2. Physiology
3. Biochemistry
4. Pathology & Microbiology

**ELECTIVES**

**Ability Enhancement compulsory course (AECC)**

1. English

**Skill enhancement course (SEC) - Choose any TWO**

1. Culinary Skills for optimal nutrition
2. Enhancing soft skill & personality
3. Basics of Yoga & Practice
4. Speaking effectively

**Generic Elective Course (GEC) - Choose any ONE**

1. Basics of Hospital Administration
2. Counseling and Guidance
3. Lifestyle Disorders

## SCHEME OF CREDIT BASED ACADEMIC CURRICULUM

Faculty Code	Category	Course Title	Hours					Credits				
			Theory	Practical	Tutorials	Lab training	Total hours	Lecture (L)	Practical	Tutorials	Lab training	Credits
AHS	Core theory CCT	Subjects										
AHS	CCT-1	Anatomy	80		32			5		1		6
AHS	CCT-2	Physiology	80		32			5		1		6
AHS	CCT-3	Biochemistry	80		32			5		1		6
AHS	CCT-4	Pathology	40		16			5		1		6
AHS		Microbiology	40		16							
AHS	Lab training CCT 1 to 4					192					6	6
AHS	AECC	English	16	34				1	1			2
AHS	SEC - 1-3	Student's choice	16	32				1	1			2
AHS	SEC - 1-3	Student's choice	16	32				1	1			2
AHS	GEC 1-3	Student's choice	64					4				4
			<b>432</b>	<b>98</b>	<b>128</b>	<b>192</b>	<b>850</b>	<b>27</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>40</b>

## SCHEME OF EXAMINATION AHS - I YEAR BASIC SCIENCES

Papers	Subject	Theory		Practical		Theory	Practical	Grand Total (900)	Min marks to pass % (450)
		UE	IA	UE	IA	UIA*	UIA*		
CCT-1	Anatomy	80	20					100	50
CCT-2	Physiology	80	20					100	50
CCT-3	Biochemistry	80	20					100	50
CCT-4	Pathology	40	10					100	50
	Microbiology	40	10						
CCT -LT	Lab training Core 1 to 4						100	100	50
AECC	Ability enhancement Compulsory Course- English	80	20					100	50
SEC	Skill enhancement Course	80	20					100	50
SEC	Skill enhancement Course	80	20					100	50
GEC	Generic elective	80	20					100	50

**\*UIA - University Internal Assessment only for Lab Trainings (No Final University Examination).**

**Passing criteria** -50 % aggregate both in theory and practical's including internal assessment marks

For all elective course, 40 marks for university theory and Practical cum Viva examination & 10 marks as Internal Assessment = 50 marks which will be converted to 100 marks in the transcript

# **ANATOMY**

**SYLLABUS FOR I YEAR  
B.Sc. ALLIED HEALTH SCIENCES - ANATOMY**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: ANATOMY</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 80 Hrs</b>
<b>DURATION OF TUTORIAL SESSIONS</b>	<b>: 32 Hrs</b>
<b>DURATION OF LAB TRAINING</b>	<b>: 40 Hrs</b>
<b>EXAMINATION</b>	<b>: 100 Marks (80 U + 20IA)</b>
<b>NO UNIVERSITY PRACTICAL EXAMINATION</b>	
<b>DURATION OF THEORY EXAMINATION</b>	<b>: 3 Hrs</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: I YEAR</b>

**COURSE DESCRIPTION**

The course is designed to assist students to acquire knowledge of the normal structure of human body and its functions. To ensure that the students understand the alteration in anatomical structure and function in disease in the practice of accident and emergency care technology.

**OBJECTIVES**

At the end of the course, the student will be able to

1. Describe the anatomical terms, organization of human body and structure of cell, tissue, membranes and glands.
2. Describe the structure and functions of bones and joints.
3. Describe the structure and functions of systems in body. Have knowledge about Applied Anatomy

**COURSE OUTCOMES FOR ANATOMY**

At the end of the course, students will be able to...

**AN-AHS-CO1:** Explains the Gross and Microscopic structure of human body.

**AN-AHS-CO2:** Explains the normal structure and integration of the functions of the organs and systems on basis of the structure of Human body.

**AN-AHS-CO3:** Explains the clinical correlation of the organs and structures involved and interprets the anatomical basis of the disease presentations.

**AN-AHS-CO4:** Knows about the General development of human body.

**AN-AHS-CO5:** Outlines the knowing of the hard & soft structures of the body.

UNIT	TITLE	THEORY + TUTORIALS (80 + 32)HOURS
I	<p><b>(a) INTRODUCTION TO HUMAN BODY AS AWHOLE</b></p> <ul style="list-style-type: none"> <li>• Terms of location, positions and planes</li> <li>• Cell and its organelles</li> <li>• Epithelium - Definition, classification, description with examples and functions.</li> <li>• Glands-Classification, description of Serous and Mucous glands with examples.</li> <li>• Basic tissues - Classification with examples.</li> </ul> <p><b>(b) LOCOMOTION AND SUPPORT</b></p> <ul style="list-style-type: none"> <li>• Cartilage - Different types with examples and Histology.</li> <li>• Bone - Classification, Names of bone cells, parts of Long bone, Microscopy of Compact bone, Names of all bones, Vertebral column, Intervertebral disc, Fontanelles of Fetal Skull.</li> <li>• Joints-Classification of Joints with examples, Synovial Joints (in detail for Medical Imaging Technology students)</li> <li>• Muscular system: Classification of Muscular tissue and histology.</li> <li>• Names of the muscles of the body.</li> </ul>	20 + 8
II	<p><b>UNIT (a) CARDIO VASCULAR SYSTEM</b></p> <ul style="list-style-type: none"> <li>• Heart Size, Location, Chambers - Exterior &amp; Interior - conducting System and Valves</li> <li>• Blood supply of heart</li> <li>• Systemic &amp; Pulmonary circulation</li> <li>• Branches of Aorta, Common Carotid artery, Subclavian artery, Axillary artery, Brachial artery, Superficial Palmar arch, Femoral artery and Internal Iliac artery.</li> <li>• Peripheral pulse</li> <li>• Inferior Venacava, Portal vein and Porto systemic anastomosis.</li> <li>• Great Saphenous vein</li> <li>• Dural Venous Sinuses</li> <li>• Lymphatic System - Cisterna Chyli and Thoracic duct.</li> <li>• Names of regionallymphatics, axillary and inguinal lymph nodes in brief.</li> </ul> <p><b>(b) RESPIRATORY SYSTEM</b></p> <ul style="list-style-type: none"> <li>• Parts of Respiratory System, Nose, Nasal Cavity, Larynx, Trachea, Lungs, Broncho pulmonary segments</li> <li>• Histology of Trachea, Lung and Pleura</li> <li>• Names of Para nasal air sinuses</li> </ul>	20 + 5
III	<p><b>(a) GASTRO- INTESTINAL SYSTEM - (10 +5hrs)</b></p> <ul style="list-style-type: none"> <li>• Parts of GIT, Oral cavity (Tongue, Tonsil, Dentition, Pharynx, Salivary glands, Waldeyer's ring)</li> <li>• Oesophagus, Stomach, Small &amp; Large Intestine, Liver, Gall Bladder, Pancreas</li> </ul> <p><b>(b) URINARY SYSTEM - (5hrs)</b></p> <ul style="list-style-type: none"> <li>• Kidney, Ureter, Urinary bladder, Male &amp; Female Urethra</li> </ul>	10 + 5

IV	<p><b>(a) REPRODUCTIVE SYSTEM - (10 +2hrs)</b></p> <ul style="list-style-type: none"> <li>• Parts of Male Reproductive system, Testis, Vas deferens, Epididymis, Prostate</li> <li>• Parts of Female Reproductive System, Uterus, Fallopian tubes, Ovary</li> <li>• Mammary gland</li> </ul> <p><b>(b) ENDOCRINE GLANDS - (5hrs)</b></p> <ul style="list-style-type: none"> <li>• Names of all Endocrine glands in detail on Pituitary Gland, Thyroid Gland, Parathyroid gland and Suprarenal Gland.</li> </ul>	10 + 5
V	<p><b>NERVOUS SYSTEM - (15 +2 hrs)</b></p> <ul style="list-style-type: none"> <li>• Cerebrum, Cerebellum, Mid brain, Pons, Medulla Oblongata, Spinal cord with spinal nerve</li> <li>• Meninges, Ventricles and Cerebrospinal fluid</li> <li>• Names of Basal nuclei</li> <li>• Blood Supply of Brain</li> <li>• Cranial Nerves</li> </ul>	10 + 5
VI	<p><b>(a) EMBRYOLOGY</b></p> <ul style="list-style-type: none"> <li>• Spermatogenesis and Oogenesis</li> <li>• Ovulation, Fertilization</li> <li>• Fetal Circulation</li> <li>• Placenta</li> </ul> <p><b>(b) COURSE SPECIFIC TOPICS</b></p> <ul style="list-style-type: none"> <li>• Skin</li> <li>• Eye</li> <li>• Arterial System and Venous Drainage System in detail</li> </ul>	10 + 4

#### LAB TRAINING (40 hrs)

- Histology of Types of Epithelium
- Histology of Serous, Mucous and Mixed Salivary gland
- Histology of the types of Cartilage
- Demo of all bones showing parts, radiographs of normal bones & Joints
- Histology of Skeletal (TS & LS), Smooth and Cardiac muscle
- Demonstration of Heart and Vessels of the body
- Histology of Large artery, Medium sized artery and vein, Large Vein
- Microscopic appearance of Large and Medium sized Artery and Vein, Large Vein
- Demonstration of all muscles of the body
- Pericardium
- Histology of Lymph node, Spleen, Tonsil and Thymus
- Demonstration of parts of Respiratory system
- Normal Chest radiograph showing Heart shadows
- Histology of Lung and Trachea
- Normal Angiograms
- Histology of Lymphatic tissues
- Radiographs of Abdomen - IVP, Retrograde cystogram
- Demonstration of parts of the Urinary system and Histology of Kidney, Ureter and Urinary bladder

- Demonstration of Male and Female Pelvis with organs in situ.
- Histology of Male and Female Reproductive organs
- Histology of Pituitary, Thyroid, parathyroid and Suprarenal glands
- Histology of peripheral nerve and optic nerve.
- Demo of all parts of brain

#### METHODS OF TEACHING

- Lecture cum discussion
- Demonstration
- Lab visit
- Practical work record

#### METHODS OF EVALUATION

- Written Test
- Laboratory observation Book
- Assignments
- Oral Presentations

#### REFERENCE BOOKS

- Cohen, Memmler: Structure & Function of Human Body, Lippincott Williams & Wilkins; Tenth edition(2012)
- Waugh: Ross & Wilson Anatomy & Physiology in health and illness Penguin Books Ltd(2010)
- Tortora: Anatomy & Physiology, John Wiley & Sons(2012)

#### B.Sc. ALLIED HEALTH SCIENCES - ANATOMY - BLUE PRINT

Unit No.	Unit	Weightage	Marks Allotted	Knowledge / Recall			Understanding			Application		
				LAQ	SAQ	VSAQ	LAQ	SAQ	VSAQ	LAQ	SAQ	VSAQ
1	I	14 %	12	...	1	1	---	---	1	---	---	---
2	II	20 %	16	1		1	1*		----	---	---	1
3	III	20 %	15	1*	1	1	--	1	----	---	---	1*
4	IV	20 %	16	--	--	1	1	1*	1*	---	----	1
5	V	14 %	12	---	1	---	---	--	1	---	---	1
6	VI	12 %	9	---	1	---	---	--	1	---	---	--

## LONG ANSWER QUESTIONS

S.No	Unit wise	Type of Question	Question has to ask
1	CVS / Respiratory System / GIT	Knowledge / Understanding	2
2	Urinary system / Reproductive system / Endocrine system	Knowledge / Understanding	2

## SHORT ANSWER QUESTIONS

S. No	Unit wise	Type of Question	Question has to ask
1	Unit - I	Recall	1
2	Unit - II	Understanding	-
3	Unit - III	Understanding + Recall	2
4	Unit - IV	Understanding / Recall	1
5	Unit - V	Understanding	1
6	Unit - VI	Understanding / Recall	1

## VERY SHORT ANSWER QUESTIONS

S.No	Unit wise	Type of Question	Question has to ask
1	Unit - I	Understanding / Recall	2
2	Unit - II	Understanding + Recall	2
3	Unit - III	Understanding + Recall + Application	2
4	Unit - IV	Understanding + Recall + Application	3
5	Unit - V	Understanding + Application	2
6	Unit - VI	Understanding / Application	1

The duration of Examination (University) is Three (3) hours.

The total marks for the University Examination will be 100 marks.

Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)

Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)

Very Short Answer Questions : 10 X 3 = 30 marks (Choice 10 out of 12)

TOTAL = Theory 80 + IA 20 = 100marks

**MODEL QUESTION PAPER**  
**FIRST YEAR B.Sc. ALLIED HEALTH SCIENCES**  
**ANATOMY**

**Time:3 Hours**

**Maximum Marks:80**

Illustrate your answers with suitable diagrams where ever necessary.

**LONG ANSWER QUESTIONS - (Write any Two) (2 X 10 =20)**

1. (A) Explain the Gross features of Right atrium. (OR)  
(B) Explain the Gross features of Stomach.
2. (A) Explain the Gross features of Kidney. (OR)  
(B) Explain the Gross features of Thyroid gland.

**SHORT ANSWER QUESTIONS - (Write any Five) (5 x 6=30)**

1. Discuss the Classification of joints with its examples.
2. Discuss the boundaries and contents of superior Mediastinum.
3. Discuss the gross features of Right lung.
4. Discuss the external & internal features of 2<sup>nd</sup> part of Duodenum.
5. Discuss the location, external features of urinary bladder.
6. Discuss the supports of uterus.

**VERY SHORT ANSWER QUESTIONS - (Write any Ten) (10 x3 =30)**

1. Write a note on Sesamoid bone.
2. Trace the conducting system of Heart.
3. List out the paranasal air sinuses.
4. Write a note on Pancreatic duct.
5. List out the parts & functions of extra hepatic biliary apparatus.
6. Write a note on Trigone of urinary bladder.
7. Enumerate the Ovarian follicles.
8. Enumerate the hormones of Adrenal gland.
9. Enumerate the layers of Scrotum.
10. List out the meningeal layers & its modifications.
11. Structure of thin skin.
12. Write a note on Fertilization

# PHYSIOLOGY

**SYLLABUS FOR I YEAR  
B.Sc. ALLIED HEALTH SCIENCES - PHYSIOLOGY**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: PHYSIOLOGY</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 80 Hrs</b>
<b>DURATION OF TUTORIAL SESSIONS</b>	<b>: 32 Hrs</b>
<b>DURATION OF LAB TRAINING</b>	<b>: 38 Hrs</b>
<b>THEORY EXAMINATION</b>	<b>: 100 Marks (80 U + 20IA)</b>
<b>UNIVERSITY PRACTICAL EXAMINATION</b>	<b>: NIL</b>
<b>DURATION OF THEORY EXAMINATION</b>	<b>: 3 Hrs</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: I YEAR</b>

**COURSE DESCRIPTION**

The course is designed to assist students to acquire the knowledge of the normal physiology of various human body systems and understand the alteration in physiology in disease and practice of accident and emergency care technology

**COURSE OBJECTIVES**

At the end of the course, the student will be able to

- Describe the physiology of cell, tissues, membranes and glands.
- Describe the physiology of blood and functions of heart.
- Demonstrate blood cell count, coagulation, grouping, Hb; BP and Pulse monitoring
- Describe the physiology and mechanism of respiration.
- Demonstrate Spirometry
- Describe the physiology of Excretory system

**COURSE OUTCOMES FOR PHYSIOLOGY**

At the end of the course, students will be able to...

**PHY-AHS-CO1:** Understand normal structure and functioning of the organs and organ systems of the body

**PHY-AHS-CO2:** Understand the regulatory mechanisms in normal and physiological variations.

**PHY-AHS-CO3:** Understand age-related physiological changes in the organ functions that reflect normal growth and development.

**PHY-AHS-CO 4:** Understand the physiological basis of diseases.

**PHY-AHS- CO 5:** Interpret laboratory data pertaining to normal function of organ and organ system.

UNIT	TITLE	THEORY + TUTORIALS (80+32) HOURS
I	<p><b>a. General physiology (5 + 2hrs)</b></p> <ul style="list-style-type: none"> <li>• Structure and functions of cell and cell organelles</li> <li>• Transport across cell membrane</li> <li>• Homeostasis: definition and feedback mechanisms</li> </ul> <p><b>b. Hematology (10 + 2hrs)</b></p> <ul style="list-style-type: none"> <li>• Composition and function of blood and body fluids</li> <li>• Plasma proteins and their functions</li> <li>• RBC: morphology, production, functions and fate</li> <li>• Anemia: etiological &amp; morphological classification</li> <li>• Immunity : Types, mechanism of immune response</li> <li>• Hemostasis and anticoagulants</li> <li>• Blood groups: Types, cross matching and clinical importance</li> </ul>	15 + 4
II	<p><b>Cardiovascular physiology (10 + 5 hrs)</b></p> <ul style="list-style-type: none"> <li>• Functional anatomy</li> <li>• Conductive system of heart: origin, spread of cardiac impulse</li> <li>• Properties of cardiac muscle</li> <li>• ECG: leads, principles of normal recording. Normal waves and interpretations</li> <li>• Cardiac cycle</li> <li>• Heart sounds, Physiological basis of murmur</li> <li>• Cardiac output: definition, factors affecting, factors regulating and its measurement</li> <li>• Blood pressure: total pressure, lateral pressure, importance of different pressure, measurements, factors controlling BP</li> <li>• Shock: definition &amp; types.</li> </ul>	10 + 5
III	<p><b>Respiratory physiology (10 + 5 hrs)</b></p> <ul style="list-style-type: none"> <li>• Functional anatomy</li> <li>• Mechanism of respiration</li> <li>• Lung volumes and capacities: definition, normal values, measurements and clinical importance</li> <li>• Transport of gases: oxygen and carbon dioxide</li> <li>• Control of respiration: neural and chemical regulation.</li> <li>• Dyspnoea, Asphyxia, cyanosis, periodic breathing</li> <li>• Hypoxia : definition and types</li> </ul>	10 + 5
IV	<p><b>a. Gastro-intestinal physiology (5 hrs)</b></p> <ul style="list-style-type: none"> <li>• GI secretions: saliva, gastric juice, pancreatic juice, liver &amp; gallbladder</li> <li>• GI motility: deglutition, gastric motility and emptying,</li> </ul>	15 + 3

	<p>intestinal motility</p> <ul style="list-style-type: none"> <li>• GI hormones: Gastrin, Secretin, CCK - PZ, motilin, Inhibin</li> </ul> <p><b>b. Renal physiology (10 + 3 hrs)</b></p> <ul style="list-style-type: none"> <li>• Nephrons: structure, types and functions</li> <li>• Juxta glomerular apparatus</li> <li>• RBF: definition, normal values, factor affecting</li> <li>• GFR: definition, normal values factor affecting and factors regulating, measurement.</li> <li>• Renal handlings of solutes : Na<sup>+</sup> , Cl<sup>-</sup> ,Glucose, water (diuretics, diuresis), H<sup>+</sup>, ammonia</li> <li>• Renin-angiotensin- aldosterone mechanism</li> <li>• Concentration of urine - countercurrent multiplier and countercurrent exchanger.</li> <li>• Micturition</li> <li>• Renal dialysis</li> </ul>	
V	<p><b>a. Endocrine physiology (10 + 3hrs)</b></p> <ul style="list-style-type: none"> <li>• Pituitary gland: hormones secreted and their functions, applied: dwarfism, gigantism, Diabetes Insipidus.</li> <li>• Thyroid gland: hormones secreted and their functions, applied: hypothyroidism, hyperthyroidism</li> <li>• Parathyroid gland: hormones secreted and their functions</li> <li>• Adrenal gland: hormones secreted and their functions</li> <li>• Pancreas: hormones secreted and their functions, applied: Diabetes Mellitus</li> </ul> <p><b>b. Reproductive physiology (5 + 2hrs)</b></p> <ul style="list-style-type: none"> <li>• Male reproductive system: spermatogenesis ,endocrine functions of testis</li> <li>• Female reproductive system: oogenesis, ovulation, functions of estrogen and progesterone.</li> <li>• Menstrual cycle: ovarian cycle, uterine cycle, hormonal changes, abnormalities of menstruation</li> <li>• Contraception</li> </ul>	15 + 5
VI	<p><b>a. Nerve-Muscle physiology (5 + 5 hrs)</b></p> <ul style="list-style-type: none"> <li>• Neurons: structure, types, properties, degeneration and regeneration</li> <li>• Neuromuscular junction: transmission of impulse and its clinical applications</li> <li>• Skeletal muscle: structure , muscle proteins, contraction&amp; relaxation, types of contraction</li> </ul> <p><b>b. Central nervous system (5 + 3hrs)</b></p> <ul style="list-style-type: none"> <li>• Organization of nervous system</li> <li>• Synapse: types, functions</li> <li>• CSF :functions</li> <li>• Cerebral cortex: Broca`s area and their functions</li> <li>• Cerebellum: lobes &amp;function</li> <li>• Basal ganglia: nucleus &amp; functions, Parkinsonism</li> </ul>	15 + 10

	<ul style="list-style-type: none"> <li>• Hypothalamus: functions</li> </ul> <p><b>c. Special senses (5 + 2 hrs)</b></p> <ul style="list-style-type: none"> <li>• Vision: Errors of refraction, visual pathway and effects of lesion</li> <li>• Hearing: functions of middle ear, Conductive deafness and nerve deafness.</li> <li>• Smell and taste: receptors and pathways</li> </ul>	
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### **LAB TRAINING (38 hrs)**

- Hemoglobinometry
- White Blood Cell Count
- Red Blood Cell Count
- Determination of Blood Groups
- Leishman's Staining and Differential WBC Count
- Determination of Packed Cell Volume
- Erythrocyte Sedimentation Rate(ESR)
- Determination of Clotting Time, Bleeding Time
- Recording of Blood pressure
- Auscultation for Heart sounds
- Artificial Respiration
- Determination of Vital capacity.

#### **METHODS OF TEACHING**

- Lecture cum discussion
- Demonstration
- Lab visit
- Practical work record

#### **METHODS OF EVALUATION**

- Written Test
- Laboratory observation Book
- Assignments
- Oral Presentations

#### **REFERENCE BOOKS**

1. Basics of Medical Physiology D.Venkatesh /H.H.Sudhakar Wolters Kluwer Third Edition.
2. Waugh: Ross & Wilson Anatomy & Physiology in health and illness Penguin Books Ltd (2010).
3. Principles of Physiology, Singh (H).

## PHYSIOLOGY - BLUEPRINT

Unit	Systems	Marks	Weightage (%)	Question type		
				LAQ (2 out of 4 )	SAQ (5 out of 6)	VSAQ (10 out of 12)
I	General physiology	15	19%			2+1*
	Hematology			1*	1	1
II	Cardiovascular physiology	16	20%	1	1	
III	Respiratory physiology	16	20%	1	1	
IV	Gastro-intestinal physiology	12	15%		1	1+1*
	Renal physiology			1*		1
V	Endocrine physiology	12	15%		1	1
	Reproductive physiology					1
VI	Nerve-Muscle physiology	09	11%			1
	Central nervous system				1*	1
	Special senses					1

**Note:** \* represents question of choice

- The duration of Examination (University) is Three (3) hours.
- The total marks for the University Examination will be 100marks.
  - Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)
  - Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)
  - Very Short Answer Questions : 10 X 3 = 30 marks (Choice 10 out of 12)
  - TOTAL = Theory 80 + IA 20 = 100mark

**MODEL QUESTION PAPER**  
**FIRST YEAR B.Sc. ALLIED HEALTH SCIENCES**  
**PHYSIOLOGY**

**Total marks: 80**

**Duration: 3hours**

**LONG QUESTION ANSWER**

**(2 X 10 =20)**

1. a) Define Erythropoiesis? Describe its stages. Mention the factors influencing it. (OR)  
b) Define blood pressure. Write its normal range. Briefly explain short term regulation mechanism of blood pressure.
2. a) Explain how oxygen is transported in blood. Explain oxygen dissociation curve. List the factors shifting this curve to right&left.(OR)  
b) Define Glomerular filtration rate (GFR). Write its normal value. Explain the factors affecting it.

**SHORT QUESTION ANSWER - Answer any 5**

**(5 X 6 =30)**

1. Define hemostasis. Briefly explain blood clotting mechanism.
2. Define cardiac output. Give its normal value. Describe the factors regulating it
3. Draw normal spirogram indicating static lung volumes and capacities.
4. Briefly explain the mechanism of HCl secretion in stomach.
5. Name the anterior pituitary hormones. Briefly explain functions of growth hormones.
6. Briefly describe stages of Spermatogenesis.

**VERY SHORT ANSWER - Answer any 10**

**(10 X 3=30)**

1. Write the functions of Golgi apparatus
2. Briefly explain osmosis
3. Briefly describe the function of Na<sup>+</sup> K<sup>+</sup> ATPase pump
4. What are anticoagulants? Name any two.
5. Write any 3 functions of saliva
6. Name any two GI hormones. Write any one function of them.
7. Name the cells of Juxta glomerular apparatus & mention their function
8. List the 3 functions of thyroid hormone
9. Name natural contraceptive methods
10. Classify muscle proteins
11. Classify glial cell. Write any two functions of it.
12. What is myopia? How it is corrected

# **BIOCHEMISTRY**

**SYLLABUS FOR I YEAR**  
**B.Sc. ALLIED HEALTH SCIENCES - BIOCHEMISTRY**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: BIOCHEMISTRY</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 80hrs</b>
<b>DURATION OF TUTORIAL SESSIONS</b>	<b>: 32hrs</b>
<b>DURATION OF LAB TRAINING</b>	<b>: 38Hrs</b>
<b>THEORY EXAMINATION</b>	<b>: 100 marks (80 U + 20IA)</b>
<b>UNIVERSITY PRACTICAL EXAMINATION</b>	<b>: Nil</b>
<b>DURATION OF THEORY EXAMINATION</b>	<b>: 3 hrs</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: I YEAR</b>

**COURSE DESCRIPTION**

The course is designed to assist students to acquire the knowledge of the normal biochemical functioning of human body and alterations.

**OBJECTIVES**

At the end of the course, the student will be able to

1. Identify the basic principles of biochemistry.
2. Synthesize the knowledge of these principles in various situations.

**COURSE OUTCOMES FOR BIOCHEMISTRY**

At the end of the course, students will be able to...

**BIO-AHS-CO1:** Correlate the integration of various aspects of biomolecules and its lab diagnosis

**BIO-AHS-CO2:** Explain biochemical basis and rationale of clinical laboratory tests for inborn errors of metabolism, and interpret the results.

**BIO-AHS-CO3:** Correlate the results of these investigations with the primary disorders of each human body system.

**BIO-AHS-CO4:** Follow good clinical laboratory practice as well as to handle the biological samples collected

**BIO-AHS-CO5:** Learn how to collect the samples and to process it for diagnostic purposes

UNIT	TITLE	THEORY + TUTORIALS (80 +32 ) HOURS
I	<p><b>(i) INTRODUCTION TO BIOCHEMISTRY</b></p> <ul style="list-style-type: none"> <li>• Biophysical aspects of Biochemistry: Theory of acids and bases, Ionization of acids, Dissociation of water, Hydrogen ion concentration and concept of pH, Dissociation of acids and bases, Basic concepts in Acidosis and Alkalosis (Respiratory and Metabolic)</li> <li>• Concept of buffering, Definition of buffers and Buffering Capacity, Chemical and Physiological buffers, Henderson Hassel Balch equation and pH - pK relationship,</li> <li>• Glass electrode and determination of pH, Acid Base titration.</li> </ul> <p><b>ii) PROTEINS</b></p> <ul style="list-style-type: none"> <li>• Proteins: Chemistry, Classification, properties and biomedical importance of Proteins.</li> <li>• Hydrolytic products of proteins</li> <li>• Classification of Amino acids and important properties</li> </ul> <p><b>iii) ENZYMES</b></p> <ul style="list-style-type: none"> <li>• Definitions of Catalyst, Enzymes, Apo enzyme, Coenzyme, Holoenzyme, Cofactors and prosthetic group</li> <li>• Active site</li> <li>• Systematic classification of Enzymes</li> <li>• Factors influencing Enzyme kinetics</li> <li>• Enzyme units</li> </ul>	18 + 6
II	<p><b>i) CARBOHYDRATES</b></p> <ul style="list-style-type: none"> <li>• Carbohydrates: Chemistry, Classification, properties and biomedical importance of carbohydrates.</li> </ul> <p><b>ii) NUCLEOPROTEINS</b></p> <ul style="list-style-type: none"> <li>• Purine and Pyrimidine bases</li> <li>• Ribose and Deoxy Ribose</li> <li>• Definition of Nucleosides and Nucleotides</li> <li>• Structure of DNA</li> <li>• Types of RNA</li> <li>• Biologically significant Nucleotides</li> </ul>	15 + 5
III	<p><b>LIPIDS</b></p> <ul style="list-style-type: none"> <li>• Definition of Fats and Oils</li> <li>• Classification of Lipids</li> <li>• Saturated and Unsaturated Fatty acids</li> <li>• Properties of Lipids</li> <li>• Biomedical importance of Lipids with special reference to Phospho Lipids, Glycolipids and Cholesterol.</li> </ul>	15 + 7
IV	<p><b>ENERGY METABOLISM AND NUTRITIONAL BIOCHEMISTRY</b></p> <ul style="list-style-type: none"> <li>• Calorific value, Respiratory Quotient, Resting Metabolic expenditure, Specific dynamic action</li> <li>• Energy requirements</li> <li>• Complex Carbohydrates and Role of Dietary fiber</li> <li>• Essential Fatty acids</li> <li>• Essential amino acids</li> </ul>	20 + 6

	<ul style="list-style-type: none"> <li>• Positive and Negative Nitrogen balance</li> <li>• Protein Energy Malnutrition</li> <li>• Biochemical functions of Vitamins</li> <li>• Biochemical functions of major and trace elements</li> </ul>	
V	<p><b>(i) CLINICAL CHEMISTRY</b></p> <ul style="list-style-type: none"> <li>• Serum Osmolality: Significance and measurement</li> <li>• Electrophoresis: Principles, Methodology and Diagnostic significance</li> <li>• Principles and applications of Paper Chromatography</li> <li>• Simple tests to identify Carbohydrates, Lipids and Proteins in biological fluids</li> <li>• Qualitative estimation of Glucose, Proteins, Cholesterol, Urea, Creatinine and Uric acid and their diagnostic significance</li> </ul> <p><b>(ii) ENVIRONMENTAL CHEMISTRY</b></p> <ul style="list-style-type: none"> <li>• Definition of Pollutants</li> <li>• Impact of Terrestrial, Water and air pollutants</li> <li>• Bio pesticides Chemistry, Metabolic Transformation in the living system and role in Chemical Pathology</li> <li>• Influence of Non-Biodegradable domestic utility items and its role in metabolic disorders</li> <li>• Carcinogens and mutagens: qualitative and molecular pathology involved in mutagenesis and carcinogenesis</li> <li>• Plastics and its impacts on Society</li> <li>• Biomedical Waste and its management</li> </ul>	12 + 8

#### LAB TRAINING (38 hrs)

- Simple Color reactions of Carbohydrates and Proteins
- Qualitative estimations of Glucose, Urea, Creatinine, Total Protein and Cholesterol
- Normal constituents of Urine
- Abnormal (pathological) Urine
- Glucose Tolerance Test and its significance
- Demonstration of Electrophoresis and Interpretation of important clinical conditions based on Electrophoresis appearance
- Demonstration of Paper Chromatography and its utility in the diagnosis of inborn errors of metabolism

#### METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

## METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

## REFERENCE BOOK

1. Essential of Biochemistry for B.Sc. Nursing Students Harbanslal, first edition.
2. Biochemistry U.Sathya Narayana, U.Chakrapani, fifth edition

### B.Sc. ALLIED HEALTH SCIENCES - BIOCHEMISTRY (I Year) BLUE PRINT

Unit No.	Weight age	Marks Allotted	Knowledge/ Recall			Understanding			Application		
			LAQ (10)	SAQ (6)	VSAQ (3)	LAQ (10)	SAQ (6)	VSAQ (3)	LAQ (10)	SAQ (6)	VSAQ (3)
I	30 %	25		1	1	1	1				
II	20%	19	1		2			1			
III	15%	12	1*	1	2						
IV	15 %	9	1*	1*	2			1			
V	20%	15		1	1 + 1*		1	1*			

The duration of Examination (University) is Three (3) hours.

The total marks for the University Examination will be 80 marks.

Long Answer Questions : 2X 10 marks = 20 marks (Choice 2 out of 4)

Short Answer Questions : 5X 6 marks = 30 marks (Choice 5 out of 6)

Very Short Answer Questions : 10 X 3 marks = 30 marks (Choice 10 out of 12)

TOTAL = Theory 80 + IA 20 = 100marks

**MODEL QUESTION PAPER**  
**FIRST YEAR B.Sc. ALLIED HEALTH SCIENCES**  
**BIOCHEMISTRY**

**TIME: 3 HOURS**

**MAXIMUM MARKS:80**

**A. Long answer question (2 X10=20)**

1. a) Write in detail about the Hetero polysaccharides and mention its importance.

(Or)

b) How is acid base balance maintained in the body?

2. a) Define and classify Lipids with suitable examples.

(Or)

b) Write in detail about the RDA, dietary sources, and biochemical role and deficiency manifestations of folic acid.

**B. Short answer questions -Answer any 5 questions (5X 6=30)**

1. Mention dietary sources and functions of cholesterol
2. Define Chromatography & write any 4 applications
3. Classify Carbohydrates with a suitable example
4. Classify Enzymes systematically by providing one example under each class.
5. Define carcinogen and name any three agents that cause carcinogenesis.
6. List down the sources, regulation and functions of Calcium

**C. Very Short answer questions -Answer any 10 questions (10 x 3=30)**

1. Define Respiratory quotient
2. Define buffer
3. List any two functions of trace elements.
4. List any two impacts of plastics on society
5. Mention the essential fatty acids and its importance
6. List any 2 functions of phospholipids
7. Name one test to identify plasma proteins and urea.
8. Define osmolality
9. Mention any one cardiac glycoside with its function
10. Draw a neat labeled diagram of DNA
11. Define mutarotation
12. List any two functions of Fat soluble vitamin

# **GENERAL MICROBIOLOGY**

**SYLLABUS FOR I YEAR**  
**B.Sc. ALLIED HEALTH SCIENCES - GENERAL MICROBIOLOGY**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: GENERAL MICROBIOLOGY</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 40 hrs</b>
<b>DURATION OF TUTORIAL SESSIONS</b>	<b>: 16 hrs</b>
<b>DURATION OF LAB TRAINING</b>	<b>: 38 Hrs</b>
<b>EXAMINATION</b>	<b>: 50 marks (40 U+10 IA)</b>
<b>NO UNIVERSITY PRACTICAL EXAMINATION</b>	
<b>DURATION OF THEORY EXAMINATION</b>	<b>: 1 ½ hrs</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: I YEAR</b>

**COURSE DESCRIPTION**

The course is designed to assist students to acquire understanding of fundamentals of microbiology and identification of microorganisms. It also provides opportunities for practicing infection control measures in hospital setting.

**COURSE OBJECTIVES**

At the end of the course, the student will be able to:

1. Identify common disease producing microorganisms
2. Explain the basic principles of microbiology and their significance in health and disease. Demonstrate skill in handling specimens.
3. Explain various methods of disinfection and sterilization
4. Identify the role of the nurse in hospital infection control system.

**COURSE OUTCOMES FOR GENERAL MICROBIOLOGY**

At the end of the course, students will be able to...

**MIC-AHS-CO1:** Sterilize the articles with physical and chemical methods

**MIC-AHS-CO2:** Perform with suitable culture media, methods for growth of the bacteria and perform staining techniques for identification of bacteria

**MIC-AHS-CO3:** Learn the structure, function of immune system and immunity by its antigen-antibody reactions

**MIC-AHS-CO4:** Learn the how to collect & process the specimen for the diagnostic purposes

**MIC-AHS-CO5:** Learn about the identification of fungal infections from clinical specimens and various antifungal agents used for the fungal infections.

**MIC-AHS-CO6:** Learn the laboratory diagnosis of Parasitic and Viral infections

**MIC-AHS-CO7:** Learn about the treatment and post exposure prophylaxis (PPE) of viral infections

UNIT	TITLE	THEORY + TUTORIALS (40 +16) HOURS
I	<b>GENERAL BACTERIOLOGY</b> <ul style="list-style-type: none"> <li>□ Historical introduction Classification of Microorganisms based on size, shape and structure</li> <li>□ Anatomy &amp; Physiology of Bacteria : Nutrition, Growth</li> <li>□ Microscopy, staining techniques &amp; Culture media, culture methods</li> <li>□ Sterilization (physical &amp; chemical methods) Infection</li> </ul>	8 + 2
II	<b>IMMUNOLOGY</b> <ul style="list-style-type: none"> <li>□ Immune response</li> <li>□ Immunity</li> <li>□ Hyper sensitivity, Autoimmunity</li> <li>□ Complement</li> <li>□ Antigen antibody reactions</li> </ul>	7 + 2
III	<b>SYSTEMATIC BACTERIOLOGY</b> <ul style="list-style-type: none"> <li>□ Introduction : Collection transport &amp; processing of bacteriological clinical specimen in general</li> <li>□ Pyogenic cocci</li> <li>□ Spore bearing bacilli Clostridium + Bacillus</li> <li>□ Enterobacteriaceae- E.coli, Klebsiella, Salmonella, Shigella</li> <li>□ Vibrio, Pseudomonas</li> </ul> <b>MYCOLOGY</b> <ul style="list-style-type: none"> <li>□ Introduction, classification of fungi, laboratory diagnosis in general</li> <li>□ Fungi of medical importance- Opportunistic fungi</li> </ul>	8 + 3
IV	<b>BASICS OF PARASITOLOGY</b> <ul style="list-style-type: none"> <li>□ Introduction to Parasitology, Classification, Protozoa-I - Entamoeba histolytica</li> <li>□ Protozoa-II, Plasmodium spp.</li> <li>□ Cestodes: general, T.solium &amp; T.saginata, E.granulosus</li> <li>□ Nematodes: Introduction &amp; Classification <ul style="list-style-type: none"> <li>- Intestinal - Ascaris, Ancylostoma, Strongyloides</li> <li>- Tissue- W.bancrofti</li> </ul> </li> </ul>	7 + 3
V	<b>VIROLOGY</b> <ul style="list-style-type: none"> <li>□ Classification &amp; General properties of Viruses, Virus Host interactions &amp; Lab diagnosis in general</li> <li>□ DNA Viruses : Pox viruses &amp; Adenoviruses, Herpes viruses</li> <li>□ Hepatitis virus, HIV</li> <li>□ Rabies , Polio, Arbo viruses common in India - Dengue, Chikungunya , Japanese encephalitis, KFD</li> </ul>	6 + 4
VI	<b>HOSPITAL INFECTION AND CONTROL</b> <ul style="list-style-type: none"> <li>□ Causative agents and methods of transmission</li> <li>□ Systematic investigation of hospital infection</li> <li>□ Prevention and control of Hospital infections</li> <li>□ Environmental Hazards resulting from biomedical waste and preventive measures.</li> </ul>	4 + 2

## LAB TRAINING (38 hrs)

- Introduction & visit to microbiology lab + Morphology of bacteria + Identification of bacteria (Culture plates & Basic biochemical reactions)
- Gram stain, Acid fast Stain
- Spotters , Instruments, Culture media inoculated & un inoculated
- Applied Immunology(Bacterial)
- Serological tests - CRP, ASO, RPR, Widal Applied Immunology (Virology) Serological tests: HIV, HBsAg( Rapid Tests)
- Stool Examination for eggs + Parasitology specimens

### METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

### METHODS OF EVALUATION

1. Written Test
2. Laboratory Observation Book
3. Assignments
4. Oral Presentations

### REFERENCE BOOKS

1. Ananthnarayan R: Textbook of Microbiology.(2017)
2. Pommerville J. C: Fundamentals of Microbiology. Jones and Bartlett learning(2013)
3. ApurbaSastry, SandhyaBhat. Essentials of Microbiology.
4. Text book of Concise Microbiology by C.P.Baveja, Latest edition

**BLUE PRINT - B.Sc ALLIED HEALTH SCIENCES -GENERAL MICROBIOLOGY (I Year)**

Unit No.	Unit	Weightage (%)	Marks Allotted	Knowledge/ Recall			Understanding			Application		
				LAQ (10)	SAQ (6)	VSAQ (3)	LAQ (10)	SAQ (6)	VSAQ (3)	LAQ (10)	SAQ (6)	VSAQ (3)
I	GENERAL BACTERIOLOGY	8	3	1*								1
II	BASICS OF IMMUNOLOGY	15	6			1*		1				
III	SYSTEMATIC BACTERIOLOGY	25	10				1				1*	
IV	BASICS OF PARASITOLOGY& MYCOLOGY	22	9					1				1
V	VIROLOGY	22	9		1							1
VI	HOSPITAL INFECTION AND CONTROL	8	3		1*				1			
	<b>TOTAL</b>	<b>100</b>	<b>40</b>									

The duration of Examination (University) is One and Half (1 ½) hours.

The total marks for the University Examination will be 40marks.

Long Answer Questions : 1X10mark = 10 marks (Choice 1 out of2)

Short Answer Questions : 3X6marks = 18 marks (Choice 3 outof5)

Very Short Answer Questions : 4 X3 marks = 12marks (Choice 4 out of5)

TOTAL = 40 marks

**MODEL QUESTION PAPER**  
**FIRST YEAR B.Sc. ALLIED HEALTH SCIENCES**  
**GENERAL MICROBIOLOGY**

**Time: 1½Hours**

**Maximum Marks: 40**

Illustrate your answers with suitable diagrams wherever necessary.

**(A) Long answer questions (1 X 10=10)**

1. Describe the commonly used chemical disinfectants and their applications in the hospital.

**(OR)**

2. Classify Mycobacterium. Give an account on pathogenesis and laboratory diagnosis of pulmonary tuberculosis. Add a note on BCG vaccine.

**(B) Short answer questions -Answer any 3 questions marks (3 X6=18)**

1. Define immunity. Describe acquired immunity.

2. Types of HAI & mention the causative agents.

3. Name the UTI cause bacteria. How to collect urine & laboratory diagnosis of *E.coli*.

4. Life cycle of malaria parasite in human.

5. Write about Modes of transmission of HIV.

**(C) Very Short answer questions -Answer any 4 questions (4 x3 =12)**

1. Mention different color coded bags for biological waste management used in hospital with the viruses.

2. Prophylaxis of hepatitis B.

3. List FOUR bacteria causing wound infection.

4. Name the opportunistic fungi.

5. Name four arbo viral diseases common in India.

# **GENERAL PATHOLOGY**

**SYLLABUS FOR I YEAR**  
**B.Sc. ALLIED HEALTH SCIENCES - GENERAL PATHOLOGY**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: GENERAL PATHOLOGY</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 40hrs</b>
<b>DURATION OF TUTORIAL SESSIONS</b>	<b>: 16hrs</b>
<b>DURATION OF LAB TRAINING</b>	<b>: 38Hrs</b>
<b>EXAMINATION</b>	<b>: 50 marks (40 U + 10IA)</b>
<b>NO UNIVERSITY PRACTICAL EXAMINATION</b>	
<b>DURATION OF THEORY EXAMINATION</b>	<b>: 1 ½hrs</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: I YEAR</b>

**COURSE DESCRIPTION**

To make the student to understand pathology laboratory reports, the normal ranges of investigations, severity and specificity of disease conditions which will help him perform International Classification of diseases to clinical pertinence.

**COURSE OBJECTIVES**

On completion of this subject, the student will be able to:

- Differentiate between symptoms and diseases
- Understand the needs of mandatory diagnostic procedures
- Demonstrate an understanding of the pathology of common diseases
- Understand various pathology laboratory reports
- Know about the possibilities and consequences of nosocomial infections, needle prick injuries etc., in a health care facility

**COURSE OUTCOMES FOR GENERAL PATHOLOGY**

At the end of the course, students will be able to...

**PAT-AHS-CO1:** Learns the pathophysiology of disease and its causes and progression

**PAT-AHS-CO2:** Learns the etiologies, the pathogenesis, and the host response specific to a particular organ system

**PAT-AHS-CO3:** Learn about lab investigations and techniques in Hematology.

**PAT-AHS-CO4:** Learns to perform cross matching, coombs test, blood grouping and TTI

**PAT-AHS-CO5:** Learns the diagnosis of disease based on the laboratory analysis of bodily fluids

UNIT	TITLE	THEORY + TUTORIALS (40 +16) HOURS
I	<b>GENERAL PATHOLOGY (12 +3 HOURS)</b> Basic Concepts in Cellular Adaptions <ul style="list-style-type: none"> <li>• Cell injury and Cell death</li> <li>• Over view of Cellular adaption</li> </ul> Basic Principles in Inflammatory Process <ul style="list-style-type: none"> <li>• General features of acute and Chronic inflammation repair.</li> <li>• NEOPLASIA</li> <li>• Definition of Neoplasia</li> <li>• Differences between Benign and Malignant tumors</li> <li>• Nomenclature</li> </ul>	10 + 5
II	<b>HAEMATOLOGY</b> <b>Structure and functions of Blood cells</b> <ul style="list-style-type: none"> <li>• Objective use of anticoagulants</li> <li>• Mechanisms of Haemostasis</li> <li>• Tests to monitor Coagulation</li> <li>• Blood Grouping and Blood Bank (Basic aspects on Blood Components)</li> <li>• Basic concepts in Anemia</li> <li>• Basic Concepts of Leukemia</li> </ul>	10 + 3
III	<b>BIOMEDICAL WASTE MANAGEMENT AND ENVIRONMENTAL PATHOLOGY</b> <ul style="list-style-type: none"> <li>• Biomedical waste management from perspectives of Pathology</li> <li>• Environment and Disease - Smoking hazards, Asbestosis and Silicosis Occupational Exposure</li> </ul>	5 + 2
IV	<b>CLINICAL PATHOLOGY</b> <ul style="list-style-type: none"> <li>• Collection, transport, preservation and processing of Clinical Specimen</li> <li>• Clinical Pathology of specialized Body Fluids(CSF), Synovial fluid, Pleural Fluid</li> <li>• Urine Examination(Urinalysis)</li> </ul>	5 + 2
V	<b>OVERVIEW OF SYSTEMIC PATHOLOGY</b> <ul style="list-style-type: none"> <li>• Rheumatic Heart Disease ineffective endocarditic, atherosclerosis, IHD - Basic Concepts.</li> <li>• Lungs : Pneumonia, COPD, Asthma, ARDS - Basic Concepts</li> <li>• Gastrointestinal tract - Peptic Ulcer, Carcinoma Stomach, Carcinoma Colon -Basic Concepts.</li> <li>• Liver: Hepatitis, Cirrhosis, Gall Bladder -basic</li> </ul>	10 + 4

	<p>Concepts.</p> <ul style="list-style-type: none"> <li>• Brain Tumor.</li> <li>• Kidney - Renal Calculi, Hydronephrosis, renal Tumor - Basic Concepts.</li> <li>• FGT - Leiomyoma, Endometrial hyperplasia, Endometrial Cancer, Cervical Cancer -Basic Concepts.</li> <li>• FGT - Ovarian Tumor classifications - Basic Concepts.</li> <li>• Breast - Benign and Malignant tumors - Basic Concepts</li> <li>• Bone Tumors - Basic Concepts</li> </ul>	
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### **LAB TRAINING (38 hrs)**

1. Blood Grouping and Rh typing
2. Urine Routine
3. Hb, TLC,DLC
4. Gross Specimens
5. Slides

#### **METHODS OF TEACHING**

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

#### **METHODS OF EVALUATION**

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

#### **REFERENCE BOOK**

1. Culling Histopathology techniques
2. Bancroft Histopathology techniques
3. Todd & Sanford Clinical Diagnosis by laboratory method
4. Dacie & Lewis - Practical Haematology
5. Ramanicood, Laboratory Technology (Methods and interpretation) 4<sup>th</sup>Ed.

**B.Sc. ALLIED HEALTH SCIENCES - PATHOLOGY (I Year)-BLUE PRINT**

Unit No.	Unit	Weightage	Marks Allotted	Knowledge/ Recall			Understanding			Application		
				LAQ (10)	SAQ (6)	VSAQ (3)	LAQ (10)	SAQ (6)	VSAQ (3)	LAQ (10)	SAQ (6)	VSAQ (3)
I	a) BASIC CONCEPTS IN CELLULARADAPTIONS b) BASIC PRINCIPLES IN INFLAMATORY PROCESS c) NEOPLASIA	37.5%	15	1*	2	1	-	1*	1*	-	-	-
II	HAEMATOLOGY	22.5%	9	-	1	1	-	-	-	-	-	-
III	BIOMEDICAL WASTE MANAGEMENT AND ENVIRONMENTAL PATHOLOGY	7.5%	3	-	-	-	-	-	1	-	-	-
IV	CLINICAL PATHOLOGY	7.5%	3	-	1*	1	-	-	-	-	-	-
V	OVERVIEW OF SYSTEMIC PATHOLOGY	25%	10	1	-	-	-	-	-	-	-	-

The Duration of Examination (University) is One and Half hours (1 ½) hours.

The total marks for the University Examination will be 40 marks.

Lon Answer Questions : 10X1marks = 10 marks (Choice 1 out of 2)

Short Answer Questions : 3 X6marks = 18 marks (Choice 3 out of5)

Very Short Answer Questions : 4 X3marks = 12 marks (Choice 4 out of5)

TOTAL = 40 marks

**MODEL QUESTION PAPER  
FIRST YEAR B.Sc. ALLIED HEALTH SCIENCES  
GENERAL PATHOLOGY**

**Time: 1½Hour**

**Maximum Marks: 40**

Illustrate your answers with suitable diagrams wherever necessary.

**(A) Long Answer Questions**

**(1X10=10)**

1. Mention the types of necrosis with examples

(Or)

2. Describe about Myocardial infarction

**(B) Short Answer Question**

**(3X6=18)**

**Answer any THREE of the following**

1. Tabulate the difference between Benign and Malignant tumors

2. Define anemia. Mention types of anemia, on the basis of Etiology.

3. Explain the mode of spread of tumors in brief.

4. Explain granulomatous inflammation with a neat labeled diagram

5. Describe the method of collection, transport and preservation of CSF

**(C) Very Short Answer Questions**

**(4X3=12)**

**Answer any FOUR of the following**

1. Define Apoptosis.

2. Enumerate two colors coding for various biomedical waste disposal with examples.

3. Define cross matching

4. Mention two types of Necrosis.

5. Define Pneumonia.

# **I YEAR ELECTIVE COURSES**

**SYLLABUS FOR I YEAR  
B.Sc. ALLIED HEALTH SCIENCES  
ABILITY ENHANCEMENT COMPULSORY COURSE (AECC) - ENGLISH**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: ENGLISH</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 16hrs</b>
<b>DURATION OF PRACTICAL SESSIONS</b>	<b>: 34hrs</b>
<b>EXAMINATION</b>	<b>: 100 marks (80 U + 20 IA)</b>
<b>NO UNIVERSITY PRACTICAL EXAMINATION</b>	
<b>DURATION OF THEORY EXAMINATION</b>	<b>: 1 ½ hrs</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: I YEAR</b>

**COURSE OUTCOMES FORENGLISH**

**ENG-CO1:** Speak and write grammatically correct sentences in English

**ENG-CO2:** Develop effective writing skills needed for clinical task

**ENG-CO3:** Build fluency in English needed for clinical tasks

**SYLLABUS  
(THEORY& PRACTICALS = 16 +34 Hours)**

**COURSE DESCRIPTION**

This course is designed to build spoken and written English competency of the students needed to function effectively in academic setup.

**OBJECTIVES**

On completion of this subject, the student will be able to:

1. Speak and write grammatically correct sentences in English.
2. Develop effective writing skills.
3. Build fluency in English

**UNIT: I GRAMMAR**

1. Remedial Grammar : Parts of speech; Types of sentences, question tags
2. Modal verbs;
3. Tenses
4. Concordance

**UNIT: II VOCABULARY**

1. Word formation - prefixes and suffixes
2. Medical terminology
3. Words often misused or confused
4. Idioms and phrases

**UNIT: III WRITING SKILLS**

1. Letter writing - permission, leave and other official letters
2. Note making methods
3. Jumbled sentences -cohesion
4. Paragraph Writing

**UNIT: IV SPOKEN COMMUNICATION**

1. Pronunciation of commonly mispronounced words
2. Day today conversation
3. Telephonic conversations
4. Group Discussions

**UNIT: V LISTENING AND READING SKILLS**

1. General Listening and reading comprehension

**Textbook Recommended**

1. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw - Hill Publishing Company Limited, New Delhi.
2. English for Colleges and Competitive Exams by Dr. R. Dyvadatham, Emerald Publishers.

**SYLLABUS FOR I YEAR  
B.Sc. ALLIED HEALTH SCIENCES  
SKILL BASED ELECTIVE COURSE (SBEC) - CULINARY SKILLS FOR  
OPTIMAL NUTRITION**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: CULINARY SKILLS FOR OPTIMAL NUTRITION</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 16 Hrs</b>
<b>DURATION OF PRACTICAL SESSIONS</b>	<b>: 32Hrs</b>
<b>PRACTICAL EXAMINATION</b>	<b>: 50 Marks (40 U + 10 IA)</b>
<b>NO UNIVERSITY THEORY EXAMINATION</b>	
<b>DURATION OF EXAMINATION</b>	<b>: 1 ½ Hrs</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT: I YEAR</b>	

**COURSE OUTCOMES**

**NUTRI-CO1:** Understand the basic food groups, their nutrient composition and function for balanced healthy diet for people of all ages & patients on dietary management for healthy life.

**THEORY & PRACTICALS (DURATION 16 + 32 Hours)**

**UNIT-I INTRODUCTION TO FOODS AND NUTRITION**

- Food-Definition of foods, nutrition and nutrients characteristics of good health
- Relation of nutrition to good health-optimal nutrition, malnutrition and over nutrition
- Classification of foods based on major nutrient content
- Food selection-factor responsible for food selection

**UNIT-II FOODS GROUPS**

- Basic four and five food groups-cereals, millets pulses, fruits and vegetables, fats and oils, sugar and jaggery.
- Foods and nutrients, Functions of food- energy yielding, body building and protective foods, balanced diet, vegetarian and non-vegetarian foods
- Functional Foods-Dietary supplements
- Food Adulterations-Common adulterants and method of identification, nutrition labeling and food standards

**UNIT-III METHODS OF COOKING, PRESERVATION AND SENSORY EVALUATION**

- Principles and techniques of sensory evaluation, Interpretation tools
- Cooking methods-moist heat, dry heat advantages and disadvantages, changes during cooking, nutrient preservation while cooking
- Preservation techniques advantages and disadvantages

#### **UNIT-IV NUTRITIONAL REQUIREMENTS AND MEAL PLANNING**

- Basic nutritional requirements through different stages of life cycle, basic principles of meal planning, revisiting concept of balanced diet.

#### **PRACTICALS**

- Introduction to cutlery and crockery
- Introduction to weights and measures
- Art of table setting
- Market survey on food labeling
- Preparation of few commonly consumed cereal preparation
- Preparation of few commonly consumed pulse dishes
- Vegetable cooking without nutrient loss
- Preparation and display of fruits salads
- A day's menu for an adult sedentary worker
- A day's menu for an 8-monthold infant
- Nutritious snacks for preschooler
- Nutritious lunch for school going boys and girl
- Consistency modified menu for an 80-year-old
- Simple test to identify food adulteration
- Sensory evaluation of prepared items

#### **METHODS OF TEACHING**

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

#### **METHODS OF EVALUATION**

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

#### **Reference book**

1. Srilakshmi.B. : Food science; seventh edition(2012)
2. Jacqueline B .Marcus :Culinary Nutrition: The science and practice of healthy cooking:(2014)

**SYLLABUS FOR I YEAR**  
**B.Sc. ALLIED HEALTH SCIENCES**  
**SKILL BASED ELECTIVE COURSE (SBEC) - ENHANCING SOFT SKILL &**  
**PERSONALITY**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: Enhancing soft skill &amp; personality</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 16Hrs</b>
<b>DURATION OF PRACTICAL SESSIONS</b>	<b>: 32Hrs</b>
<b>PRACTICAL EXAMINATION</b>	<b>: 50 Marks (40 U + 10 IA)</b>
<b>NO UNIVERSITY THEORY EXAMINATION</b>	
<b>DURATION OF EXAMINATION</b>	<b>: 1 ½ Hrs.</b>
<b>YEAR</b>	<b>: I YEAR</b>

**COURSE OUTCOMES**

**ESSP-CO1:** Foster healthy attitude and develop effective inter and intra personal skills to be an effective team worker in both academic and professional setup.

**LEARNING OBJECTIVES**

This course is designed to equip the students with essential soft skills needed for workplace and improve personality.

**SYLLABUS**

**UNIT: I ASPECTS OF COMMUNICATION**

1. Importance of communication, Process, Barriers
2. Nonverbal Communication

**UNIT: II SPEAKING**

1. Opening and Closing conversations
2. Introductions and Address Systems
3. Expressing Courtesy
4. Giving Compliments and replying to Compliments
5. Presentation Skills
6. Telephonic conversation and telephone etiquette

**UNIT - III PRESCRIBED READING**

1. White washing the Fence - Episode from Tom Sawyer by Mark Twain
2. Bacon's Essays: - Of Goodness and goodness of nature

**UNIT - IV WRITING**

1. Letter writing - Letter of Complaints, Inviting and Declining an invitation
2. Memos and Email
3. Editing- Grammar, Spelling & Punctuation, Use of Dictionary & Thesaurus.

## **UNIT - V SOFT SKILLS**

1. Active Listening Skills
2. Assertive Skills
3. Negotiation and Persuasive Skills
4. Interview Skills

### **Reference Books**

1. Communication Skills for Engineers and Scientists by Sangeeta Sharma and Binod Mishra, PHI Learning Private Limited, New Delhi.
2. English and soft skills by S.P. Dhanavel, Orient Black Swan
3. Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata McGraw -Hill Publishing Company Limited.
4. Technical Communication - Principles and Practice, by Meenakshi Raman and Sangeetha Sharma, II edition, Oxford University Press.

### **Learning Outcome**

This course is designed to help the students to

- ~~team worker.~~ Foster healthy attitude.
- ~~Communicate effectively in both academic and professional setup~~ Develop effective inter and intra personal skills to be an effective

**SYLLABUS FOR I YEAR  
B.Sc. ALLIED HEALTH SCIENCES  
SKILL BASED ELECTIVE COURSE (SBEC) - SPEAKING EFFECTIVELY**

**NAME OF THE SUBJECT PAPER : SPEAKING EFFECTIVELY**

**DURATION OF THEORY CLASSES : 16Hrs**

**DURATION OF PRACTICAL SESSIONS : 32Hrs**

**PRACTICAL EXAMINATION : 50 Marks (40 U + 10 IA)**

**NO UNIVERSITY THEORY EXAMINATION**

**DURATION OF EXAMINATION : 1 ½ Hrs.**

**YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT: I YEAR**

**COURSE OUTCOMES**

**SPEAK-CO1:** Speak and write grammatically correct sentences in English and Build fluency in English needed for clinical tasks.

**LEARNING OBJECTIVES**

- Advance the students intellectual curiosity, competency and skills in preparation for employment
- Develop critical thinking, creativity and effective communication

**SYLLABUS**

**1. Communication Skills**

- Importance of Communication skills in Public health; Communication process; Methods of communication; Types of communication: Verbal and Non-verbal; Impediments to effective communication; Feedback

**2. Oral Presentation Skills**

- Preparation and planning; Structure; Audio-visual aids; Creating interest and establishing a relationship with the audience; Body language; Voice and pronunciation; Review

**3. Writing skills**

- Writing a scientific paper; Writing a proposal; Structure of an article; References and literature review; Peer-review process-Publication bias; International guidelines for publication in journals; Professional Ethics

**4. Leadership in Public health**

- Leadership styles and trait; Motivation skills; Interpersonal communication skills; Problem solving skills; Decision making skills; Management skills; Communication Skills

## **5. Manuscript writing**

- Writing introduction, objectives, methodologies, major finding, discussion, conclusion and recommendation

## **6. Seminar presentations**

- Use of computers present data and information on recent topics

## **LEARNING OUTCOMES**

At the completion of the course, the students will-

- Develop good written and oral communication abilities
- Develop an understanding of team building and leadership skills
- Develop knowledge regarding capacities needed to work independently within diverse work environments

## **TEXT BOOKS**

1. Professional Writing Skills, A self-paced training Programme by Janis Fisher Chan and Diane Lutovich.
2. Speaking Your Mind: Oral Presentation and Seminar Skills By Rebecca Stott, Tory Young, Cordelia Bryan Contributor Rebecca Stott, Tory Young, Cordelia Bryan.

**SYLLABUS FOR I YEAR**  
**B.Sc. ALLIED HEALTH SCIENCES**  
**SKILL BASED ELECTIVE COURSE (SBEC) - BASICS OF YOGA AND PRACTICE**

NAME OF THE SUBJECT PAPER	: BASICS OF YOGA AND PRACTICE
DURATION OF THEORY CLASSES	: 16Hrs
DURATION OF PRACTICAL SESSIONS	: 32Hrs
PRACTICAL EXAMINATION	: 50 Marks (40 U + 10 IA)
NO UNIVERSITY THEORY EXAMINATION	
DURATION OF EXAMINATION	: 1 ½ Hrs
YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT	: I YEAR

**SYLLABUS & COURSE OUTCOMES FOR BASICS OF YOGA & PRACTICE (YOGA)**

**YOGA CO1:** Understand the respiratory system, types of breathing and benefits of meditation.

Unit	TIME(HRS)	CONTENT
1	1	Introduction to Yoga philosophy, psychology and lifestyle
2	1	A brief outline of the history of Yoga.
3	1	Cultivation of correct psychological attitudes
4	1	Asanas : Definition, Types, scope and limitations of Asanas
5	1	Pranayamas and their significance in Yogic curriculum, Types & phases of Pranayama.
6	1	Dharna and Dhyana as the keys to unlocking human potential.
7	1	Study of various aspects of Yoga: Kriyas, Bandhas, Mudras
8	1	Yoga defined as –Integration   and –Harmony
9	1	Meaning of the term –Positive Health
10	1	Yoga, a tool to restore homeostasis
11	1	Integration of Yoga into Health Professions Education
12	1	Order of teaching the Yogic practices; Do’s and Dont’s of specific Yoga techniques.
13	2	Applied aspects of Yoga in various human activities like therapeutics, education and sports
14	2	Introduction to yogic concept of health and disease

## **Unit 15: Introduction to Yogic techniques: Methods and practices (32 hours)**

### **Asanas (26 hrs):**

- Aruna Surya Namaskar
- Ardha - Padmasana/Padmasana
- ArdhakatiChakrasana
- PadaHasta
- PavanaMuktasana
- Trikona
- Navasana
- Ardha -Shalabhasana
- Shalabhasana
- Makarasana
- Bhujangasana
- Dhanurasana
- Vakrasana
- Vrikshasana
- Ushtrasana
- Gomukasana
- Yoga Mudra.
- Natarajasana
- Chakra sana
- Sarvangasana
- Matsyasana
- Halasana
- Shavasana

### **Pranayama (6 hrs)**

- Vibhaga Pranayama
- Pranava Pranayama
- Savitri Pranayama
- Chandra and SuryaNadi Pranayama
- Nadi-Shuddhi
- Sheetali and Sitkari

## **TEXT BOOKS**

- Dayanidy G and Bhavanani AB. CYTER Practical Book. Pondicherry, India: Dhivyananda Creations;2016.
- A primer of Yoga Theory - Dr Ananda Balayogi Bhavanani, Dhivyananda Creations,Pondicherry-13
- Fundamentals of Yoga History- Compilation by Meena Ramanathan
- Basic Hatha Yoga lessons (Tamil) - Dr Ananda Balayogi and Meena Ramanathan, Puducherry

## **BOOKS RECOMMENDED FOR STUDIES AND REFERENCE**

1. A yogic approach to stress-Dr Ananda Balayogi Bhavanani, Ananda Ashram, Pondicherry
2. Asana, Pranayama, Mudra and Bandha. Swami Satyananda, Bihar School of Yoga,Monger
3. ASANAS : WHY? AND HOW? - byShri. O.P. Tiwari.Kaivalyadhama,Lonavla.
4. Hatha Yoga practices of the Gitananda tradition by Dr Ananda Balayogi Bhavanani
5. Ramanathan Meena. Applied Yoga: Applications of Yoga in Different Fields of Human Activities. 3<sup>rd</sup>Ed; Pondicherry, India: Sri BalajiVidyapeeth;2018
6. PRANAYAMA - by Swami Kunalayananda. Kaivalyadhama, Lonavla.
7. Yoga and sports- Swami Gitananda and Meenakshi Devi, Ananda Ashram, Pondicherry.

**SYLLABUS FOR I YEAR**  
**B.Sc. ALLIED HEALTH SCIENCES**  
**GENERIC ELECTIVE COURSE (GEC) - BASICS OF HOSPITAL ADMINISTRATION**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: BASICS OF HOSPITAL ADMINISTRATION</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 64Hrs</b>
<b>THEORY EXAMINATION</b>	<b>: 50 Marks (40 U + 10 IA )</b>
<b>NO UNIVERSITY PRACTICAL EXAMINATION</b>	
<b>DURATION OF THEORY EXAMINATION</b>	<b>: 1 ½ HRS</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: I YEAR</b>

**COURSE OUTCOMES**

**HSM CO1:** To familiarizes students with the basics concepts, policies of hospital management regarding the occupational safety, organizational behavior & quality management.

**COURSE OBJECTIVES**

- To provide orientation about the hospital functions
- To familiarize students with the basics concepts of hospital management

**THEORY (DURATION 64 Hours)**

**UNIT: I ORGANISATION OF A HOSPITAL AND ITS DEPARTMENTS**

1. Organogram
2. Vision, Mission & Values, Logo
3. Patient Service Points - Clinical & Non-Clinical (OPD's, A&E, MHC, Wards, ICU's, OT's, etc.)
4. Scope of Services (Medical & Supportive Services)

**UNIT: II HOSPITAL POLICIES & PROCEDURES**

1. Registration Process
2. OP/IP Billing
3. Admission Process
4. Discharge Process
5. Financial counseling
6. Visitors Policy
7. Feedback forms.

**UNIT: III MEDICAL RECORDS MANAGEMENT/LEGAL ASPECTS**

1. Types of Medico legal cases
2. SOP's for handling MLC

3. Medical Records -Forms, consents, registers used in hospitals

#### **UNIT: IV QUALITY MANAGEMENT**

1. Quality - Brief Introduction
2. Code of Conduct for health care professionals
3. Patient rights &responsibilities
4. Incident Reporting
5. Quality indicators
6. List of Licenses to be obtained to run a Hospital College
7. Accreditation-ISO/NABH/JCI

#### **UNIT: VOCCUPATIONAL SAFETY**

1. Biomedical Waste Management
2. Hospital Spill Management
3. Usage of PPE
4. Emergency Codes
5. Fire Safety Management
6. Hospital Infection Control

#### **UNIT: VI ORGANISATIONAL BEHAVIOUR**

1. Communication with patients/health care professionals
2. Grooming standards
3. Time Management
4. Grievance Handling, Interdisciplinary Committee
5. Leadership

#### **LEARNING OUTCOMES**

Students will have an overview of hospital functions, processes and patient management.

**SYLLABUS FOR I YEAR**  
**B.Sc. ALLIED HEALTH SCIENCES**  
**GENERIC ELECTIVE COURSE (GEC) - COUNSELING AND GUIDANCE**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: COUNSELING AND GUIDANCE</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 64Hrs.</b>
<b>EXAMINATION</b>	<b>: 50 Marks (40 U +10IA)</b>
<b>NO UNIVERSITY PRACTICAL EXAMINATION</b>	
<b>DURATION OF THEORY EXAMINATION</b>	<b>: 1 ½ Hrs.</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: I YEAR</b>

**COURSE OUTCOMES**

**CG CO1:** To assess a person's needs and understand their personal characteristics that will help in personal growth, wellbeing and improving their relationships with others.

**LEARNING OBJECTIVES**

- To understand theoretical foundations of counseling psychology
- To examine briefly the major perspectives of Counselling and to apply based on the client's needs
- To assess one's own needs and motivations and personal characteristics that will help in personal growth and wellbeing.
- To understand basic counseling skills as practiced by an effective counsellor.
- To discuss special settings and populations where Counselling could be effectively used.
- To explore ethical and legal issues for the practice of counseling profession.

**SYLLABUS**

**UNIT I:**

Introduction and definition of Counselling and Guidance, Counsellor Preparation, Qualifications, Qualities, Legal and Professional ethics

**UNIT- II:**

Different approaches to counselling, goals in counselling, role and functions of the counsellor.

**UNIT- III:**

Micro skills in Counselling- relationship building strategies and methods: Opening techniques, attending skills- verbal and non-verbal communication, Listening skills:

Open questions and closed questions, Encouragement, Paraphrasing, Reflection, Summarization, influencing skills-Reframing, genuineness and Self-disclosure.

**UNIT-IV:**

Macro skills in Counselling, empathy, advanced empathy, Confrontation & challenging, Resistance, transference and counter-transference

**UNIT-V:**

Counselling situations and Counselling across life-span.

**Learning Outcome**

At the end of this course, the students will be able to:

Demonstrate basic knowledge in counseling (concepts, theories, ethical issues, basic skills, etc.)

**SYLLABUS FOR I YEAR  
B.Sc. ALLIED HEALTH SCIENCES  
GENERIC ELECTIVE COURSE (GEC) - LIFESTYLE DISORDERS**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: LIFESTYLE DISORDERS</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 64Hrs</b>
<b>EXAMINATION</b>	<b>: 50 Marks (40 U +10IA)</b>
<b>NO UNIVERSITY PRACTICAL EXAMINATION</b>	
<b>DURATION OF THEORY EXAMINATION</b>	<b>: 1 ½ Hrs.</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: I YEAR</b>

**COURSE OUTCOMES**

**LD CO1:** To understand the relevance, significance and implications of lifestyle disorders for the betterment of human life quality.

**THEORY (64 Hours)**

**UNIT I Modern Life style disorders**

Desk bound and sleeping habits, junk food, anxiety. Food poisoning, Acidity.

**UNIT II Dietary disorders**

Food groups and concept of a balanced diet, obesity, metabolic syndrome, hypertension- their causes and prevention through dietary and lifestyle modifications

**UNIT III Social health problems**

Smoking, alcoholism, drug dependence and Acquired Immune Deficiency Syndrome (AIDS).

**UNIT IV Gastrointestinal disorders**

Stomach disorders-Gastritis, Ulcer, Amoebiasis, Constipation, piles  
Common ailment- cold, cough, fevers, diarrhea, constipation- their causes and dietary

**LEARNING OUTCOMES**

To understand the relevance, significance and implications of lifestyle disorders for the betterment of human life quality

**Text Books**

1. Text book of Clinical Biochemistry-Carl.A. Burtis and EdwardR.Ashwood
2. Text Book of Medical Biochemistry-Dr.M.N.Chatterjee and Rane Shinde

**Reference Books**

1. P. Singh MD. Textbook of Nutrition and Health; First Ed; 2008; Academic Excellence  
Biochemistry with Clinical Correlation- Thomas M.Devl

**II YEAR**

**B.Sc - UROLOGY TECHNOLOGY**  
**FACULTY OF ALLIED HEALTH SCIENCES**  
**SRI BALAJI VIDYAPEETH**  
**(Deemed to be University)**  
**Accredited by NAAC with 'A' Grade**

**II- YEAR**

**CORE SUBJECTS**

1. Clinical Pharmacology
2. Clinical Microbiology & Renal Pathology
3. Principles of Operation theater & Hospital management
4. Basics of Surgery & Introduction to Urology part - I

**ELECTIVES**

**Ability Enhancement compulsory course (AECC)**

1. Environmental studies

**Skill enhancement course (SEC) - Choose any TWO**

1. Good Clinical Laboratory practice
2. Computer Applications
3. Library and E-resource
4. Public Health and Hygiene

**Generic Elective Course (GEC) - Choose any ONE**

1. Basic Psychology
2. Sociology
3. Entrepreneurship essentials

## AHS Course Content Second year B.Sc. Urology Technology (UT)

Faculty code	Category	Course title	Hours					Credits				
			Theory	Practical	Tutorials	Clinical training	Total hours	Lecture	Practical	Tutorials	Clinical training	Total credits
AHS	Core theory UT	Subjects										
AHS	UT -5	Clinical Pharmacology	80		32			5		1		6
AHS	UT -6	Clinical Microbiology & Renal Pathology	80		32			5		1		6
AHS	UT -7	Principles of Operation theater & Hospital management	80		32			5		1		6
AHS	UT -8	Basics of Surgery & Introduction to Urology part - I	64	64				4	2			6
AHS	UT-CT 1	Clinical Training UT 5 to 8				192					6	6
AHS	AECC	Environmental Science	16	32				1	1			2
AHS	SEC - 1-3	Student's choice	16	32				1	1			2
AHS	SEC - 1-3	Student's choice	16	32				1	1			2
AHS	GEC - 1-3	Student's choice	64					4				4
			<b>416</b>	<b>160</b>	<b>96</b>	<b>192</b>	<b>864</b>	<b>26</b>	<b>5</b>	<b>3</b>	<b>6</b>	<b>40</b>

## SCHEME OF EXAMINATION

Papers	Subject	Theory		Practical		Theory	Practical	Grand total 1000	Min marks to pass % (500)
		UE	IA	UE	IA	UIA*	UIA*		
UT -5	Clinical Pharmacology	80	20					100	50
UT -6	Clinical Microbiology & Renal Pathology	80	20					100	50
UT -7	Principles of Operation theater & Hospital management	80	20					100	50
UT -8	Basics of Surgery & Introduction to Urology part - I	80	20	80	20			200	100
UT-CT 1	Clinical Training UT 5 to 8						100	100	50
AECC	Ability enhancement Compulsory Course - Environmental Science	80	20					100	50
SEC	Skill enhancement Course	80	20					100	50
SEC	Skill enhancement Course	80	20					100	50
GEC	Generic elective	80	20					100	50

For all elective course, 40 marks for university theory and Practical cum Viva examination & 10 marks as Internal Assessment = 50 marks which will be converted to 100 marks in the transcript.

# **CLINICAL PHARMACOLOGY**

## PAPER UT-5- CLINICAL PHARMACOLOGY

NAME OF THE SUBJECT PAPER	: CLINICAL PHARMACOLOGY
DURATION OF THEORY CLASSES	: 80hrs
DURATION OF TUTORIAL SESSIONS	: 32hrs
UNIVERSITY THEORY EXAMINATION	: 100 marks (80 U + 20 IA)
UNIVERSITY PRACTICAL EXAMINATION	: NIL
DURATION OF THEORY EXAMINATION	: 3 Hrs
YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT	: II YEAR

### COURSE DESCRIPTION

To make the student to understand pharmacology drugs for various treatment mechanism of action uses of drugs adverse effect dosage of drugs in various organs.

### COURSE LEARNING OBJECTIVE

- In-depth knowledge about Pharmaceutical, Pharmacokinetic, Pharmacodynamics drug toxicity and safety.
- Understand the immunosuppressive medications used in patients.
- Understand in detail about the cardiovascular medications used in patients.
- Understand the analgesics medications used in patients.
- Understand enlist the chemotherapy medications used in patients.

### PROGRAM OUTCOMES

**UTPO1:** Performs the duty as a Uro-Technologist with leadership qualities having a good written & communication skills and also skilled at computer applications including E-library.

**UTPO2:** To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

**UTPO3:** Understanding the structure and functions of different organs in normal human body.

**UTPO4:** Phlebotomists are trained to draw blood primarily by performing venipunctures (for collection of minute quantities of blood and finger pricks).

**UTPO5:** Understanding the various method of sterilization used, functional flow and

maintenance of CSSD. Demonstrate the ability to sterilize urological instruments using physical and chemical method.

**UTPO6:** Learns about the theatre asepsis and its maintenance to manage indenting, record keeping and inventory maintenance.

**UTPO7:** To gain knowledge about the pharmacological aspect of some commonly used drugs and emergency medicine must be in position to list their indication therapeutic uses dilution, dosage and adverse effects.

**UTPO 8:** Able to assist urologist in surgical procedure like cystectomy, cystolithotomy, pyeloplasty, nephroureterectomy, nephrectomy, catheterization and stent replacement.

**UTPO9 :** Able to coordinate emergency resuscitative measures, administrate drug in various route and should provide adequate pre-operative, post-operative, and follow up case of surgical patients.

**UTPO10:** Able to provide palliative care for Urological cancer patients and respond to emergency situation by providing CPR and assist in the provision of advanced cardiac life support.

**UTPO11:** Develop and carry out well-organized patient management plans that support safe, effective and efficient care for both emergent and chronic condition as well as for preventive care.

**UTPO12:** To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behaviour healthy.

#### **COURSE OUTCOMES**

**CP-CO1:** Inculcate basic pharmacological understanding of rational and scientific basis of usage of drugs therapeutics.

**CP-CO2:** Describe pharmacological actions and precautions to be exercised with commonly used drugs.

**CP-CO3:** Relate specific adverse effect of commonly used drugs.

**CP-CO4:** Correlate specific contraindications of frequently used drug.

**CP-CO5:** Categorize major drug groups with their mechanism of action.

**CP-CO6:** Evaluate factors such as efficiency, safety, & suitability of medications to appropriately manage patients OT set up.

**CP-CO7:** Describe the specific adverse effects and drug interactions of prototype drugs.

**CP-CO8:** Acquire basic knowledge about drugs used in perfusion.

## COURSE CONTENT

UNIT	TITLE	THEORY + TUTORIAL (80+32) HOURS
I	<b>INTRODUCTION TO PHARMACOLOGY</b> <ul style="list-style-type: none"> <li>▪ Sources of Drugs</li> <li>▪ Route of drug administration</li> <li>▪ Pharmacokinetics (Absorption, Metabolism, Distribution, Excretion)</li> <li>▪ Pharmacodynamics (Mechanisms of action)</li> </ul>	5+6
II	<b>(A) AUTONOMIC NERVOUS SYSTEM &amp; CARDIOVASCULAR DRUGS</b> <ul style="list-style-type: none"> <li>▪ Anatomy &amp; functional organization.</li> <li>▪ List of drugs acting on ANS including dose, route of administration, indications,</li> <li>▪ Contra indications and adverse effects.</li> </ul> <b>(B) CARDIOVASCULAR DRUGS</b> <ul style="list-style-type: none"> <li>▪ Enumerate the mode of action, side effects and therapeutic uses of the following drugs.</li> <li>▪ Antihypertensive</li> <li>▪ Beta Adrenergic antagonists</li> <li>▪ Alpha Adrenergic antagonists</li> <li>▪ Peripheral Vasodilator</li> <li>▪ Calcium channel blockers</li> <li>▪ Antiarrhythmic drugs</li> <li>▪ Cardiac glycosides</li> <li>▪ Coronary vasodilators.</li> <li>▪ Antinatal and anti-failure agents</li> <li>▪ Lipid lowering &amp; anti atherosclerotic drugs.</li> <li>▪ Drugs used in Hemostasis - anticoagulants Thrombolytics and antithrombolytics.</li> <li>▪ Drugs used in the treatment of shock.</li> </ul>	20+6
III	<b>CNS</b> <ul style="list-style-type: none"> <li>▪ Sedative Hypnotics - Diazepam, Barbiturates, midazolam</li> <li>▪ Antiepileptics - Phenytoin, Carbamazepine, Phenobarbitone, Valproate.</li> <li>▪ Local Anaesthetics Xylocaine, Bupivacaine, Ropivacaine, Levobupivacaine.</li> <li>▪ Opioid Analgesics - Morphine, Pethidine, Fentanyl</li> <li>▪ NSAIDS - classification &amp; indication of all drugs</li> <li>▪ Respiratory System-Treatment Of Cough And Bronchial Asthma</li> </ul>	15+ 5
IV	<b>RENAL SYSTEM</b>	25+10

	<ul style="list-style-type: none"> <li>○ IV fluid therapy with special emphasis in renal diseases</li> <li>○ Diuretics - classification, actions, dosage, side effects &amp; contraindications</li> <li>○ Antidiuretics - Vasopressin.</li> <li>○ Mechanism of action of commonly used drugs in urology.</li> <li>○ Dialyzable drugs - phenobarbitone, lithium, methanol etc.</li> <li>○ Vitamin d &amp; its analogues, phosphate binders, iron, folic acid &amp; other vitamins of therapeutic value</li> <li>○ Erythropoietin in detail</li> <li>○ Formalin, sodium hypochlorite, hydrogen peroxide - role as disinfectants &amp; adverse effects of residual particles.</li> <li>○ Haemodialysis concentrates - composition &amp; dilution (acetate &amp; bicarbonates)</li> <li>○ Peritoneal dialysis fluid in particular hypertonic solutions - composition</li> <li>○ Potassium exchange resins with special emphasis on mode of administration.</li> </ul>	
<b>V</b>	<p><b>GIT, CHEMOTHERAPY</b></p> <ul style="list-style-type: none"> <li>○ GIT - Drugs Used In Peptic Ulcer</li> <li>○ H<sub>2</sub> Blockers, Antacids</li> <li>○ Antiemetics - Metaclopramide, Domperidone, Ondansetron</li> <li>○ Purgatives &amp; Laxatives.</li> <li>○ Drugs Used In Diarrhoea- ORS, Super ORS,</li> <li>○ Antimotility Drugs (Loperamide, Diphenoxylate)</li> <li>○ Chemotherapy - general considerations MOA, Resistance, Prophylaxis Sulfonamides, cotrimoxazoles, Quinolones Tetracyclines, chloramphenicol,</li> <li>○ Betalactam antibiotics</li> <li>○ j ) Aminoglycosides</li> <li>○ Macrolides, other antibiotics (vancomycin, linezolid) &amp; treatment of UTI Antifungal (clotrimazole, fluconazole)</li> <li>○ Antiviral (Acyclovir, Few drugs used in HAART)</li> </ul>	<b>15+5</b>

#### **METHODS OF TEACHING**

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

## METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

## RECOMMENDED BOOKS

1. K.D. Tripathi, Essentials of Medical Pharmacology, V. Edition, M/s. Jaypee Brothers.
2. Padmaja Udaykumar -Pharmacology for Allied Sciences.
3. R.S. Satoskar, S.D. Bhandarkar, S.S. Ainaपुरे, Pharmacology and Pharmacotherapeutics, 18th edition, Single Volume, M/s Popular Prakashan.

## PAPER-UT-5 CLINICAL PHARMACOLOGY -BLUE PRINT

S.NO	UNIT	WEIGHTAGE	MARKS ALLOTTED	LONG ANSWER (10)	SHORT ANSWER (6)	VERY SHORT ANSWER(3)
1	Introduction	7%	6	-	1*	2
2	Nervous system & cardio vascular	35%	28	1	2	2+1*
3	CNS	15%	12	1*	1	2
4	Renal system	28%	22	1	1	2+1*
5	chemotherapy	15%	12	1*	1	2

The duration of Examination (University) is Three (3) hours.

The total marks for the University Examination will be 100marks.

Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)

Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)

Very Short Answer Questions: 10 X 3 = 30 marks (Choice 10 out of 12)

TOTAL = Theory 80 + IA 20 = 100 marks

**MODEL QUESTION PAPER**  
**SECOND YEAR B.Sc. UROLOGY TECHNOLOGY**  
**PAPER UT-5 CLINICAL PHARMACOLOGY**

**Time: 3 Hours**

**Maximum Marks: 80**

**A. Long Answer Questions**

**(2x10 =20)**

1. a) Classifications of Opioid drugs, and write about Morphine. (OR)
- B) Classify Antihistamines. Explain briefly the clinical uses of antihistamines.
2. a) Describe the pharmacology of Atropine, uses and contraindications. (OR)
- b) Classify Muscle relaxants and describe the mechanism of action.

**B. Short Answer Questions - Any 5**

**(5 X 6 =30)**

1. Therapeutic uses and adverse effects of Beta blockers.
2. Pre-anesthetic medication.
3. Role of inducing agents in general anesthesia.
4. Mechanism of action of Diazepam.
5. Compare and contrast the pharmacology of Morphine & Pethidine.
6. Indication, preparation and administration of Nitroglycerine.

**C. Very Short Answer Questions - (Any 10)**

**(10x3 = 30)**

1. Mannitol- indications and dosage
2. Frusemide - mechanism of action and side-effects
3. Mephentermine and phenylephrine- mechanism of action
4. Classify bronchodilators
5. Role of Oxytocin in the induction of labor.
6. Pharmacological actions of Fentanyl.
7. Mechanism of action of Protamine sulphate.
8. Adverse reactions of Insulin.
9. Therapeutic uses of Nitroglycerine.
10. What are Antibiotics? List any four antibiotics used in the treatment of bacterial infections.
11. Hoffman degradation.
12. Second gas effect.

**CLINICAL  
MICROBIOLOGY & RENAL  
PATHOLOGY**

## UT- PAPER 6 - CLINICAL MICROBIOLOGY & RENAL PATHOLOGY

NAME OF THE SUBJECT PAPER	: CLINICAL MICROBIOLOGY & RENAL PATHOLOGY
DURATION OF THEORY CLASSES	: 80hrs
DURATION OF TUTORIAL SESSIONS	: 32hrs
UNIVERSITY THEORY EXAMINATION	: 100 marks (80 U + 20 IA) UNIVERSITY
PRACTICAL EXAMINATION	: NIL
DURATION OF THEORY EXAMINATION	: 3 Hours
YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT: II YEAR	

### COURSE DESCRIPTION

To make the student to understand pathology laboratory reports, the normal ranges of investigations, and microorganisms, sterilization methods and infection controls.

### OBJECTIVES

On completion of this subject, the student will be able to:

- To Understand the Differentiate between symptoms and diseases
- Understand the needs of mandatory diagnostic procedures
- Demonstrate an understanding of the pathology of common diseases
- Understand various pathology laboratory reports
- Know about the possibilities and consequences of nosocomial infections, needle prick injuries etc., in a health care facility
- Identify common disease producing micro organisms
- Explain the basic principles of microbiology and their significance in health and disease.
- Demonstrate skill in handling specimens
- Explain various methods of disinfection and sterilization
- Identify the role of the nurse in hospital infection control system.

### PROGRAM OUTCOMES

**UTPO1:** Performs the duty as a Uro-Technologist with leadership qualities having a good written & communication skills and also skilled at computer applications including E-library.

**UTPO2:** To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

**UTPO3:** Understanding the structure and functions of different organs in normal human body.

**UTPO4:** Phlebotomists are trained to draw blood primarily by performing venipunctures (for collection of minute quantities of blood and finger pricks).

**UTPO5:** Understanding the various method of sterilization used, functional flow and maintenance of CSSD. Demonstrate the ability to sterilize urological instruments using physical and chemical method.

**UTPO6:** Learns about the theatre asepsis and its maintenance to manage indenting, record keeping and inventory maintenance.

**UTPO7:**To gain knowledge about the pharmacological aspect of some commonly used drugs and emergency medicine must be in position to list their indication therapeutic uses dilution, dosage and adverse effects.

**UTPO 8:** Able to assist urologist in surgical procedure like cystectomy, cystolithotomy, pyeloplasty, nephroureterectomy, nephrectomy, catheterization and stent replacement.

**UTPO9 :** Able to coordinate emergency resuscitative measures, administrate drug in various route and should provide adequate pre-operative, post-operative, and follow up case of surgical patients.

**UTPO10:** Able to provide palliative care for Urological cancer patients and respond to emergency situation by providing CPR and assist in the provision of advanced cardiac life support.

**UTPO11:** Develop and carry out well-organized patient management plans that support safe, effective and efficient care for both emergent and chronic condition as well asfor preventive care.

**UTPO12:** To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behaviour healthy.

### **COURSE OUTCOMES**

**CPM-CO1:** to be acknowledged to disinfect the instruments used in patient care units.

**CPM-CO2:** know about health care associated infection like Urinary tractinfection etc.

**CPM-CO3:** To gain knowledge about multi drug resistant bacteria.

**CPM-CO4:** To know about diseased condition and abnormalities of urinary system.

**CPM-CO5:** able to know about oncology of urinary system also male reproductive system.

## COURSE CONTENT

UNIT	TITLE	THEORY + TUTORIAL (80+32) HOURS
I	<b>IMPORTANCE OF STERILIZATION AND DISINFECTION</b> <ul style="list-style-type: none"> <li>▪ Disinfection of instruments used in patient care</li> <li>▪ Disinfection of patient care unit</li> <li>▪ Infection control measures for ICUs</li> </ul>	10+5
II	<b>HEALTH CARE ASSOCIATED INFECTIONS</b> <ul style="list-style-type: none"> <li>○ Surgical site infections</li> <li>○ Urinary tract infections</li> <li>○ Ventilator associated pneumonia</li> <li>○ Catheter associated blood stream infections</li> <li>○ Antibiotic associated diarrhea</li> </ul>	10+5
III	<b>DRUG RESISTANT BACTERIA</b> <ul style="list-style-type: none"> <li>○ MRSA</li> <li>○ VRE</li> <li>○ Drug resistant Gram negative bacteria</li> </ul>	15+5
IV	<b>OCCUPATIONALLY ACQUIRED INFECTIONS AND ITS PREVENTION</b> <ul style="list-style-type: none"> <li>○ Respiratory route - Tuberculosis, Varicella zoster virus, Influenza, RSV</li> <li>○ Blood borne route - HIV, HBV, HCV, CMV, Ebola</li> <li>○ Orofecal route - Salmonella, Hepatitis A</li> <li>○ Direct contact - Herpes virus</li> </ul>	15+7
V	<b>RENAL PATHOLOGY</b> <ul style="list-style-type: none"> <li>○ Congenital abnormalities of urinary system</li> <li>○ Classification of renal diseases</li> <li>○ Glomerular disease - causes and types</li> <li>○ Tubulointerstitial disease</li> <li>○ Renal vascular disorders</li> <li>○ Stone disease ( renal calculi, ureteric clculi, bladder calculi)</li> <li>○ ESRD - Causes and pathology</li> <li>○ Pathology of kidney in hypertension, diabetes mellitus and pregnancy</li> <li>○ Pathology of UTI &amp; inflammatory conditions.</li> <li>○ Pyelonephritis &amp; tuberculosispyelonephritis.</li> <li>○ Basics genetics of uro - pathological conditions.</li> <li>○ Oncology of the kidney &amp; bladder ( renal cancer &amp; upper tract urothelial cancer, bladder cancer )</li> <li>○ Oncology of the prostate, testis &amp; penis ( prostate cancer, penile cancer, testicular cancer )</li> </ul>	30+10

## **METHODS OF TEACHING**

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

## **METHODS OF EVALUATION**

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

## **RECOMMENDED BOOKS**

1. Textbook of Microbiology by Ananthnarayan and paniker
2. Textbook of hospital infection control by Purvamathur
3. Textbook of Microbiology by Baveja
4. Hospital infection control by Mayhall
5. Basic Pathology Robbins Saunders an imprint of Elsevier Inc., Philadelphia,
6. Text book of Pathology Harsh Mohan Jaypee Brothers, New Delhi
7. Practical Pathology P. Chakraborty, Gargi Chakraborty New Central Book Agency, Kolkata.

## BLUE PRINT

No	Unit	Weightage (%)	Marks Allotted	Knowledge/Recall			Understanding			Application		
				LAQ 10	SAQ 6	VSA Q 3	LAQ 10	SA Q 6	VSA Q 3	LAQ 10	SA Q 6	VS AQ 3
I	Importance of sterilization and disinfection	15%	12	1*	1	1			1			
II	Health care associated infections	16.25%	13	1		1						1*
III	Drug resistant bacteria	11.25%	9		1				1			
IV	Occupationally acquired infections and its prevention	11.25%	9		1				1			
V	Renal Pathology	46.25%	37	1+1*	2	3		1*	2			1*

The duration of Examination (University) is Three (3) hours.

The total marks for the University Examination will be 100 marks.

Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)

Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)

Very Short Answer Questions: 10 X 3 = 30 marks (Choice 10 out of 12)

TOTAL = Theory 80 + IA 20 = 100 marks

**UT-PAPER 6 - CLINICAL MICROBIOLOGY & RENAL PATHOLOGY**  
**MODEL QUESTION PAPER**

**TIME: 3HOURS**

**MAXIMUM MARKS: 80**

Illustrate your answers with suitable diagrams wherever necessary.

**A. LONG ANSWER QUESTIONS** **(2×10=20)**

1. a) List the microbial etiology of Diarrheal diseases. Describe the pathogenesis and lab diagnosis of Shigellosis. (or)  
b) Describe in detail about the infection control measures for Intensive care units?
2. a) Classify testicular tumor and write in detail about seminoma. (or)  
b) Classify cystic disease of the kidney and explain in detail about adult and childhood polycystic kidney disease.

**B. SHORT ANSWERS QUESTIONS-any 5** **(5×6=30)**

1. Explain in detail about the physical examination of urine
2. Enumerate the renal function test
3. Enumerate the cystic lesion of the kidney
4. Enumerate microbes causing food poisoning
5. Explain about the General Management of Catheter-Related Infection?
6. Biomedical waste management

**C. VERY SHORT ANSWER- any 10** **(10×3=30)**

1. Name any two chemical preservatives of urine
2. Define Hydronephrosis
3. Describe the clinical features of renal stones
4. Write the complication of renal stones
5. Mention any two risk factors for urothelial carcinoma
6. Name any two premalignant lesion of penis
7. Testing of disinfectants
8. Sterilization controls
9. List the causative agents of occupationally acquired infections?
10. Explain Clinical pulmonary infection score (CPIS)
11. List the ESBL producing bacteria
12. BCG vaccine

# **PRINCIPLES OF OPERATION THEATER & HOSPITAL MANAGEMENT**

## **PAPER- UT-7- PRINCIPLES OF OPERATION THEATER & HOSPITAL MANAGEMENT**

**NAME OF THE SUBJECT PAPER : Principles of operation & hospital management**

**DURATION OF THEORY CLASSES : 80hrs**

**DURATION OF TUTORIAL SESSIONS : 32hrs**

**UNIVERSITY THEORY EXAMINATION : 100 marks (80 U + 20 IA)**

**UNIVERSITY PRACTICAL EXAMINATION : NIL**

**DURATION OF THEORY EXAMINATION : 3hrs**

**YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT: II YEAR**

### **COURSE DESCRIPTION**

To make the student to understand operation theater principle Equipment, procedure and instrumentation and documentation of procedure and hospital management.

### **LEARNING OBJECTIVES**

- Understand about organs and their surgical techniques,
- Understand about complication and management.
- Understand about surgical techniques and maintenance of the patient before and after the surgery.
- Understand the surgery and pre and post follow up the patients.
- Understand the documentation for before the procedure.

### **PROGRAM OUTCOMES**

**UTPO1:** Performs the duty as a Uro-Technologist with leadership qualities having a good written & communication skills and also skilled at computer applications including E-library.

**UTPO2:** To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

**UTPO3:** Understanding the structure and functions of different organs in normal human body.

**UTPO4:** Phlebotomists are trained to draw blood primarily by performing venipunctures (for collection of minute quantities of blood and finger pricks).

**UTPO5:** Understanding the various method of sterilization used, functional flow and maintenance of CSSD. Demonstrate the ability to sterilize urological instruments using physical and chemical method.

**UTPO6:** Learns about the theatre asepsis and its maintenance to manage indenting, record keeping and inventory maintenance.

**UTPO7:** To gain knowledge about the pharmacological aspect of some commonly used

drugs and emergency medicine must be in position to list their indication therapeutic uses dilution, dosage and adverse effects.

**UTPO 8:** Able to assist urologist in surgical procedure like cystectomy, cystolithotomy, pyeloplasty, nephroureterectomy, nephrectomy, catheterization and stent replacement.

**UTPO9 :** Able to coordinate emergency resuscitative measures, administrate drug in various route and should provide adequate pre-operative, post-operative, and follow up case of surgical patients.

**UTPO10:** Able to provide palliative care for Urological cancer patients and respond to emergency situation by providing CPR and assist in the provision of advanced cardiac life support.

**UTPO11:** Develop and carry out well-organized patient management plans that support safe, effective and efficient care for both emergent and chronic condition as well as for preventive care.

**UTPO12:** To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behaviour healthy.

#### COURSE OUTCOMES

**POTM- CO1:** The terminologies, equipment, and techniques used for preparation and management of the OT

**POTM- CO2:** To learn in detail Principles of sterilization and disinfection.

**POTM- CO3:** To learn in detail about biomedical waste management.

**POTM- CO4:** To learn Patient's record keeping preoperatively, during anesthesia and post-operatively

**POTM- CO5:** To learn the management of operation theatre in routine, emergency and electrical safety precautions in operation theatre.

#### COURSE CONTENT

UNIT	TITLE	THEORY + TUTORIAL HOURS (80+32)
I	<b>BIOPHYSICS:</b> <ul style="list-style-type: none"> <li>○ Physical law</li> <li>○ Measurement units</li> <li>○ Law of motion</li> <li>○ Force concept</li> <li>○ Equilibrium of concurrent forces</li> <li>○ Dynamics of uniform circular motion</li> <li>○ Work Energy theorem and Notion of potential energy</li> <li>○ Behaviour of perfect gas and kinetic theory</li> <li>○ Gas laws</li> <li>○ State of perfect gas</li> </ul>	10+4

	<ul style="list-style-type: none"> <li>○ Kinetic theory of gases</li> <li>○ Electrical circuits, Transformers and safety, Electrical interference.</li> </ul>	
II	<p><b>THEATRE ORGANIZATION</b></p> <ul style="list-style-type: none"> <li>○ Sterile practices &amp; Fumigation practices, Maintaining sterility &amp; cleanliness of OT.</li> <li>○ Method of CSSD functioning- cleaning &amp; packing of surgical instruments, soil linen management, sterilization, Handling autoclaves, E.T.O sterilisation.</li> </ul>	7+5
III	<p><b>INTRODUCTION, COMMUNICATION AND DOCUMENTATION</b></p> <p><b>Introduction to Patient Care:</b></p> <ul style="list-style-type: none"> <li>• Principles of patient care</li> <li>• Types of patients (gender, age, diseases, severity of illness, triage)</li> </ul> <p><b>Communication &amp; Documentation:</b></p> <ul style="list-style-type: none"> <li>• Communication with doctors, colleagues and other staffs.</li> <li>• Non-verbal communication, Inter-personnel relationships.</li> <li>• Patient contact techniques, communication with patients and their relatives</li> </ul> <p><b>Documentation:</b></p> <ul style="list-style-type: none"> <li>▪ Importance of documentation,</li> <li>▪ initial and follow up notes;</li> <li>▪ documentation of therapy, procedures and communication</li> </ul>	20+8
IV	<p><b>UNIVERSAL PRECAUTIONS AND INFECTION CONTROL</b></p> <p><b>UNIVERSAL PRECAUTIONS AND INFECTION CONTROL:</b></p> <ul style="list-style-type: none"> <li>▪ Hand washing and hygiene.</li> <li>▪ Injuries and Personal protection, Insulation and safety procedures.</li> <li>○ Aseptic techniques, sterilization and disinfection.</li> <li>• Disinfection and Sterilization of devices and equipment</li> <li>○ Central sterilization and supply department</li> <li>• Biomedical Medical waste management</li> </ul>	8+5
V	<p><b>MEDICATION ADMINISTRATION AND TRANSPORT OF PATIENT</b></p> <p><b>Medication Administration:</b></p> <ul style="list-style-type: none"> <li>• Oral / Parenteral route</li> <li>• Parenteral medication administration: Intra venous, intra muscular, sub-cutaneous, intra dermal routes, Intra venous Infusion</li> <li>• Aerosol medication administration, Oxygen therapy</li> <li>• Intravenous fluids,</li> <li>• Blood and blood component transfusion.</li> </ul> <p><b>Position and Transport of patient:</b></p> <ul style="list-style-type: none"> <li>○ Patient position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, bed making, rest</li> </ul>	15+5

	<ul style="list-style-type: none"> <li>○ and sleep.</li> <li>○ Lifting and transporting patients: lifting patients up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher.</li> <li>○ Transport of ill patients (inotropes, intubated / ventilated patients)</li> </ul>	
VI	<p><b>DRESSING AND WOUND CARE</b></p> <ul style="list-style-type: none"> <li>• Bandaging: basic turns, bandaging extremities, triangular bandages and their application.</li> <li>• Surgical dressing: observation of dressing procedures.</li> <li>• Suture materials and suturing techniques</li> <li>• Splinting</li> <li>• Basic care of patient with burns</li> </ul> <p><b>HOSPITAL MANAGEMENT</b></p> <ol style="list-style-type: none"> <li>1. Quality Concepts: Definition of Quality, Dimensions of Quality, Basic concepts of Total Quality Management, Quality Awards. Accreditations for hospitals: Understanding the process of getting started on the road to accreditation, National and International Accreditation bodies, overview of standards- ISO (9000 &amp; 14000 environmental standards), NABH, NABL, JCI, JACHO.</li> <li>2. Hospital Information System: Hospital Information System Management and software applications in registration, billing, investigations, reporting, ward management and bed distribution, medical records management, materials management and inventory control, pharmacy management, dietary services, management, information processing. Security and ethical challenges.</li> <li>3. Inventory Control: Concept, various costs of inventory, Inventory techniques-ABC, SDE / VED Analysis, EOQ models. Storage: Importance and functions of storage. Location and layout of stores. Management of receipts and issue of materials from stores, Warehousing costs, Stock verification.</li> <li>4. Equipment Operations management: Hospital equipment repair and maintenance, types of maintenance, job orders, equipment maintenance log books, AMCS, outsourcing of maintenance services, quality and reliability, concept of failure, equipment history and documents, replacement policy, calibration tests, spare parts stocking techniques and policies</li> <li>5. Biomedical Waste Management: Meaning, Categories of Biomedical Wastes, Colour code practices, Segregation, Treatment of biomedical waste - Incineration and its importance. Standards for waste autoclaving, Microwaving. Packaging, Transportation &amp; Disposal of Biomedical wastes.</li> </ol>	20+5

**METHODS OF TEACHING**

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

**METHODS OF EVALUATION**

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

**REFERENCE BOOKS**

1. Principles And Practice Of Nursing - Sr Nancy
2. Manual Of Operating Room Discipline & Protocol - Inderdeep Singh Walia
3. Berry & Kohn's Operating Room Technique- Nancymarie Philips

**BLUE PRINT**  
**PAPER-UT-7 -PRINCIPLES OF OPERATION THEATER & HOSPITAL MANAGEMENT**

S.NO	UNIT	WEIGHTAGE	MARKS ALLOTTED	LONG ANSWER (10)	SHORT ANSWER (6)	VERY SHORT ANSWER (3)
1	Biophysics	4%	3	-	-	1
2	Theatre organization	35%	28	1+1*	2	2+1*
3	Introduction, communication & documentation	8%	6	-	-	2
4	Infection control & Universal precaution	30%	25	1	2+1*	1+1*
5	Medication administration and transport of patients	15%	12	-	1	2
6	Dressing & wound care, hospital management	8%	6	-	-	2

The duration of Examination (University) is Three (3) hours.

The total marks for the University Examination will be 100marks.

Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)

Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)

Very Short Answer Questions: 10 X3 = 30 marks (Choice 10 out of 12)

TOTAL = Theory 80 + IA 20 = 100 marks

**MODEL QUESTION PAPER**

**PAPER-UT-7 -PRINCIPLES OF OPERATION THEATER & HOSPITAL MANAGEMENT**

**Time: 3 Hours**

**Maximum Marks: 80**

**a) Long Answer Questions :( Write any Two)**

**(2 X 10 = 20)**

1. a) Describe various methods of sterilization of anaesthetic equipment and accessories. (OR)
- b) Discuss in brief the things you will check for in the operation theatre before induction of anaesthesia.
2. a) Operating room pollution. Discuss the occupational hazards for health workers in operation theatre and advocate prophylactic measures. (OR)
- b) Enumerate any two different positions given to a patient in operating room and care for each positioning taken.

**B. Short Answer Questions -Answer any 5**

**(5X 6 =30)**

1. Explain in detail about the informed consent.
2. Privileged communication.
3. Therapeutic misadventure.
4. Explain the hospital acquired infections and steps to prevent it.
5. Radiation hazards
6. Mention three gas laws applied in anaesthesia

**C. Very Short answer questions -Answer any 10**

**(10 x3 = 30)**

1. Principle of suction function
2. Any 2 precautions to prevent fire in operating room.
3. Cylinder color coding system.
4. Infusion pump.
5. Breathing Bag (Reservoir Bag).
6. Procedure for safe handling and disposal of sharps
7. Stabilisation techniques during transport of patient
8. Colour coding in biomedical waste management
9. Professional secrecy.
10. Secondary survey before transport of patient.
11. Intraoperative monitoring.
12. Bispectral index.

**INTRODUCTION TO UROLOGY  
TECHNOLOGY & BASICS OF SURGERY  
PART-I**

## PAPER UT-8- INTRODUCTION TO UROLOGY TECHNOLOGY & BASICS OF SURGERY PART-I

NAME OF THE SUBJECT PAPER	: INTRODUCTION TO UT & BASICS OF SURGERY PART-I
DURATION OF THEORY CLASSES	: 64 HRS
DURATION OF PRACTICAL SESSIONS	: 64 HRS
UNIVERSITY THEORY EXAMINATION	: 100 MARKS (80 U + 20 IA)
UNIVERSITY PRACTICAL EXAMINATION	: 100 MARKS
DURATION OF THEORY EXAMINATION	: 3 HRS
YEAR IN WHICH SUBJECT PAPER IS TAUGHT : II YEAR	

### COURSE DESCRIPTION

The course is designed to understand the importance of urological procedure for different organs of the lower limb and students play a role in assessing the urologist during surgery.

### COURSE LEARNING OBJECTIVE

- Understand about lower abdomen organs and their surgical techniques,
- Understand about urosurgical complication and management.
- Understand about surgical techniques and maintenance of the patient after the surgery.
- Understand the uro surgeons during the surgery and pre and post follow up the patients.

### PROGRAM OUTCOMES

**UTPO1:** Performs the duty as a Uro-Technologist with leadership qualities having a good written & communication skills and also skilled at computer applications including E-library.

**UTPO2:** To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

**UTPO3:** Understanding the structure and functions of different organs in normal human body.

**UTPO4:** Phlebotomists are trained to draw blood primarily by performing venipunctures (for collection of minute quantities of blood and finger pricks).

**UTPO5:** Understanding the various method of sterilization used, functional flow and maintenance of CSSD. Demonstrate the ability to sterilize urological instruments using physical and chemical method.

**UTPO6:** Learns about the theatre asepsis and its maintenance to manage indenting, record keeping and inventory maintenance.

**UTPO7:**To gain knowledge about the pharmacological aspect of some commonly used drugs and emergency medicine must be in position to list their indication therapeutic uses dilution, dosage and adverse effects.

**UTPO 8:** Able to assist urologist in surgical procedure like cystectomy, cystolithotomy, pyeloplasty, nephroureterectomy, nephrectomy, catheterization and stentreplacement.

**UTPO9 :** Able to coordinate emergency resuscitative measures, administrate drug in various route and should provide adequate pre-operative, post-operative, and follow up case of surgical patients.

**UTPO10:** Able to provide palliative care for Urological cancer patients and respond to emergency situation by providing CPR and assist in the provision of advanced cardiac life support.

**UTPO11:** Develop and carry out well-organized patient management plans that support safe, effective and efficient care for both emergent and chronic condition as well asfor preventive care.

**UTPO12:** To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behaviour healthy.

### **COURSE OUTCOMES**

**BS-IUT-CO1-**To classify items to be sterilized or disinfected for urological procedures.

**BS-IUT-CO2-**To learn in detail Principles of sterilization and disinfection.

**BS-IUT-CO3-** To learn in detail about biomedical waste management

**BS-IUT-CO4-**This course the Student will learn how to handle the patients and their positioning.

**BS-IUT-CO5-**To learn Patient's record keeping preoperatively, during anaesthesia and post-operatively.

**BS-IUT-CO6-** Management of urological procedures in routine and emergency.

## COURSE CONTENT

UNIT	TITLE	THEORY 64 HOURS
I	<b>INTRODUCTION</b> <ul style="list-style-type: none"> <li>• Urology team - rights - responsibilities - patient doctor relationship</li> <li>• An introduction to common urological procedures and instruments</li> <li>• Patient assessment - Pre procedure and post procedure</li> <li>• Antibiotic prophylaxis</li> <li>• Equipment - accessories - function</li> <li>• Quality assurance in urology</li> <li>• Laparoscopic instrument maintenance</li> <li>• Laparoscopic access, percutaneous renal / vesical access</li> <li>• Operation of C-arm Machine</li> <li>• Principles of extracorporeal short wave lithotripsy</li> <li>• Principles of lithotripsy, urodynamics.</li> <li>• Medications in urology patients</li> <li>• Nutrition management in urology patients</li> <li>• Complications in urology patients</li> <li>• Psychosocial aspects and patient education</li> <li>• Lab data analysis</li> <li>• Theatre data maintenance</li> <li>• Disinfectant reuse</li> <li>• Computer applications in urology</li> </ul>	20
II	<b>COMMON UROLOGICAL PROCEDURES ( KNOWLEDGE / DIAGNOSTIC &amp; TREATMENT SKILLS )</b> <ul style="list-style-type: none"> <li>• PCNL</li> <li>• TURP</li> <li>• Cystoscopy</li> <li>• Cystectomy</li> <li>• Pyeloplasty</li> <li>• Nephrotomy</li> <li>• Nephrectomy</li> <li>• URS tripsy</li> <li>• DJ stenting</li> <li>• BMG Urethroplasty</li> </ul>	26
III	<b>BASICS OF SURGERY</b> <ul style="list-style-type: none"> <li>• History of Surgery, role of the surgeon, importance of team work and anticipating the needs of surgeons; stresses that may arise during operative procedure</li> <li>• surgical terminology, types of incision and indications for the use of particular incision</li> <li>• Hemorrhage - signs and symptoms of internal and external; classification and management</li> </ul>	18

	<ul style="list-style-type: none"> <li>• identification of types of tourniquets reasons for use and duration of application, dangers of use</li> <li>• Wounds, types, process of healing, treat Wounds, types, process of healing, treatment and complications; inflammation; wound infections-causes and treatment; incision and drainage of abscesses; importance of personal cleanliness and aseptic techniques</li> <li>• Pre-operative and post-operative care of the surgical patient; Emergency procedures;</li> <li>• Knowledge of surgical asepsis, skin preparation for invasive procedures</li> </ul>	
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#### METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

#### METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentations

#### REFERENCES BOOKS

1. Oxford textbook of Nephrology
2. The Kidney - Brenner (Vol I/II)
3. Diseases of the Kidney and the urinary tract - Schrier (Vol I, II, & III)

#### BLUE PRINT

S.NO	UNIT	WEIGHTAGE	MARKS ALLOTTED	LONG ANSWER (10)	SHORT ANSWER (6)	VERY SHORT ANSWER (3)
1	Introduction	31.25%	25	1	1	3+1*
2	Common urological procedures	50%	40	1+1*	3+1*	4+1*
3	Basic of Surgery	18.75%	15	1*	1	3

**MODEL QUESTION PAPER**  
**PAPER UT-8- - INTRODUCTION TO UROLOGY TECHNOLOGY & BASICS OF**  
**SURGERY PART-I**

**Time: 3 Hours**

**Maximum Marks: 80**

**A. Long Answer Questions**

**(2 X10 = 20)**

1. a) Define wound. Classify different types of wound. Discuss the factors affecting wound healing. (OR)
- b) What is meant by high level disinfection (HLD)? What factors determines the Effectiveness and describes its methods.
2. a) Preparation of urology OT for nephrectomy procedure. (OR)
- b) What are the factors affecting successful surgical care?

**B. Short Answer Questions -ANY 5**

**(5X6 = 30)**

1. Principles of ESWL
2. Nutrition management for urology patient
3. Major urological procedures and their indications.
4. Mention signs and symptoms of severe hemorrhage.
5. Discuss the management of exposed person with special emphasis on post exposure prophylaxis
6. What are the steps for the decontamination of the suction equipment
7. Describe the preoperative preparation of the patient from admission to the shifting in to operation theatre.

**C. Very Short Answer Questions - ANY 10**

**(10X3 = 30)**

1. Enumerate the general factors which impede the healing of wound.
2. Write a short description and definition of some of the surgical terms
  - a. Cystectomy,
  - b. Embolism,
  - c. Fasciotomy
3. Expansion of PCNL, TURP, ESWL
4. Explain the e. Fasciotomy for abscess drainage.
5. What the causes are for cross infections?
6. Precautionary steps in handling laparoscopy instruments
7. Discuss the steps of surgical hand scrub.
8. Write short notes on URS TRIPSY
9. How will you disinfect of gloves
10. List the various packing material for sterilization.
11. Furosemide
12. Normal values of electrolytes

# **II YEAR ELECTIVE COURSES**

**II YEAR ELECTIVE COURSE CONTENT  
ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)  
ENVIRONMENTAL STUDIES**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: ENVIRONMENTAL STUDIES</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 16 hrs</b>
<b>DURATION OF PRACTICAL SESSIONS</b>	<b>: 32 hrs</b>
<b>EXAMINATION</b>	<b>: 100 marks (80 U + 20 IA)</b>
<b>NO UNIVERSITY PRACTICAL EXAMINATION</b>	
<b>DURATION OF THEORY EXAMINATION</b>	<b>: 1 ½ hrs</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: II YEAR</b>

**SYLLABUS**

**UNIT-I (Renewable and Non – renewable resources)**

The multidisciplinary nature of environmental studies – Definition, scope and importance – Need for public awareness.

- 1 Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
- 2 Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
- 3 Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- 4 Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- 5 Energy resources: Growing energy needs, renewable and non-renewable energy resources, use of alternate energy sources, case studies.
- 6 Land resources: Land as a resource, land degradation, man induced Landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

**UNIT-II (Ecosystems)**

Concept of an ecosystem - Structure and function of an ecosystem Producers, consumers and decomposers – Energy flow in the ecosystem-Ecological succession- Food chains, food webs and ecological pyramids –Introduction, types, characteristic features, structure and function of the following ecosystem:

- Forest ecosystem
- Grassland ecosystem
- Desert ecosystem
- Aquatic ecosystems (Ponds, streams, lakes, rivers, ocean estuaries)

**UNIT-III (Biodiversity and its conservation)**

Introduction – Definition: genetics, species and ecosystem diversity

- Biogeographically classification of India
- Value of Biodiversity: Consumptive use, productive use, social,

- ethical/aesthetic and option values
- Biodiversity at global, national and local levels
- India as a mega-diversity nation
- Hot-spots of biodiversity-Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

#### **UNIT-IV (Environmental Pollution)**

Definition- causes, effects and control measures of:

- Air pollution
- Water pollution
- Soil pollution
- Marine pollution
- Noise pollution
- Thermal pollution
- Nuclear pollution
- Solid waste Management: causes, effects and control measures of urban and industrial wastes – role of an individual in prevention of pollution –Pollution case studies – Disaster management: floods, earthquake, cyclone and landslides.

#### **UNIT-V**

Social Issues and the Environment: From unsustainable to sustainable development – Urban problems and related to energy – Water conservation, rain water harvesting, watershed management –Resettlement and rehabilitation of people; its problems and concerns. Case studies - Environmental ethics: issues and possible solutions climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.

- Wasteland reclamation – Consumerism and waste products –Environmental Protection Act – Air (Prevention and Control of Pollution) Act – Water (Prevention and Control of Pollution) Act – Wildlife Protection Act – Forest Conservation Act - Issues involved in enforcement environmental legislation – Public awareness
- Human Population and the Environment: Population growth, variation among nations – Population explosion – Family welfare Programmes –Environment and human health- Human Rights - Value Education- HIV/ AIDS - Women and Child Welfare- Role of Information Technology in Environment and Human Health – Case Studies.

#### **FIELD WORK**

1. Visit to local area to document environmental assets- river/ forest/ grassland /hill / mountain
2. Visit to a local polluted site - Urban / Rural / Industrial / Agricultural
3. Study of common plants, insects, birds
4. Study of simple ecosystems- pond, river, hill slopes, etc.

### **TEXT BOOKS RECOMMENDED**

1. Agarwal, K.C. Environmental Science, Nidi Publishers.
2. Bharucha Erach, The Biodiversity of India, Mapin Publication.
3. Brunner RC, Hazardous waste incineration, McGraw Hill Publishers.
4. Jaclhav H, Environmental Protection and Laws, Himalaya Publication.
5. Odum EP, fundamentals of Ecology, WB Sannders Publication.

### **TEACHING LEARNING ACTIVITIES**

The course content in Environmental Studies will be covered by:

1. Interactive Lectures
2. Group Discussions
3. Field Visits

**SKILL- BASED ELECTIVE COURSES - II YEAR**  
**GOOD CLINICAL LABORATORY PRACTICE**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: Good Clinical Laboratory practice</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 16 Hrs</b>
<b>DURATION OF PRACTICAL SESSIONS</b>	<b>: 32 Hrs</b>
<b>PRACTICAL EXAMINATION</b>	<b>: 50 Marks (40 U + 10 IA)</b>
<b>NO UNIVERSITY THEORY EXAMINATION</b>	
<b>DURATION OF EXAMINATION</b>	<b>: 1 ½ Hrs</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: II YEAR</b>

**THEORY & PRACTICALS (DURATION 16 + 32 Hours)**

**Learning Objective**

- To understand the relevance, importance and basic concepts of good laboratory practices
- To apply the knowledge to become familiar with the basic laboratory skills

**UNIT I: INTRODUCTION**

Introduction to Bioethics and Biosafety. Biosafety Guidelines and Regulations. Legal and Socio-economic Impacts of Biotechnology. Use of Genetically Modified Organisms and their Release in the Environment. Hazardous Materials used in Biotechnology their Handling and Disposal.

**UNIT II: GOOD LABORATORY PRACTICE PRINCIPLE**

Test Facility Organization and Personnel: Management responsibility, Study director's responsibility, safety measures and personal responsibility. Quality assurance program. Facilities: Test System Facilities, Facilities for Handling test and Reference Substances. Archive Facilities. Waste Disposal, Animal Care Facilities, Animal Supply Facilities.

**UNIT III: STANDARDIZED OPERATING PROCEDURES**

Definition, Initiation of SOP, Preparation of SOP, Administration, Distribution and Implementation. Maintenance of laboratory records. Formatting SOP, Reagent/materials certification, Certification of analysts, Certification of laboratory facilities, Documentation and maintenance of record.

**UNIT IV: DATA REPORTING AND STORAGE**

Performance of study, Study plan, Conduct of study, Reporting of results. Archival storage of records and reports.

**Learning Outcome**

- To understand the implications of good laboratory practices

**SKILL- BASED ELECTIVE COURSES - II YEAR  
COMPUTER APPLICATIONS**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: COMPUTER APPLICATIONS</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 16 Hrs</b>
<b>DURATION OF PRACTICAL SESSIONS</b>	<b>: 32 Hrs</b>
<b>PRACTICAL EXAMINATION</b>	<b>: 50 Marks (40 U + 10 IA)</b>
<b>NO UNIVERSITY THEORY EXAMINATION</b>	
<b>DURATION OF EXAMINATION</b>	<b>: 1 ½ Hrs</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: II YEAR</b>

**THEORY & PRACTICALS (DURATION 16 + 32 Hours)**

**UNIT - I - Introduction to Computers**

- Concepts of Computers
- Hardware and software trends and technology
- Classification of computers
- Application of computers in Laboratories

**UNIT - II - Operating System**

- Introduction
- Types of operating systems
- Windows

**UNIT - III -Multimedia**

- Types and uses
- Computer aided teaching and testing

**UNIT – IV -Internet**

- Introduction to Internet
- Use of Internet and e- mail
- Statistical packages

### **LIST OF PRACTICAL EXERCISES**

1. Computer operating systems like MS-DOS and WINDOWS

2. Study of software packages like Chem Draw, Tinker and Microsoft package. Unit - Typing text in MS word- manipulating text- formatting the text - using different font sizes, bold, italics, Bullets and numbering - pictures, file insertion - aligning the text and justify - choosing paper size - adjusting margins- header and footer, inserting page numbers in a document - printing a file with options - using spell check and grammar - find and replace mail merge - inserting tables in a document.

**Creating table in MS - Excel** - cell editing - using formulas and functions - manipulating data with excel - using sort function to sort numbers and alphabets - drawing graphs and charts using data in excel - auto formatting - inserting data from other worksheets  
**Preparing new slides using MS- POWER POINT** - inserting slides - slide transition and animation - using templates - different text and font sizes - slides with sounds - inserting clip arts, pictures, tables and graphs - presentation using wizards.

**Internet-** using search engine - Google search - Exploring the text Explorer and Navigator - uploading and downloading of files and images E mail ID creation - sending messages - attaching files in E- mail

### **TEACHING LEARNING ACTIVITIES**

The course content in Computer Applications will be covered by:

1. Interactive Lectures
2. Lab

**SKILL- BASED ELECTIVE COURSES - II YEAR**  
**Library and E-resource**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: Library and E-resource</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 16 Hrs</b>
<b>DURATION OF PRACTICAL SESSIONS</b>	<b>: 32 Hrs</b>
<b>PRACTICAL EXAMINATION</b>	<b>: 50 Marks (40 U + 10 IA)</b>
<b>NO UNIVERSITY THEORY EXAMINATION</b>	
<b>DURATION OF EXAMINATION</b>	<b>: 1 ½ Hrs</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: II YEAR</b>

**THEORY & PRACTICALS (DURATION 16 + 32 HOURS)**

**Course Objectives**

- To enable the students to understand at different levels of information systems in the society
- and their functions.
- To enable the students apply their knowledge in various library practice.
- To enable the students to understand the basic concepts of the Health Sciences.

**UNIT: 1**

Evolution, growth and development of LIS in India-current trends.

Type of libraries: Academic, Public and special Libraries (Health Science Libraries).

**UNIT: 2**

Library concepts & Legislation: Five laws of Library science, Professional ethics of librarian, Delivery of books and newspaper act/IntellectualProperty/Plagiarism.

**UNIT: 3**

Library Association and International Bodies: Library Association -ILA, IASCIC, ALA, IFLA and UNESCO, SALIS, MLAI (Medical Library Association of India).

**UNIT: 4**

Library Rules & Regulation, Stock Verification, Annual Reports, Budgets, Library buildings, furniture, equipment's.

## **SKILL- BASED ELECTIVE COURSES - II YEAR PUBLIC HEALTH AND HYGIENE**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: Public Health and Hygiene</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 16 Hrs</b>
<b>DURATION OF PRACTICAL SESSIONS</b>	<b>: 32 Hrs</b>
<b>PRACTICAL EXAMINATION</b>	<b>: 50 Marks (40 U + 10 IA)</b>
<b>NO UNIVERSITY THEORY EXAMINATION</b>	
<b>DURATION OF EXAMINATION</b>	<b>: 1 ½ Hrs</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: II YEAR</b>

### **THEORY & PRACTICALS (DURATION 16 + 32 Hours)**

#### **Learning objectives**

- To understand the concepts, significance and relevance of public health and hygiene
- To understand the health hazards as associated with public health and hygiene

#### **I Introduction**

Definition and Concept of Public Health, historical aspects, public health system in India and in the rest of world

#### **II Aspects of health**

Indicators of health, Determinants of Health, (Social, Economic, Cultural, Environmental, Education, Genetics, Food and Nutrition). Burden and prevention of disease. Environmental health- sanitation, air, water pollution, waste management. Mental health.

#### **III Epidemiology**

Introduction, principles and concepts, study design, analysis methods, presentation and interpretation of epidemiological data

#### **IV Hygiene concepts**

Definition, importance, personal hygiene, medical hygiene, food hygiene, industrial hygiene.

**Learning outcomes**

- To understand public health and hygiene issues, their relevance and significance as can be practiced in real-life situations.

**Text Books**

1. Introduction to Public Health, Raymond L. Goldsteen, Karen Goldsteen, David G. Graham, 2011, Springer publishing company
2. Introduction To Community Health Nursing, KasturiSundarRao, 4th edition, Bi Publications Pvt Ltd
3. Concepts of Epidemiology, Raj S Bhopal, 2002, Oxford University press

**Reference Books**

1. A Treatise On Hygiene And Public Health, BirendraNathGhosh, 9th edition, Calcutta Scientific Publishing Co
2. An Introduction to Public Health, Caryl Thomas, 1949, John Wright and SonsLtd.,

## GENERIC ELECTIVE COURSES - II YEAR BASIC PSYCHOLOGY

NAME OF THE SUBJECT PAPER	: Basic Psychology
DURATION OF THEORY CLASSES	: 64 Hrs
EXAMINATION	: 50 Marks (40 U + 10 IA)
NO UNIVERSITY PRACTICAL EXAMINATION	
DURATION OF THEORY EXAMINATION	: 1 ½ Hrs
YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT	: II YEAR

### THEORY (64 Hours)

#### LEARNING OBJECTIVES

After completing the course the student can able to

- To identify the emerging specialties
- To understand the behavior and mental processes
- How the theories and principles of psychology may be applied to individual, societal and global issue
- Explain the application of psychology in Allied Health Sciences

#### Unit I: Introduction

Introduction to applied Psychology, Scientific methods in Psychology, Application of Psychology: Psychology in Industry, community, family, education, health, self development, Human relations. Scope of psychology with special relevance to Allied Health Sciences.

#### Unit II: various cognitive processes and their application

Factors affecting learning, Importance of studying Psychology of learning in relation to Allied Health Sciences

Memory and forgetting, Kinds of remembering, the nature of forgetting, Improving memory, relevance to Allied Health Sciences

Intelligence, Normal distribution of intelligence levels, Intelligence Testing, Intelligence tests, Uses and abuses of intelligence tests, relevance of intelligence and aptitude for Allied Health Sciences

#### Unit-III: Life style, Health, Stress and Coping Behavior

Cultural evolution, Life style choices and consequences, Healthy and Unhealthy life styles. Nutrition, Physical fitness, Smoking and Drinking. Stress and Health, The biological basis of stress, Stress and Physical functioning, Coping with stress, Adjustment a lifelong process. Cognitive appraisal and Stress, Stressful life styles,

Coping with everyday stress, Sources of stress, Coping styles and Strategies, Stress inoculation training.

#### **Unit IV : Psychology of Vulnerable Individuals**

Psychology of the challenged, types of disability, effects of disability, psychology of women, women and health, dealing with alcoholics and their families, post-traumatic stress disorder, psychology of the sick and ill, how patients react to chronic illness, effects of illness and hospitalization

#### **REFERENCE BOOKS**

1. Clifford T. Morgan, Richard a. King, John R. Weis and John Schopler, –Introduction to Psychologyll - 7th Edition. Tata McGraw Hill Book Co. New Delhi, 1993.
2. Ernest R. Hillgard, Richard C. Atkinson, Rita L. Atkinson, –Introduction to Psychologyll 6th Edition, Oxford IBH publishing Co. Pvt. Ltd., New Delhi, 1975.
3. Baron.A. Robert, Psychology, Pearson Education Vth Ed., 2002
4. Psychology -the science of behavior -fifth edition 1982-Neil Carson-William Bulkist-Allyn and Bacon.

## GENERIC ELECTIVE COURSES - II YEAR SOCIOLOGY

NAME OF THE SUBJECT PAPER	: SOCIOLOGY
DURATION OF THEORY CLASSES	: 64 Hrs
EXAMINATION	: 50 Marks (40 U + 10 IA)
NO UNIVERSITY PRACTICAL EXAMINATION	
DURATION OF THEORY EXAMINATION	: 1 ½ Hrs
YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT	: II YEAR

### THEORY (64 Hours)

#### Unit 1: Sociology: Discipline and Perspective

- Thinking Sociologically
- Emergence of Sociology, Sociology as a science; Sociology and Common Sense
- Some Basic Concepts: Association; Aggregates: Community, Categories, Groups and its Forms; Status and Role; Norms and Values.
- Individual and Society; Socialization: Concept and Agencies; Culture -meaning and characteristics; Types of culture - popular, elitist, folk, and consumer cultures; Pluralism and Multiculturalism, Culture and Personality.

#### Unit 2: Sociology and Other Social Sciences

- Sociology and Social Anthropology
- Sociology & Psychology
- Sociology & History

#### Unit 3: Human Society

- Social Institutions and Social Processes
- Social control: meaning, agencies and mechanisms
- Conformity and Deviance.
- Social Change, definition, factors, Social Mobility Readings
  1. Anthony Giddens : Sociology
  2. G. Rocher: A General Introduction to Sociology
  3. George Ritzer. Encyclopaedia of sociology
  4. Harry M. Johnson Sociology

## **GENERIC ELECTIVE COURSES - II YEAR ENTREPRENEURSHIP ESSENTIALS**

<b>NAME OF THE SUBJECT PAPER</b>	<b>: Entrepreneurship essentials</b>
<b>DURATION OF THEORY CLASSES</b>	<b>: 64 Hrs</b>
<b>EXAMINATION</b>	<b>: 50 Marks (40 U + 10 IA)</b>
<b>NO UNIVERSITY PRACTICAL EXAMINATION</b>	
<b>DURATION OF THEORY EXAMINATION</b>	<b>: 1 ½ Hrs.</b>
<b>YEAR IN WHICH THE SUBJECT PAPER IS TAUGHT</b>	<b>: II YEAR</b>

### **THEORY (64 Hours)**

#### **LEARNING OBJECTIVES**

- To understand the fit between you and your entrepreneurial ambitions
- To find a problem worth solving
- To identify your customers
- To develop a solution for your customers' problems and problem solution
- To build and demonstrate an MVP
- To structure a business model around the problem, customer, and solution and present your Business Model Canvas

#### **UNIT - I ORIENTATION**

What is entrepreneurship - myths about entrepreneurship - impact of an entrepreneur and social entrepreneurship - wealth building and making an impact

#### **IDEA/PROBLEM**

What is a business opportunity and how to identify it - Methods for finding and understanding problems - (Observation, Questioning, DT, Jobs to be done (JTBD) - Introduction to Design Thinking - Process and Examples - Generate ideas that are potential solutions to the problem identified.

#### **UNIT - II**

##### **CUSTOMER**

The difference between a consumer and a customer (decision maker); Market Types, Segmentation and Targeting, Defining the personas; Understanding Early Adopters and Customer Adoption Patterns - Identify the innovators and early adopters for start-up - Basics of Lean Approach and Canvas; Types of Business Models (b2b; b2c)

## **UNIT - III**

### **BUSINESS MODEL AND VALIDATION**

Introduction to Risks; Identify and document your assumptions (Hypotheses); Identify the riskiest parts of Plan - Develop the Solution Demo - Sizing the Opportunity - Building an MVP (Minimum Viable Product)

## **UNIT - IV**

### **MONEY AND TEAM**

Revenue Streams: Basics of how companies make money - Understand income, costs, gross and net margins - Identify primary and secondary revenue streams - Pricing and Costs - Financing Your New Venture - Team Building: Role of a good team in a venture's success; What to look for in a team; How do you ensure there is a good fit? Defining clear roles and responsibilities

## **UNIT - V**

### **MARKETING AND SALES**

Positioning - channels and strategy - sales planning - Importance of project management to launch and track progress - Understanding time management, workflow, and delegation of tasks- Business regulation: Basics of business regulations of starting and operating a business - Importance of being compliant and keeping proper documentation

## **LEARNING OUTCOMES**

- This course will give the students the foundational experience of the entire cycle of entrepreneurship, through a combination of theory and practice.
- Students will learn what it takes to be an entrepreneur, recognizing business opportunities and the basics to create launch and manage new businesses.
- The participating students will create a ‘\_campus venture’ or a "real" venture of their own to practice the concepts taught during the program. The course is built in a modular fashion such that colleges can tailor their offerings to cover either the entire offering (idea to an MVP) or limit to building a business model.

# III YEAR

**B.Sc - UROLOGY TECHNOLOGY  
FACULTY OF ALLIED HEALTH SCIENCES  
SRI BALAJI VIDYAPEETH  
(Deemed to be University)  
Accredited by NAAC with 'A' Grade**

**III YEAR**

**CORE SUBJECTS**

1. Urological procedures Part II
2. Basics Of Dialysis & Organ Transplantation
3. Medicine outline & Medical ethics
4. Emergency Medical services

**Discipline Elective Course (DEC) - Choose any TWO**

1. Biomedical Waste Management
2. Basic assessment and support in intensive care
3. Palliative care
4. Basic airway management

**AHS COURSE CONTENT THIRD YEAR B.SC. UROLOGY TECHNOLOGY (UT)**

Faculty code	Category	Course title	Hours					Credits				
			Theory	Practical	Tutorials	Clinical training	Total hours	Lecture	Practical	Tutorials	Clinical training	Total credits
AHS	Core theory UT	Subjects										
AHS	UT -9	Urological procedures Part II	64	64				4	2			6
AHS	UT -10	Basics Of Dialysis & Organ Transplantation	64	64				4	2			6
AHS	UT -11	Medicine outline & Medical ethics	80		32			5		1		6
AHS	UT -12	Emergency Medical services.	80		32			5		1		6
AHS	UT-CT 2	Clinical Training UT 9 to 12				256					8	8
AHS	DE 1-8	Student's choice	64					4				4
AHS	DE 1-8	Student's choice	64					4				4
			<b>416</b>	<b>128</b>	<b>64</b>	<b>256</b>	<b>864</b>	<b>26</b>	<b>4</b>	<b>2</b>	<b>8</b>	<b>40</b>

## SCHEME OF EXAMINATION

Papers	Subject	Theory		Practical			Grand total (900)	Min pass marks (450)
		UE	IA	UE	IA	UIA*		
UT -9	Urological procedures Part II	80	20	80	20		200	100
UT -10	Basics Of Dialysis & Organ Transplantation	80	20	80	20		200	100
UT -11	Medicine outline & Medical ethics	80	20				100	50
UT -12	Emergency Medical services.	80	20				100	50
UT-CT 2	Clinical Training UT 9 to 12					100	100	50
DEC	Discipline elective	80	20				100	50
DEC	Discipline elective	80	20				100	50

# **UROLOGICAL PROCEDURES PART II**

## PAPER UT-9- UROLOGICAL PROCEDURES PART II

NAME OF THE SUBJECT PAPER	: UROLOGICAL PROCEDURES PART II
DURATION OF THEORY CLASSES	: 64 HRS
DURATION OF PRACTICAL SESSIONS	: 64 HRS
UNIVERSITY THEORY EXAMINATION	: 100 MARKS (80 U + 20 IA)
UNIVERSITY PRACTICAL EXAMINATION	: 100 MARKS (80 U + 20 IA)
DURATION OF THEORY EXAMINATION	: 3 HRS
YEAR IN WHICH SUBJECT PAPER IS TAUGHT	: III YEAR

### COURSE DESCRIPTION

The course is designed to understand the importance of urological procedure for different organs of the lower limb and students play a role in assessing the urologist during surgery.

### COURSE LEARNING OBJECTIVE

- Understand about lower abdomen organs and their surgical techniques,
- Understand about urosurgical complication and management.
- Understand about surgical techniques and maintenance of the patient after the surgery.
- Understand the uro surgeons during the surgery and pre and post follow up the patients.

### PROGRAM OUTCOMES

**UTPO1:** Performs the duty as a Uro-Technologist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library.

**UTPO2:** To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

**UTPO3:** Understanding the structure and functions of different organs in normal human body.

**UTPO4:** Phlebotomists are trained to draw blood primarily by performing venipunctures (for collection of minute quantities of blood and finger pricks).

**UTPO5:** Understanding the various method of sterilization used, functional flow and maintenance of CSSD. Demonstrate the ability to sterilize urological instruments using physical and chemical method.

**UTPO6:** Learns about the theatre asepsis and its maintenance to manage indenting, record keeping and inventory maintenance.

**UTPO7:**To gain knowledge about the pharmacological aspect of some commonly used

drugs and emergency medicine must be in position to list their indication therapeutic uses dilution, dosage and adverse effects.

**UTPO 8:** Able to assist urologist in surgical procedure like cystectomy, cystolithotomy, pyeloplasty, nephroureterectomy, nephrectomy, catheterization and stent replacement.

**UTPO9 :** Able to coordinate emergency resuscitative measures, administrate drug in various route and should provide adequate pre-operative, post-operative, and follow up case of surgical patients.

**UTPO10:** Able to provide palliative care for Urological cancer patients and respond to emergency situation by providing CPR and assist in the provision of advanced cardiac life support.

**UTPO11:** Develop and carry out well-organized patient management plans that support safe, effective and efficient care for both emergent and chronic condition as well as for preventive care.

**UTPO12:** To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behaviour healthy.

#### COURSE OUTCOMES

**UPII-CO1-** Know the procedures of Nephrectomy, Catheterisation and stent placement

**UPII-CO2-** Perform the procedures of ureter and urinary bladder cystectomy, Pyeloplasty, Nephroureterectomy& cystolithotomy

**UPII-CO3-** Perform the Incision, urethral dilatation and urethral sting placement

**UPII-CO4-**Able to manage the hydrocele patients and their procedures

**UPII-CO5-**Know the knowledge of Penile and testicular prosthesis

#### COURSE CONTENT

UNIT	TOPIC	THEORY 64 HOURS
I	<b>GENERAL</b> <ul style="list-style-type: none"> <li>• Diagnostic ultrasound</li> <li>• Nephrostomy</li> <li>• Catheterisation</li> <li>• Stent placement</li> <li>• Vascular access surgery</li> </ul>	12
II	<b>KIDNEY</b> <ul style="list-style-type: none"> <li>• Simple nephrectomy</li> <li>• Nephrectomy for tumour</li> <li>• Donor nephrectomy</li> <li>• Partial nephrectomy</li> <li>• Nephro-ureterectomy</li> </ul>	15

	<ul style="list-style-type: none"> <li>• Pyeloplasty</li> </ul>	
III	<b>URETER AND BLADDER</b> <ul style="list-style-type: none"> <li>• Diagnostic and therapeutic rigid ureterorenoscopy and stone manipulation</li> <li>• Flexible uretero-rensoscopy</li> <li>• Ureterectomy</li> <li>• Ureterolysis</li> <li>• Ureteric reimplantation</li> <li>• Urinary diversion</li> <li>• Diagnostic and therapeutic cystoscopy</li> <li>• Radical cystectomy</li> <li>• Cystodiathermy</li> <li>• Trans-urethral resection of bladder tumour (TURBT)</li> <li>• Partial cystectomy</li> <li>• Cystolithotomy</li> <li>• Augmentation cystoplasty</li> </ul>	15
IV	<b>PROSTATE AND URETHRA</b> <ul style="list-style-type: none"> <li>• Trans-urethral prostatectomy (TURP)</li> <li>• Bladder neck incision</li> <li>• Open prostatectomy for benign disease</li> <li>• Radical prostatectomy for cancer</li> <li>• Urethral dilatation</li> <li>• Optical urethrotomy</li> <li>• Surgery for hypospadias Anastomotic and augmentation urethroplasty</li> <li>• Urethral sling placement</li> <li>• Insertion of an artificial urinary sphincter (AUS)</li> </ul>	15
V	<b>PENIS AND TESTICLES</b> <ul style="list-style-type: none"> <li>• Circumcision</li> <li>• Penectomy for cancer</li> <li>• Penis conserving surgery for cancer</li> <li>• Penile prosthesis placement</li> <li>• Scrotal exploration for the acute scrotum</li> <li>• Orchidopexy</li> <li>• Management of hydrocele</li> <li>• Epididymal cystectomy and epididymectomy</li> <li>• Insertion of testicular prosthesis</li> <li>• Radical orchidectomy</li> <li>• Surgical sperm retrieval</li> </ul>	15

### **METHODS OF TEACHING**

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

### **METHODS OF EVALUATION**

- a. Written Test

- b. Laboratory observation Book
- c. Assignments
- d. Oral Presentation

### REFERENCES BOOKS

1. Oxford textbook of Nephrology
2. The Kidney - Brenner (Vol I/II)
3. Diseases of the Kidney and the urinary tract - Schrier (Vol I, II, & III)

### BLUE PRINT

S.NO	UNIT	WEIGHTAGE	MARKS ALLOTTED	LONG ANSWER (10)	SHORT ANSWER (6)	VERY SHORT ANSWER (3)
1	GENERAL	15%	12	-	1	2
2	KIDNEY	27.5%	22	1	1	2
3	URETER BLADDER	27.5%	22	1	1+1*	2+1*
4	PROSTATE URETHRA	15%	12	1*	1	2+1*
5	PENIS AND TESTICLES	15%	12	1*	1	2

The duration of Examination (University) is Three (3) hours.

The total marks for the University Examination will be 100 marks.

Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)

Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)

Very Short Answer Questions: 10 X 3 = 30 marks (Choice 10 out of 12)

TOTAL = Theory 80 + IA 20 = 100 marks

**PAPER UT-9 UROLOGICAL PROCEDURES PART II  
MODEL QUESTION PAPER**

**TIME: 3 HOURS**

**MAXIMUM MARKS: 80**

**a) Long Answer Questions**

**(2X10 = 20)**

1. a) Elaborate on OT preparation for the renal transplantation. (OR)  
b) Discuss in detail about the pathophysiology of acute renal failure and its management
2. a) Discuss post Obstructive diuresis (OR)  
b) Discuss about the drugs effects the ureter.

**b) Short Answer Questions -ANY 5**

**(5X 6 = 30)**

1. Contrast induced nephropathy
2. Oncogenes
3. Describe the structure and anatomical relationships of prostate gland
4. Merits and de merits of organ transplantation.
5. Immunosuppressive drugs
6. Acute pyelonephritis in pregnancy

**C. Very Short Answer Questions - ANY 10**

**(10X3 = 30)**

1. Types of dialysis
2. Normal urea and creatinine values
3. Draw kidney and label its parts
4. Cystinuria
5. Mechanism of action of diuretics
6. Nsaids for renal patients
7. Complications of renal transplantation
8. Function of epididymis
9. ESWL
10. Principles of Lithotripsy
11. Causes of CKD
12. Apoptosis

# **BASICS OF DIALYSIS & ORGAN TRANSPLANTATION**

## PAPER UT-10- BASICS OF DIALYSIS & ORGAN TRANSPLANTATION

NAME OF THE SUBJECT PAPER	: BASIC OF DAILYIS & ORGAN TRANSPLANTATION
DURATION OF THEORY CLASSES	: 64HRS
DURATION OF PRACTICAL SESSIONS	: 64HRS
THEORY EXAMINATION	: 100 MARKS (80 U + 20 IA)
UNIVERSITY PRACTICAL EXAMINATION	: 100 MARKS
DURATION OF THEORY EXAMINATION	: 3 HRS
YEAR IN WHICH SUBJECT PAPER IS TAUGHT	: III YEAR

### COURSE DESCRIPTION

The course is designed to understand the importance of dialysis procedure and its complications and organ transplantation.

### COURSE LEARNING OBJECTIVE

- Understand about dialysis protocol and its standards in treating the patients with different requirements.
- Understand about renal transplantation procedures of pre and post process.
- Understand about complications and maintenance of dialysis during the pre , intra and post procedure.

### PROGRAM OUTCOMES

**UTPO1:** Performs the duty as a Uro-Technologist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library.

**UTPO2:** To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

**UTPO3:** Understanding the structure and functions of different organs in normal human body.

**UTPO4:** Phlebotomists are trained to draw blood primarily by performing venipunctures (for collection of minute quantities of blood and finger pricks).

**UTPO5:** Understanding the various method of sterilization used, functional flow and maintenance of CSSD. Demonstrate the ability to sterilize urological instruments using physical and chemical method.

**UTPO6:** Learns about the theatre asepsis and its maintenance to manage indenting, record keeping and inventory maintenance.

**UTPO7:** To gain knowledge about the pharmacological aspect of some commonly used drugs and emergency medicine must be in position to list their indication therapeutic uses

dilution, dosage and adverse effects.

**UTPO 8:** Able to assist urologist in surgical procedure like cystectomy, cystolithotomy, pyeloplasty, nephroureterectomy, nephrectomy, catheterization and stent replacement.

**UTPO9 :** Able to coordinate emergency resuscitative measures, administrate drug in various route and should provide adequate pre-operative, post-operative, and follow up case of surgical patients.

**UTPO10:** Able to provide palliative care for Urological cancer patients and respond to emergency situation by providing CPR and assist in the provision of advanced cardiac life support.

**UTPO11:** Develop and carry out well-organized patient management plans that support safe, effective and efficient care for both emergent and chronic condition as well as for preventive care.

**UTPO12:** To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behaviour healthy.

### COURSE OUTCOMES

**BDOT 1:** Understand the dialysis team work, basic principles and types of haemodialysis.

**BDOT 2:** Identify the hemodialysis apparatus, understand the composition of dialysate.

**BDOT 3:** Identify the complication of vascular access and water treatment and AAMI and standard ultrapure water quality

**BDOT 4:** understand about universal precautions and infection control in haemodialysis

**BDOT 5:** Understand the water treatment process and dialyzer reprocessing and machine disinfectant.

**BDOT 6:** Introduction to kidney transplantation immunology, procedure and Immunosuppressive medications

### COURSE CONTENT

UNIT	TOPIC	THEORY 64 HOURS
UNIT - I	<b>BASICS OF DIALYSIS</b> <ul style="list-style-type: none"> <li>• History, types of Dialysis</li> <li>• Principles of Dialysis</li> <li>• Dialysis-Team-rights responsibilities-patient doctor relationship</li> <li>• Dialysis reuse</li> <li>• Dialyzer Membranes</li> <li>• Vascular Access - Temporary &amp; Permanent</li> <li>• Equipment - Accessories - Function</li> <li>• Computer applications in Dialysis</li> <li>• Dialysate delivery system</li> <li>• Composition of dialysate</li> <li>• High flux / high efficiency dialysis</li> <li>• Continuous Renal Replacement Therapy / Slow Low Efficiency Dialysis</li> <li>• Complications in dialysis patients</li> <li>• Water treatment-pretreatment, deionizer, Reverse Osmosis</li> <li>• Dialysis in Neonates, infants &amp; children</li> </ul>	34 HOURS

	<ul style="list-style-type: none"> <li>• Acute and chronic dialysis prescription</li> <li>• Medications in dialysis patients</li> <li>• Nutrition management in dialysis patients</li> <li>• Psychosocial aspects &amp; patient education, Quality assurance in dialysis.</li> </ul>	
<b>UNIT-2</b>	<p><b>ORGAN TRANSPLANTATION</b></p> <ul style="list-style-type: none"> <li>• Renal transplant co-ordination</li> <li>• Merits and demerits, Recipient and donor workup, psychosocial and legal aspects,</li> <li>• cadaver donor.</li> </ul> <p><b>Maintenance, principles of post-operative management and follow-up</b></p> <ul style="list-style-type: none"> <li>• Anatomy: implantation site, kidney anatomy (including variations and anomalies)</li> <li>• Immunology: ABO compatibility, cytotoxic cross match, flow cytometry, HLA matching, immunosuppression, rejection</li> <li>• Indications and contraindications for: deceased and live kidney donation and transplantation</li> <li>• Principles of pre-op preparation and post-op management</li> <li>• Principles of organ allocation</li> <li>• Evaluation of donor/ organ suitability (including non heart beating donors)</li> <li>• Select appropriate patient from the waiting list</li> <li>• Kidney retrieval from deceased donor</li> <li>• Kidney retrieval from live donor</li> <li>• Kidney transplantation: bench preparation, prepare implant site, perform vascular and ureteric anastomoses</li> <li>• Manage post-op care: drug therapy, fluid management, laboratory and imaging investigations, renal biopsy</li> <li>• Identify and treat post-op complications: drug side effects, infection, rejection, vascular and ureteric complications</li> <li>• Post-transplant graft nephrectomy</li> <li>• Assess patients referred for kidney transplantation (including live donors): arrange appropriate investigations, counsel patients and families and obtain informed consent, prepare patients for theatre.</li> </ul>	<b>30 HOURS</b>

**PRACTICAL ( 64 HOURS)**  
**BASIC OF DIALYSIS & ORGAN TRANSPLANTATION**

**HEMODIALYSIS PROCEDURES**

- Patient assessment - General, pre, intra and post dialysis
- Machine monitoring during hemodialysis/setting of dialysis machine
- Initiation of dialysis through Central venous catheter
- AV fistula/AV graft cannulation
- Sequential dialysis
- Sodium profiling
- Termination (closing of dialysis)

**CASE STUDY**

- Patient Education
- PD Catheter and exit site care
- Performance of PD exchanges manually
- Setting up of automated PD equipments
- First assessment in minor procedures
- PET analysis
- Types of renal donor & cadaver donor maintenance
- Recipient and donor workup for renal transplantation
- Principles of post transplant management and follow up

**METHODS OF TEACHING**

1. Lecture cum discussion
2. Demonstration
3. Labvisit
4. Practical work record

**METHODS OF EVALUATION**

1. WrittenTest
2. Laboratory observation Book
3. Assignments
4. Oral Presentation

**REFERENCES BOOKS**

1. Oxford textbook of Nephrology
2. The Kidney - Brenner (Vol I/II)
3. Diseases of the Kidney and the urinary tracy - Schrier (Vol I, II, & III)
4. Textbook of Dialysis therapy - Nissenson
5. Textbook of Peritoneal Dialysis - Ram Goka
6. Handbook of dialysis - John T. Daugirdas
7. Kidney Transplantation - Principles & Practice Peter J. Morris 7th Edition.

## BLUE PRINT

S.NO	UNIT	WEIGHTAGE	MARKS ALLOTTED	LONG ANSWER (10)	SHORT ANSWER (6)	VERY SHORT ANSWER (3)
1	Basic of Dialysis	46.25%	37	1+1*	2+1*	5+1*
2	Organ transplantation	53.75%	43	1+1*	3+2*	5+1*

The duration of Examination (University) is Three (3) hours.

The total marks for the University Examination will be 100 marks.

Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)

Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)

Very Short Answer Questions: 10 X 3 = 30 marks (Choice 10 out of 12)

TOTAL = Theory 80 + IA 20 = 100 marks

### PAPER UT-10-BASICS OF DIALYSIS & ORGAN TRANSPLANTATION MODEL QUESTION PAPER

**TIME: 3 HOURS**

**MAXIMUM MARKS: 80**

**A. Long Answer Questions**

**(2 X 10 = 20)**

1. a) Non-dialyzable anti-hypertensive agents . (OR)

b) Type of heparin preferred in Hemodialysis - unfractionated heparin vs. low molecular weight.

2. a) Treatment of accidental administration of heparin to a dialysis patient with ongoing bleeding.

(OR)

b) Diagnosis of Iron Deficiency anemia in a patient of chronic kidney disease on hemodialysis.

**B. Short Answer Questions -ANY 5**

**(5 X 6 = 30)**

1. Drugs useful in the medical treatment of hyperkalemia and their mechanism of action. Potassium exchange resins.

2. Catheter related blood stream infections - what are they? How is the Diagnosis made? How are they treated?

3. Hepatitis B vaccination schedule in dialysis patients.
4. Infection preventive strategies in patients on peritoneal dialysis.
5. Regional anticoagulation.
6. Steps in the training a patient on continuous ambulatory peritoneal dialysis

**C. Very Short Answer Questions - ANY 10**

**(10 X 3= 30)**

1. Disposition of arterio-venous fistula needles after a dialysis session.
2. Routine blood biochemistry testing in a patient on regular thrice-weekly maintenance hemodialysis.
3. Dry weight in a hemodialysis patient.
4. Different peritoneal fluids available in routine clinical practice.
5. Sites of arterio-venous fistula construction.
6. Contraindications to initiation of Peritoneal.
7. Dialysis in chronic kidney disease
8. Target Hemoglobin level to be maintained in a CKD patient on hemodialysis.
9. Precautionary measures while dialyzing patients with Human Immunodeficiency Virus infection.
10. Disadvantages of reprocessing and reuse of dialyzers.
11. Biomedical waste segregation in a dialysis unit.
12. Optimal hand hygiene.

# **MEDICINE OUTLINES AND MEDICAL ETHICS**

## PAPER UT-11- MEDICINE OUTLINES AND MEDICAL ETHICS

NAME OF THE SUBJECT PAPER	: MEDICINE OUTLINES & MEDICAL ETHICS
DURATION OF THEORY CLASSES	: 80HRS
DURATION OF PRACTICAL SESSIONS	: 32 HRS
UNIVERSITY THEORY EXAMINATION	: 100 MARKS (80 U + 20 IA)
UNIVERSITY PRACTICAL EXAMINATION	: NIL
DURATION OF THEORY EXAMINATION	: 3 HRS
YEAR IN WHICH SUBJECT PAPER IS TAUGHT	: III YEAR

### COURSE DESCRIPTION

The course is designed to understand the basic of medical ethics and law of the and right of patients. Legal aspects of medical record and standard protocol of consent.

### COURSE LEARNING OBJECTIVE

- Understand the basics of Medical ethics
- Identify medical malpractice and negligence and right of patient.
- Recognize care of terminally ill and aspects of organ transplantation.
- Identify medico legal aspects of medical records.
- Apply standardized protocol and informed consent.

### PROGRAM OUTCOMES

**UTPO1:** Performs the duty as a Uro-Technologist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library.

**UTPO2:** To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

**UTPO3:** Understanding the structure and functions of different organs in normal human body.

**UTPO4:** Phlebotomists are trained to draw blood primarily by performing venipunctures (for collection of minute quantities of blood and finger pricks).

**UTPO5:** Understanding the various method of sterilization used, functional flow and maintenance of CSSD. Demonstrate the ability to sterilize urological instruments using physical and chemical method.

**UTPO6:** Learns about the theatre asepsis and its maintenance to manage indenting, record keeping and inventory maintenance.

**UTPO7:** To gain knowledge about the pharmacological aspect of some commonly used drugs and emergency medicine must be in position to list their indication therapeutic uses dilution, dosage and adverse effects.

**UTPO 8:** Able to assist urologist in surgical procedure like cystectomy, cystolithotomy, pyeloplasty, nephroureterectomy, nephrectomy, catheterization and stent replacement.

**UTPO9 :** Able to coordinate emergency resuscitative measures, administrate drug in

various route and should provide adequate pre-operative, post-operative, and follow up case of surgical patients.

**UTPO10:** Able to provide palliative care for Urological cancer patients and respond to emergency situation by providing CPR and assist in the provision of advanced cardiac life support.

**UTPO11:** Develop and carry out well-organized patient management plans that support safe, effective and efficient care for both emergent and chronic condition as well as for preventive care.

**UTPO12:** To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behaviour healthy.

### COURSE OUTCOMES

**MO-ME- CO1:** Discuss the Introduction to history taking and examination

**MO-ME- CO2:** Discuss How to perform general physical examination

**MO-ME- CO3:** Discuss definition, types, risk factors, clinical features, treatment, investigations of diabetes, acute MI, other heart diseases, Urinary system, genetic disorders, respiratory system and nervous system.

**MO-ME- CO4:** Describe definition, prevalence, Aetiology, risk factors, clinical features, investigations and management, complications of obesity, ethics, infectious diseases, and other medical conditions.

**MO-ME- CO5:** Describe physiological changes in elderly patient

### COURSE CONTENT

UNIT	TOPIC	THEORY + TUTORIAL (80+32)HOURS
I	<b>INTRODUCTION</b> Cardio vascular diseases Respiratory diseases Neurological diseases Gastro intestinal and Liver Diseases <b>Renal Diseases</b> <ul style="list-style-type: none"> <li>• Acute kidney injury</li> <li>• Chronic Kidney Disease ,Glomerulonephritis, Hemodialysis</li> </ul>	20 +6
II	<b>CLINICAL EVALUATION</b> <ul style="list-style-type: none"> <li>• Urine analysis</li> <li>• Urine culture</li> <li>• Urinary investigation for tuberculosis: AFB smear / Urine culture for M.tubercuosis</li> <li>• Urine cytology for malignant cell</li> <li>• Glomerular function</li> <li>• Tubular function</li> <li>• Metabolic evaluation of urinary stone disease</li> <li>• Semen analysis</li> <li>• S. PSA</li> </ul>	20 + 6

<b>III</b>	<b>BLOOD, BLOOD BANK, FLUID, ELECTROLYTE AND ABNORMALITIES</b> <ul style="list-style-type: none"> <li>• Blood grouping , typing and Cross matching</li> <li>• Blood donation, transfusion and transfusion reaction</li> <li>• Blood loss and Anemia, thrombocytopenia</li> <li>• Fluid Electrolyte imbalance and corrective methods</li> </ul>	<b>15 +4</b>
<b>IV</b>	<b>UROLOGICAL SIGNS AND SYMPTOMS</b> <ul style="list-style-type: none"> <li>• Renal colic, Ureteric colic</li> <li>• LUTS: Storage and Voiding symptoms; IPSS symptom score</li> <li>• Hematuria</li> <li>• Urinary incontinence</li> <li>• Voiding Diary</li> <li>• Examination: Abdomen / male genitalia / female genitalia / DRE / relevant neurological examination</li> </ul>	<b>15+ 6</b>
<b>V</b>	<b>OP PROCEDURES</b> <ul style="list-style-type: none"> <li>• Catheters, Urethral Catherization / Suprapubic catheterization</li> <li>• Urethral dilators, Urethral calibration and dilation</li> <li>• CISC</li> <li>• Trucut biopsy of prostate</li> <li>• PCN</li> <li>• IVC</li> <li>• Intracavernosal injection of vasoactive drugs</li> <li>• Procedures of Priapism</li> <li>• Pelvic floor muscle training</li> </ul> <b>MEDICAL ETHICS</b> <ul style="list-style-type: none"> <li>• 1. Medical ethics - Definition - Goal - Scope</li> <li>• 2. Code of conduct - Introduction</li> <li>• 3. Basic principles of medical ethics - Confidentiality</li> <li>• 4. Malpractice and negligence - Rational and irrational drug therapy</li> <li>• 5. Autonomy and informed consent - Right of patients</li> <li>• 6. Care of the terminally ill- Euthanasia</li> <li>• 7. Organ transplantation</li> <li>• Medico legal aspects of medical records - Medicolegal case and type-Records and document related to MLC - ownership of medical records -Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects</li> </ul>	<b>20+ 10</b>

#### **METHODS OF TEACHING**

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

## METHODS OF EVALUATION

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentation

## REFERENCE BOOKS

1. Davidson's Principles and Practice of Medicine - Elsevier
2. Publications Harrison's Principle of Internal Medicine
3. Medical Ethics & Law, The Cor Curriculum Author - Tony Hope Atla

## BLUEPRINT

S.NO	UNIT	WEIGHTAGE	MARKS ALLOTTED	LONG ANSWER(10)	SHORT ANSWER(6)	VERY SHORT ANSWER(3)
1	INTRODUCTION	27.5%	22	1	1	2+1*
2	CLINICAL EVALUATION	27.5%	22	1	1	2+1*
3	BLOOD, BLOOD BANK, FLUID, ELECTROLYTE AND ABNORMALITIES	15%	12	1*	1+1*	2
4	UROLOGICAL SIGNS AND SYMPTOMS	15%	12	1*	1	2
5	OP PROCEDURES AND MEDICAL ETHICS	15%	12		1	2

The duration of Examination (University) is Three (3) hours.

The total marks for the University Examination will be 100marks.

Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)

Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)

Very Short Answer Questions: 10 X3 = 30 marks (Choice 10 out of 12)

TOTAL = Theory 80 + IA 20 = 100 marks

**PAPER UT-11- MEDICINE OUTLINES AND MEDICAL ETHICS  
MODEL QUESTION PAPER**

**TIME: 3 HOURS**

**MAXIMUM MARKS: 80**

**A. Long Answer Questions**

**(2 X10 = 20)**

1. a) Describe the constitution and functions of Indian Medical Council. (OR)  
b) Describe the hospital acquired infection and their prevention
2. a) Describe the manifestation and management of acute renal failure. (OR)  
b) Write about complications of Diabetes mellitus.

**B. Short Answer Questions -ANY 5**

**(5 X 6 = 30)**

1. Write about Medical negligence.
2. Describe anemia and iron deficiency anaemia.
3. Write about professional misconduct.
4. Privileged communication.
5. Write about unauthorized disclosure.
6. HIV infections.

**C. Very Short Answer Questions - ANY 10**

**(10 X 3 =30)**

1. Hostile witness
2. Informed consent.
3. Diagnosis of Rheumatic fever.
4. Iatrogenic diseases.
5. Symptoms of hyperthyroidism.
6. Common organism causing UTI infections.
7. Write about sepsis.
8. What are antibiotics?
9. What is infective endocarditis?
10. Uses of ECG.
11. Define anaemia and features.
12. Write about AIDS.

# **EMERGENCY MEDICAL SERVICES**

## PAPER UT-12- EMERGENCY MEDICAL SERVICES

NAME OF THE SUBJECT PAPER	: EMERGENCY MEDICAL SERVICES
DURATION OF THEORY CLASSES	: 80HRS
DURATION OF PRACTICAL SESSIONS	: 32HRS
THEORY EXAMINATION	: 100 MARKS (80 U + 20 IA)
UNIVERSITY PRACTICAL EXAMINATION	: NIL
DURATION OF THEORY EXAMINATION	: 3 HRS
YEAR IN WHICH SUBJECT PAPER IS TAUGHT	: III YEAR

### COURSE DESCRIPTION

The course is designed to understand the importance of emergency medical services, they undergoing training in BLS, ACLS programmes.

### COURSE LEARNING OBJECTIVE

- Understand the basics of emergency care and life support skills.
- Identify vital signs, primary assessment and basic emergency care.
- Apply methods for ventilation and rescue breathing methods
- Identify and apply CPR and defibrillator.
- Apply the management of patient emergency.

### PROGRAM OUTCOMES

**UTPO1:** Performs the duty as a Uro-Technologist with leadership qualities having a good written & communication skills and also skilled at computer applications including E- library.

**UTPO2:** To gain knowledge about laboratory safety precautions, biomedical waste management adhering to the environmental needs of the society, and preventing the spread of infectious diseases.

**UTPO3:** Understanding the structure and functions of different organs in normal human body.

**UTPO4:** Phlebotomists are trained to draw blood primarily by performing venipunctures (for collection of minute quantities of blood and finger pricks).

**UTPO5:** Understanding the various method of sterilization used, functional flow and maintenance of CSSD. Demonstrate the ability to sterilize urological instruments using physical and chemical method.

**UTPO6:** Learns about the theatre asepsis and its maintenance to manage indenting, record keeping and inventory maintenance.

**UTPO7:** To gain knowledge about the pharmacological aspect of some commonly used drugs and emergency medicine must be in position to list their indication therapeutic uses dilution, dosage and adverse effects.

**UTPO 8:** Able to assist urologist in surgical procedure like cystectomy, cystolithotomy, pyeloplasty, nephroureterectomy, nephrectomy, catheterization and stent replacement.

**UTPO9 :** Able to coordinate emergency resuscitative measures, administrate drug in various route and should provide adequate pre-operative, post-operative, and follow up case of surgical patients.

**UTPO10:** Able to provide palliative care for Urological cancer patients and respond to emergency situation by providing CPR and assist in the provision of advanced cardiac life support.

**UTPO11:** Develop and carry out well-organized patient management plans that support safe, effective and efficient care for both emergent and chronic condition as well as for preventive care.

**UTPO12:** To identify various life style disorders and with due counselling & guidance advising the patients with proper diet, hygiene and Yoga to keep the body, mind, soul and behaviour healthy.

### **COURSE OUTCOMES**

**MO-ME- CO1:** Discuss the Introduction to history taking and examination

**MO-ME- CO2:** Discuss How to perform general physical examination

**MO-ME- CO3:** Discuss definition, types, risk factors, clinical features, treatment, investigations of diabetes, acute MI, other heart diseases, Urinary system, genetic disorders, respiratory system and nervous system.

**MO-ME- CO4:** Describe definition, prevalence, Aetiology, risk factors, clinical features, investigations and management, complications of obesity, ethics, infectious diseases, and other medical conditions.

**MO-ME- CO5:** Describe physiological changes in elderly patient

**COURSE CONTENT**

UNIT	TOPIC	THEORY + TUTORIAL (80+3 HOURS)
I	<b>INTRODUCTION TO EMS</b> <ul style="list-style-type: none"> <li>• History of EMS &amp; Current trends</li> <li>• Understanding Emergency Medicine (the specialty, Its pros &amp; cons)</li> <li>• Roles &amp; responsibilities of emergency medical technician</li> <li>• Medico-Legal issues                             <ul style="list-style-type: none"> <li>○ Abandonment,</li> <li>○ sexual harassment,</li> <li>○ consent &amp; referral</li> <li>○ Negligence</li> <li>○ DNR orders, Coroner &amp; medical examiner cases</li> </ul> </li> <li>• Principles of life support- basic and advanced</li> <li>• Triage</li> <li>• Critical points in functioning of EMS at a national level</li> <li>• Required components of EMS system</li> </ul>	10+4
II	<b>LIFE SUPPORT &amp; RESUSCITATION</b> <ul style="list-style-type: none"> <li>• Basic life support in perspective</li> <li>• Cardiopulmonary function and actions for survival</li> <li>• Adult Basic life support, Advanced Cardiac life support</li> <li>• Pediatric Basic Life support</li> <li>• Special resuscitation situations</li> <li>• Safety during CPR training and actual rescue</li> </ul>	15 +8
III	<b>BASIC PRINCIPLES OF TRAUMA CARE</b> <ul style="list-style-type: none"> <li>• The principles of kinetic energy Mechanism -Basic mechanics of Injury Pattern.</li> <li>• Primary survey</li> <li>• Secondary survey as appropriate</li> <li>• Re-assessment</li> <li>• Revised trauma score, Glasgow Coma Score</li> <li>• Lifting &amp; transporting of injured persons</li> </ul> Shock -different types & Categories	10+4
IV	<b>INSTRUMENTATION IN EMERGENCY SERVICES</b> <ul style="list-style-type: none"> <li>• Introduction to Biomedical engineering (Man - machine relationship)</li> <li>• ECG</li> <li>• DC Defibrillator</li> <li>• Intravenous pumps</li> <li>• Laryngoscope, ambubag, suction machine</li> <li>• SPO2 monitoring, Temperature monitoring</li> <li>• BP apparatus, BP monitoring-NIBP, IBP</li> <li>• Ventilators-Intensive care, portable</li> </ul> Power generation, transmission & distribution	10+4
V	<b>ESWL</b> <ul style="list-style-type: none"> <li>• Methods</li> </ul>	20+ 4

	<ul style="list-style-type: none"> <li>• Physical Principles</li> <li>• Lithotripter Comparisons</li> <li>• Mechanisms of Stone Comminution</li> <li>• Bioeffects</li> <li>• Contraindication</li> <li>• Complication</li> <li>• Patient preparation</li> <li>• Treatment principles</li> <li>• Post ESWL patient care</li> <li>• Treatment of special cases</li> </ul>	
<b>VI</b>	<p><b>URODYNAMIC</b></p> <ul style="list-style-type: none"> <li>• Working principle</li> <li>• Indication</li> <li>• Patient selection</li> <li>• Patient preparation</li> <li>• Precautions</li> <li>• Cystometrogram</li> <li>• Measurement variables</li> <li>• Electrophysiologic testing</li> <li>• Urethral pressure profilometry</li> <li>• Uroflowmetry</li> <li>• Ambulatory Urodynamics</li> <li>• Video urodynamics</li> </ul>	<b>15+8</b>

#### **METHODS OF TEACHING**

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

#### **METHODS OF EVALUATION**

1. Written Test
2. Laboratory observation Book
3. Assignments
4. Oral Presentation

#### **REFERENCES BOOKS**

1. Waugh - Ross & Wilson Anatomy & Physiology, 2008, Elsevier.
  2. First Aid - L.C.Gupta
  3. Preventive & Social Medicine - K.Park
- Oxford- Handbook Of Emergency Medicine

**BLUE PRINT**

S.NO	UNIT	WEIGHTAGE	MARKS ALLOTTED	LONG ANSWER (10)	SHORT ANSWER (6)	VERY SHORT ANSWER (3)
1	Introduction to EMS	7.5%	6	-	1	2
2	Life support & resuscitation	15%	12	1*	1	2
3	Basic principles of trauma care	11.25%	9	1*	1	1+1*
4	Instrumentation in emergency services	15%	12	-	1	2
5	ESWL	27.5%	22	1	1	2
6	Urodynamics	23.75%	19	1	1	1+1*

The duration of Examination (University) is Three (3) hours.

The total marks for the University Examination will be 100 marks.

Long Answer Questions : 2 X 10 = 20 marks (Choice 2 out of 4)

Short Answer Questions : 5 X 6 = 30 marks (Choice 5 out of 6)

Very Short Answer Questions: 10 X 3 = 30 marks (Choice 10 out of 12)

TOTAL = Theory 80 + IA 20 = 100 marks

**PAPER UT-12 - EMERGENCY MEDICAL SERVICES**  
**MODEL QUESTION PAPER**

**TIME: 3 HOURS**

**MAXIMUM MARKS: 80**

**Illustrate your answers with suitable diagrams wherever necessary.**

**A. Long Answer Questions (2X10 = 20)**

1. a) Write in detail about pre hospital transport of patient and Equipments needed. (OR)

b) Describe about Oxygen therapy - types of masks with flow rate.

2. a) Write in detail about cardiac cycle. (OR)

b) Write about femur with diagram

**B. Short Answer Questions -ANY 5 (5X6 = 30)**

1. Kreb's cycle.

2. Pulmonary segments.

3. Urinary catheterization.

4. C-Spine immobilization in trauma.

5. Triage.

6. Anti snake venom

**C. Very Short Answer Questions - ANY 10 (10X3 = 30)**

1. Define osmolarity and osmolality.

2. Contents of carotid triangle.

3. Normal values of pH, HCO<sub>3</sub>, Co<sub>2</sub>.

4. 3 causes of hypovolemic shock.

5. 6 steps of hand hygiene.

6. Mention 3 drugs used in asthma.

7. Name cranial nerves involved in eye.

8. Contents of femoral sheath.

9. Muscles of leg.

10. Activated charcoal dosage and its preparation in poisoning.

11. Name 3 arteries that supply to kidney.

12. Three indications of ICD.

# **DISCIPLINE ELECTIVE - III YEAR**

**B.Sc Urology Technology**  
**Discipline elective I - Biomedical waste management**

<b>NAME OF THE SUBJECT PAPER</b>	<b>:</b>	<b>Biomedical Waste Management</b>
<b>DURATION OF THEORY CLASSES</b>	<b>:</b>	<b>64 Hrs</b>
<b>THEORY EXAMINATION</b>	<b>:</b>	<b>50 Marks (40 U + 10 IA)</b>
<b>PRACTICAL EXAMINATION</b>	<b>:</b>	<b>NIL</b>
<b>DURATION OF THEORY EXAMINATION</b>	<b>:</b>	<b>1 1/2 Hrs</b>

**COURSE DESCRIPTION**

The increasing amount of Biomedical wastes (BMW) being generated is becoming a serious problem to hospitals and has significant adverse impacts on public health and occupational health if improperly handled. Biomedical waste requires utmost care in handling, collection, processing and disposal due to inherent hazards of the waste. The basic goal of the course is to provide the fundamentals of and biomedical wastes and various aspects of their management right from generation through collection and disposal. Special emphasis will be given to the system approach to managing these wastes to meet regulatory requirements.

**Learning Objectives**

- To sensitize the students about health care waste and its impact on health and environment.
- Acquaint the students to existing legislation, knowledge and practices regarding health care waste.

**Learning Outcomes**

At the end of the course the student will be able to

- Possess the knowledge on the sources of generation, of hazardous and non-hazardous waste in health care settings and research laboratories.
- Demonstrate understanding on the environmental and occupation hazards of improper BMW management.
- Understand the good practices for a systematic approach in the management of BMW
- Gain knowledge in various management strategies and technological solutions in BMW management, treatment and disposal.
- Be familiar with the applicable legislations and regulations for treatment and disposal.

## SYLLABUS

### 1. Introduction to Hospital Waste

- Definition Classification of hospital wastes
- Types and composition: Types of solids, liquids, sharps, blood and blood tissue, radioactive material, biological and chemical material
- Hospital effluents: Nature and composition, Levels of Generation in a small clinic, nursing home, small and large hospitals, Storage of hospital waste; Types of bags and containers used for storage

### 2. Biomedical Waste Management Guideline

- Requirement
- Documentation of Biomedical waste types and guidelines
- Bio-medical wastes (Management & Handling) Rules, 1998; and amendments

### 3. Principles of Biomedical Waste Management

- Segregation of biomedical waste
- Handling and transport of hospital waste: Authorization and accidental spilling
- Methods / treatments required for disposal of pathogens
- Waste disposal methods
- Techniques of waste management
- Protocols for HW management

### 4. Waste prevention

- Waste reduction activities
- Waste recycling

### 5. Biomedical Waste Treatment Facility

- Introduction, location, land requirements
- Coverage area, types of equipment
- Infrastructure requirements
- Record keeping
- Waste collection, transport and storage facilities
- Precautions required

### Text Books

1. Sustainable Biomedical Waste Management, P. K. Behera, 2nd Edition. 2008
2. Biomedical Waste Management, R. Radhakrishnan, 1st Edition, 2005
3. The Environmental Protection Act, 1986.

**DEC - Biomedical Waste Management  
Model Question Paper**

**TIME: 1 1/2 HOURS**

**MAXIMUM MARKS: 40**

**(A) Short Answer (Answer any Five) (5x6=30)**

1. Explain the different categories of biomedical waste.
2. Explain the different sources of health-care wastes and how the hospitals handle them.
3. What are the various guidelines given by WHO for safe health-care waste management?
4. Write the principles of hospital hazards management. Explain the various types of infections.
5. How does the color coding helps in medical waste management. Explain with examples.

**(B) Very Short Answer (Any six) (5x2=10)**

1. How will you classify healthcare waste?
2. What are waste sharps?
3. Who is at risk from health-care waste?
4. Write few rules governing the disposal of medical wastes?
5. Why is segregation important?
6. How sharps are disposed?
7. List some non-infectious wastes in hospital.
8. What is chemical disinfection?

# DISCIPLINE ELECTIVE II - BASIC ASSESSMENT AND SUPPORT IN INTENSIVE CARE

NAME OF THE SUBJECT PAPER	: BASIC ASSESSMENT AND SUPPORT IN INTENSIVE CARE
DURATION OF THEORY CLASSES	: 64 Hrs
THEORY EXAMINATION	: 50 Marks (40U + 10 IA)
UNIVERSITY PRACTICAL EXAMINATION	: NIL
DURATION OF THEORY EXAMINATION	: 1 1/2Hrs.

## Course Description:

- They learn the knowledge about the intensive care specialties and practical and management of critically ill patients, injury patients and general surgeons.

## Learning objectives:

- Aim to provide skills and knowledge support and manage the care of critically ill patients
- Understand the basic life support drugs, and advance cardiac life support .

## SYLLABUS CONTENT

### 1. Mechanical ventilation - non invasive and invasive(60HRS)

- Basic concepts
- Mechanics of ventilation
- Work of breathing
- Indications
- Humidification of gas
- Ventilator settings
- Timings -Inspiratory, Expiratory, Inspiratory hold
- Flow
- Tidal volume
- Pressure
- Peak
- Plateau
- PEEP
- "POP-OFF"
- Pressure support
- Proximal airway vs distal
- $FiO_2$
- Modes of ventilation
- Non Invasive CPAP, BiPAP
- Invasive modes-Controlled, Assisted, SIMV, APRV, Pressure Support
- Alarm settings

- Care of ventilator & tubings
  - Sterility
  - Weaning
  - concepts
  - Humidifier
  - Types
  - advantages and disadvantages
  - Inhaled drug therapy
  - Nebulisation
  - different types
  - Advantages & disadvantages
  - MDI with Spacer
2. Care of patients on ventilator(20 Hrs)
- Ensuring proper placement of tube
  - Cuff pressure
  - Tracheobronchial hygiene, suctioning
  - Humidification, Chest physio
  - Ventilator settings
  - Monitoring ventilatory parameters

**Text books**

- The ICU Book - Paul L Marino (Lippincott, Williams & Wilkins)
- Ventilation / Blood Flow & Gas Exchange - John B West (Blackwell Scientific Publications)
- Washington Manual of Critical Care

**DEC - BASIC ASSESSMENT AND SUPPORT IN INTENSIVE CARE**  
**Model Question Paper**

**TIME: 1 1/2 HOURS**

**MAXIMUM MARKS: 40**

**(A) Short Answer (Answer any FIVE)**

**(5x6=30)**

1. Explain the indications and modes of mechanical ventilator and its complications
2. Discuss the various methods of providing oxygen therapy for a hypoxic patients
3. Basic life support in pregnancy.
4. Automated external defibrillator.
5. Management of foreign body air way obstruction in a infant.

**(B) Very Short Answer (Any FIVE)**

**(5x2=10)**

1. Adrenaline
2. Ventricular tachycardia
3. Sodium bicarbonate
4. Amiodarone
5. Oxygen therapy
6. Classification of anti-arrhythmic drugs
7. Causes of acute renal failure
8. Discuss the reversible causes of cardiac arrest

## DISCIPLINE ELECTIVE III - PALLIATIVE CARE

NAME OF THE SUBJECT PAPER	: Palliative care
DURATION OF THEORY CLASSES	: 64 Hrs
THEORY EXAMINATION	: 50 Marks (40 U + 10 IA)
UNIVERSITY PRACTICAL EXAMINATION	: NIL
DURATION OF THEORY EXAMINATION	: 1 1/2 Hrs.

### Course description

This virtual one-day course is designed to offer physicians, nurses, social workers and other clinicians the information and skills needed to provide high quality palliative care to patients with serious illnesses in a variety of practice settings. It addresses the assessment and management of current challenges in palliative care, including the physical, psychological, social, and spiritual/existential sources of suffering experienced by patients and their families.

### Learning objectives

Upon completion of this activity, participants will be able to:

Access and manage physical, psychological, social, and spiritual/existential sources of suffering for patients and their families dealing with serious illnesses or towards the end of life

- Develop practical strategies for discussing patient fears, hopes, goals, and wishes for care in the face of serious illness and at the end of life, including balancing hope and honesty in discussing treatment options and dealing with the ethical, psychosocial and spiritual issues that arise
- Improve the access to quality palliative care for all people with serious illness regardless of setting, diagnosis, prognosis or age
- Describe key issues and principles of pain management with opioids, including equianalgesic dosing, common side effects, addiction, tolerance, and dependence

### Learning Outcomes

- Interactive learning formats include: Q&A, panel presentations, and case based discussions and ask the expert sessions.
- The course is designed to change both learner competence and performance in practice for primary and specialty palliative care practitioners.

## SYLLABUS CONTENT

### 1. Basic principles (20 Hrs)

- Definitions of palliative care; general palliative care; specialist palliative care
- Evolving nature of palliative care over the course of illness
- Re-adaptation and rehabilitation
- Personal qualities and attributes of palliative medicine

### 2. Physical care (20 Hrs)

- Initial Assessment - detailed history and examination
- Management of life limiting, progressive disease
- Management of vaginal discharge and bleeding

- Diagnosis of rectovaginal, rectovesical and vesicovaginal fistulae
  - Management of Urgency and dysuria/anuria
3. Psychosocial care (20 Hrs)
    - Social and Family Relationships
    - Communication with patients and relatives
    - Psychological responses of patients and carers to life-threatening illness and loss
    - Attitudes and responses of doctors and other professionals
    - Patient and family finance
  4. Culture, language, religion and spirituality (5 Hrs)
  5. Ethics (10 Hrs)
    - Theoretical ethics, applied ethics
  6. Legal framework, teamwork and management (5 Hrs)

### **DEC - Palliative care Model Question Paper**

**TIME: 1 1/2 HOURS**

**MAXIMUM MARKS: 40**

**(A) Short Answer (Answer any two)**

**(5x6=30)**

1. Indications and importance of providing palliative care
2. Principles of palliative care
3. Distinguish between palliative care and hospice care
4. Non pharmacological management for pain under palliative care
5. Psychosocial factors influencing palliative care

**(B) Very Short Answer (Any six)**

**(5x2=10)**

1. Signs of physiological death
2. Stages of palliative care
3. Definition of palliative care
4. Rehabilitation versus palliative care
5. Palliative care under hospital settings
6. Phases of rehabilitation
7. Pharmacotherapy for pain for patients under palliative care
8. Importance of palliative care

## DISCIPLINE ELECTIVE IV - BASIC AIRWAY MANAGEMENT

NAME OF THE SUBJECT PAPER	: Basic airway management
DURATION OF THEORY CLASSES	: 64 Hrs
THEORY EXAMINATION	: 50 Marks (40 U + 10 IA)
UNIVERSITY PRACTICAL EXAMINATION	: NIL
DURATION OF THEORY EXAMINATION	: 1 1/2 Hrs

### Course Description

They will get knowledge about fundamental skills required for Airway management, among the practiced in clinical postings and manage the respiratory, medication and high quality on training based on international standardized guidelines.

### Learning objectives

- They will trained well in airway compromise, and management of upper airway obstruction
- Understand the difference between airway management and Rescue breathing
- Learn the techniques needed to perform Rescue breathing.

### SYLLABUS CONTENT

1. Indications for artificial airways (20 HRS)
  - Relieving airway obstruction
  - Secretion removal
  - Protecting the airway
  - Positive Pressure Ventilation
2. Selecting and establishing an artificial airway (10 HRS)
  - Nasal airways
  - Pharyngeal airways
  - Tracheal airways
3. Airway clearance techniques (10 HRS)
  - Airway suctioning
  - Bronchoscopy
4. Airway maintenance (20 HRS)
  - Securing the airway and confirming placement
  - Providing adequate humidification
  - Minimizing nosocomial infections
  - Providing cuff care
  - Facilitating clearance of secretions
  - Troubleshooting airway emergencies
5. Extubation (10 HRS)
  - Indications
  - Procedure

- Post extubation care & complications

#### 6. Oxygen Therapy (10HRS)

- Sources of oxygen for therapy
- Storage of oxygen
- Oxygen delivery systems
- Hazards of oxygen
- Modes of O<sub>2</sub> therapy
- Monitoring O<sub>2</sub>
- Delivery systems (in vitro)
- Blood gases in patient (in vitro.)
- Pulse oximetry
- Economic issues

#### **TEXT BOOKS**

1. Egan's Fundamentals of Respiratory Care - Robert L. Wikins, James K Stoller, Craig L Scalan (Mosby)
2. Critical Care Secrets: Parsons, Wiener-Kronish, Jaypee Brothers

**DEC - BASIC AIRWAY MANAGEMENT  
MODEL QUESTION PAPER**

**TIME: 1 1/2 HOURS**

**MAXIMUM MARKS: 40**

**(A) Short Answer (Answer any FIVE) (5x6=30)**

1. On a short of breath you encounter a patient in respiratory failure due to pulmonary edema. What other factors should you assess to determine how difficult an intubation will be?
2. What are the two most common ways people make DL intubations harder than they need to be?
3. What are usual reasons to incubate that you will encounter basically three classes?
4. What percentages of intubation are considered difficult in emergency settings?
5. How will you estimate the tube size to intubation this child?
6. How deep would you place the tube?

**(C) Very Short Answer (Any FIVE) (5x2=10)**

1. Write the name of 3 types of supra ventricular tachycardias.
2. Write the site and manner of hands placement while doing CPR in an adult.
3. What should be the compression to Ventilation ratio while providing CPR to an adult?
4. What should be the compression rate while providing CPR to an adult?
5. What should be the depth of chest compressions while providing CPR to an adult?
6. After how many minutes of providing chest compression, respiratory therapist should be changed to avoid fatigue?
7. While providing CPR, if there is a palpable pulse, but no spontaneous breathing, what should be the rescue breathing rate?
8. During CPR, with external chest compression, approximately what fraction of normal cardiac output can be usually produced?

# QUESTION BANK

# B.Sc. AHS I YEAR

## PAPER-1: ANATOMY

### UNIT: 1 GENERAL ANATOMY

#### HUMAN CELL

Q. NO	TOPICS	TYPE
1.	Discuss the Cell & its Organelles.	SAQ

#### EPITHELIUM

Q.NO	TOPICS	TYPE
1.	Classification of Epithelium with its examples.	SAQ
2.	Draw the neat label diagram of Simple epithelium with its examples.	SAQ
3.	Draw the neat label diagram of Compound epithelium with its examples.	SAQ
4.	Write a note on Goblet cell.	VSAQ
5.	Write a note on Basement membrane of epithelium.	VSAQ

#### GLANDS

Q.NO	TOPICS	TYPE
1.	Classification of Glands with its examples.	SAQ
2.	Discuss the Microscopic structure of Mucous / Serous / Mixed salivary gland with its examples.	SAQ

#### CARTILAGE

Q.NO	TOPICS	TYPE
1.	Discuss the Microscopic structure of Hyaline cartilage / Elastic cartilage / White fibro cartilage with its examples.	SAQ
2.	Classification of Cartilage with its examples.	VSAQ
3.	Write a note on Perichondrium.	VSAQ

#### BONE

Q.NO	TOPICS	TYPE
1.	Classification of Bones with its examples.	SAQ
2.	Draw & Discuss the Microscopic structure of Compact bone (T.S)	SAQ
3.	Discuss the blood supply of long bone.	SAQ
4.	List out the bones in region wise.	SAQ
5.	State the parts of growing long bone.	VSAQ
6.	State the parts of adult long bone.	VSAQ
7.	Write a note on Periosteum.	VSAQ
8.	Write a note on carpal bones.	VSAQ
9.	Write a note on Sesamoid bone.	VSAQ
10.	Write a note on Fontanellae of fetal skull.	VSAQ
11.	Write a note on Haversian system of compact bone.	VSAQ
12.	List out the structural differences between the Bone & Cartilage.	VSAQ

#### JOINTS

Q.NO	TOPICS	TYPE
1.	Classification of Joints with its examples.	SAQ
2.	Classification of Synovial joint with its examples.	SAQ
3.	Discuss the structure of synovial joint.	SAQ

4.	Classification of Cartilagenous joint with its examples.	SAQ
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### MUSCULAR TISSUE

Q.NO	TOPICS	TYPE
1.	Draw & Discuss the Microscopic structure of Skeletal muscle / Cardiac muscle / Smooth muscle with its examples.	SAQ
2.	Classification of muscular tissue with its examples.	VSAQ
3.	State the muscles of mastication & its nerve supply.	VSAQ
4.	List out the microscopic structural differences between the types of muscles.	VSAQ

### SKIN

Q.NO	TOPICS	TYPE
1.	Draw & Discuss the Microscopic structure of Thick / Thin skin.	SAQ
2.	Classification / Types of skin with its example.	VSAQ
3.	List out the structural differences between the types of skin.	VSAQ

## UNIT: 2 CARDIOVASCULAR SYSTEMS

### MEDIASTINUM

Q.NO	TOPICS	TYPE
1.	Definition, location & general boundary / outline boundary of Mediastinum.	SAQ
2.	Discuss the boundaries & contents of Superior mediastinum.	SAQ
3.	Discuss the boundaries & contents of Inferior mediastinum.	SAQ

### HEART

Q.NO	TOPICS	TYPE
1.	Explain the gross features of Right atrium under following headings - a) Definition, b) location, c) external features, d) internal features, e) Function, f) arterial supply.	LAQ
2.	Describe the Blood supply of Heart.	LAQ
3.	Discuss the location & External features of Heart.	SAQ
4.	Discuss the Valves of Heart. (A.V -valve & Semilunar valve)	SAQ
5.	Discuss the Systemic & Pulmonary circulation of Heart.	SAQ
6.	Discuss the Right coronary artery / Left coronary artery under following headings - a) Origin, b) course, c) branches.	SAQ
7.	Write a note on Apex of Heart.	VSAQ
8.	List out the chambers & great blood vessels of Heart.	VSAQ
9.	Trace the conducting system of Heart.	VSAQ
10.	State the definition, layers, sinuses & nerve supply of Pericardium.	VSAQ

### BLOOD VESSELS

Q.NO	TOPICS	TYPE
1.	Describe the Portal vein under following headings - a) Definition, b) formation, c) location, d) course, e) branches, f) Parts, g) Tributaries.	LAQ
2.	Explain the Cavernous sinus under following headings - a) Definition, b) location, c) measurement, d) extension, e) relations,	LAQ

	f) Tributaries, g) communications.	
3.	Parts & branches of Aorta	SAQ
4.	Discuss the origin, course, parts & branches of Subclavian artery.	SAQ
5.	Discuss the origin, course, parts & branches of Axillary artery.	SAQ
6.	Discuss the origin, course & branches of Brachial artery.	SAQ
7.	Discuss the origin & branches of Internal iliac artery.	SAQ
8.	Discuss the origin, course & branches of External carotid artery.	SAQ
9.	Discuss the origin, parts, course & branches of Internal carotid artery.	SAQ
10.	Classification of Dural venous sinuses.	SAQ / VSAQ
11.	Enumerate the branches of Brachial artery.	VSAQ
12.	State the branches of Radial & Ulnar artery.	VSAQ
13.	State the branches of Femoral artery.	VSAQ
14.	List out the sites of Peripheral pulse.	VSAQ
15.	List out the sites of Porto caval anastomosis.	VSAQ
16.	State the formation, course & termination of Great saphenous vein / Short saphenous vein.	VSAQ
17.	Write a note on Cysterna chyli.	VSAQ
18.	Formation, location & branches of Superficial palmar arch / Deep palmar arch.	VSAQ

### UNIT: 3 RESPIRATORY SYSTEM

Q.NO	TOPICS	TYPE
1.	Explain the <b>Larynx</b> under following headings - a) Definition, b) location, c) extension, d) measurement, e) Skeletal framework, f) function.	LAQ
2.	Explain the <b>Lung</b> under following headings - a) Definition, b) location, c) coverings, d) weight & Colour, e) external features, f) medial surface impression, g) hilum, h) Root of lung, i) blood supply, j) note on Bronchopulmonary segments.	LAQ
3.	Discuss the definition, formation & structures opening in the Lateral wall of nose.	SAQ
4.	Discuss the definition, extension, measurement, external feature of Trachea.	SAQ
5.	Discuss the definition, layers, parts of layers, recesses, nerve supply of Pleura.	SAQ / VSAQ
6.	State the parts of Respiratory system.	VSAQ
7.	Enumerate the structures forming the Nasal septum.	VSAQ
8.	Write a note on Carina.	VSAQ
9.	Write a note on Bronchopulmonary segments.	VSAQ
10.	List out the Para nasal air sinuses.	VSAQ
11.	Enumerate the muscles of Respiration & state its nerve supply.	VSAQ

### UNIT: 4 DIGESTIVE SYSTEMS

Q.NO	TOPICS	TYPE
1.	Describe the <b>Tongue</b> under following headings - a) Definition, b) location, c) parts, d) external features, e) muscles, f) Nerve supply.	LAQ
2.	Explain the <b>Pharynx</b> under following headings -	LAQ

	a) Definition, b) location, c) extension, d) sub-division, e) Muscles forming the pharynx, f) nerve supply.	
3.	Explain the <b>Stomach</b> under following headings - a) Definition, b) location, c) capacity, d) measurement, e) External features, f) Parts, g) relations, h) blood supply.	LAQ
4.	Describe the <b>Duodenum</b> under following headings - a) Definition, b) location, c) parts, d) measurement, e) external features, f) Internal features (2 <sup>nd</sup> part), g) blood supply.	LAQ
5.	Explain the <b>Liver</b> under following headings - a) Definition, b) location, c) Colour, d) weight, e) external features, f) Relations, g) bare area, h) Porta hepatis, i) blood supply, j) function.	LAQ
6.	Explain the <b>Pancreas</b> under following headings - a) Definition, b) location, c) anatomical & functional parts, d) measurement, e) Colour, f) external features, g) relations, h) Duct of pancreas, i) Blood supply.	LAQ
7.	Discuss the location & external features of Tongue.	SAQ
8.	Discuss the parts, muscles of Tongue & state its nerve supply.	SAQ
9.	Discuss the location, external features, parts & blood supply of stomach.	SAQ
10.	Discuss the external & internal features of the 2 <sup>nd</sup> part of Duodenum.	SAQ
11.	Discuss the <b>Caecum</b> under following headings - a) Definition, b) location, c) measurement, d) types, e) external features, f) Internal features, g) blood supply.	SAQ
12.	Discuss the <b>Appendix</b> under following headings - a) Definition, b) location, c) parts, d) measurement, e) position, f) Blood supply.	SAQ
13.	Discuss the characteristic features / cardinal features of Large intestine.	SAQ
14.	Discuss the Extra hepatic biliary apparatus under following headings - a) Definition, b) parts, c) measurement, d) function, e) Note on gall bladder.	SAQ
15.	Discuss the definition, location, origin, course & branches of Coeliac trunk.	SAQ
16.	List out the parts of Digestive system.	VSAQ
17.	State the parts & papillae of Tongue.	VSAQ
18.	State the nerve supply of Tongue.	VSAQ
19.	Enumerate the muscles of Tongue.	VSAQ
20.	State the extension & sub-divisions of Pharynx.	VSAQ
21.	State the extension & constrictions of Esophagus.	VSAQ
22.	List out the structural differences between the Jejunum & Ileum.	VSAQ
23.	State the location & types of Caecum.	VSAQ
24.	State the location / parts & position of Appendix.	VSAQ
25.	Write a note on Porta hepatis.	VSAQ
26.	Write a note on bare area of Liver.	VSAQ
27.	Write a note on Pancreatic duct.	VSAQ
28.	Enumerate the parts & function of Biliary apparatus.	VSAQ
29.	Classification of Salivary glands.	VSAQ
30.	State the branches of Superior mesenteric artery.	VSAQ
31.	State the branches of Inferior mesenteric artery.	VSAQ

32.	State formation of Marginal artery / artery of Drummond.	VSAQ
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### UNIT: 5 URINARY SYSTEM

Q.NO	TOPICS	TYPE
1.	Explain the Kidney under following headings - a) Definition, b) location, c) measurement, d) Colour, e) external features, f) Hilum, g) relations, h) coverings, i) internal features, j) Blood supply.	LAQ
2.	Explain the Urinary bladder under following headings - a) Definition, b) location, c) shape, d) measurement, e) capacity, f) External features, g) relations, h) supports, i) Internal features (Trigone of urinary bladder), j) blood supply, k) role.	LAQ
3.	Discuss the location & relations of Kidney.	SAQ
4.	Discuss the extension, parts, measurement, constrictions & blood supply of Ureter.	SAQ
5.	Discuss the external features & supports of Urinary bladder.	SAQ
6.	State the parts of Urinary system.	VSAQ
7.	Write a note on hilum of kidney.	VSAQ
8.	State the extension, parts & constrictions of ureter.	VSAQ
9.	Write a note on Trigone of urinary bladder.	VSAQ
10.	State the definition, extension & parts of Male urethra.	VSAQ
11.	Write a note on Female urethra.	VSAQ

### UNIT: 6 REPRODUCTIVE SYSTEMS

#### MALE REPRODUCTIVE SYSTEM

Q.NO	TOPICS	TYPE
1.	Explain the Testis under following headings - a) Definition, b) location, c) measurement, d) shape, e) external features, f) Coverings, g) internal features, h) functions, i) blood supply.	LAQ
2.	Describe the Prostate gland under following headings - a) Definition, b) location, c) shape, d) measurement, e) shape, f) External features, g) lobes, h) coverings, i) blood supply.	LAQ
3.	Discuss the location, external features, layers & blood supply of Scrotum.	SAQ
4.	Discuss the External & internal features of Testis.	SAQ
5.	Discuss the External features, lobes & coverings of Prostate.	SAQ
6.	State the parts of Male Reproductive system.	VSAQ.
7.	Enumerate the layers of Scrotum & state its nerve supply.	VSAQ.
8.	State the parts & role of Epididymis.	VSAQ.
9.	State the coverings of Testis & Prostate.	VSAQ.
10.	State the coverings & contents of Spermaticcord.	VSAQ.

#### FEMALE REPRODUCTIVE SYSTEM

Q.NO	TOPICS	TYPE
1.	Explain the Mammary gland under following headings - a) Definition, b) location, c) extension, d) shape, e) structures / features, f) Blood supply.	LAQ
2.	Explain the Uterus under following headings - a) Definition, b) location, c) shape, d) measurement, e)	LAQ

	external features, f) Positions, g) relations, h) supports, i) blood supply.	
3.	Discuss the Gross structure of Mammary gland.	SAQ
4.	Discuss the location & external features of Uterus.	SAQ
5.	Discuss the location, position & supports of Uterus.	SAQ
6.	Discuss the external & internal features of Ovary.	SAQ
7.	State the parts of Female Reproductive system.	VSAQ
8.	State the parts & role of Fallopian tube.	VSAQ
9.	Enumerate the ovarian follicles.	VSAQ
10.	State the parts & positions of Uterus.	VSAQ

#### UNIT: 7 ENDO CRINE SYSTEM

Q.NO	TOPICS	TYPE
1.	Describe the <b>Thyroid gland</b> under following headings - a) Definition, b) location, c) hormones, d) peculiarities, e) external features, f) Parts, g) relations, h) coverings, i) blood supply, j) Functions.	LAQ
2.	Explain the <b>Pituitary gland</b> under following headings - a) Definition, b) location, c) shape, d) measurement, e) external features & hormones, f) Blood supply.	LAQ
3.	Explain the <b>Suprarenal gland</b> under following headings - a) Definition, b) location, c) measurement, d) external features, e) Internal features, f) hormones, g) blood supply.	LAQ
4.	Discuss the external features of Thyroid gland, state its coverings & blood supply.	SAQ
5.	Discuss the external features & hormones of Pituitary gland.	SAQ
6.	Discuss the external & internal features of Suprarenal gland & state its hormones.	SAQ
7.	List out the Endocrine glands.	VSAQ
8.	Classification of Endocrine glands.	VSAQ
9.	State the location & blood supply of Thyroid gland.	VSAQ
10.	State the location & hormones of Pituitary gland.	VSAQ
11.	State the location & hormones of Parathyroid gland.	VSAQ

#### UNIT: 8 NERVOUS SYSTEM

Q.NO	TOPICS	TYPE
1.	Classification of Nervous system.	SAQ
2.	Discuss the Cerebrum under following headings - a) Definition, b) location, c) external features.	SAQ
3.	Discuss the external features & blood supply of Cerebrum.	SAQ
4.	Discuss the Supero-lateral surface of Cerebrum.	SAQ
5.	Discuss the Cerebellum under following headings - a) Definition, b) location, c) nucleus, d) functions, e) blood supply.	SAQ
6.	Discuss the Spinal cord under following headings - a) Definition, b) location, c) extension, d) measurement, e) coverings, f) Blood supply.	SAQ
7.	Discuss the extension & external features of Spinal cord.	SAQ
8.	Discuss the location & external features of Midbrain.	SAQ
9.	Discuss the location & external features of Pons.	SAQ
10.	Discuss the location & external features of Medulla oblongata.	SAQ
11.	Discuss the blood supply of Brain.	SAQ

12.	Discuss the formation of Circle of Willis.	SAQ
13.	Classification of Cranial nerves.	SAQ / VSAQ
14.	State the parts of Brain.	VSAQ
15.	Write a note on Sulci & Gyri.	VSAQ
16.	State the location & nucleus of Cerebellum.	VSAQ
17.	State the layers of Meninges & its space.	VSAQ
19.	State the layers of meninges & its modification.	VSAQ
18.	State the modification of Spinal meninges.	VSAQ
20.	Enumerate the cranial nerves emerges from Midbrain / Pons / Medulla oblongata.	VSAQ
21.	List out the Cranial nerves.	VSAQ
22.	List out the Basal nuclei	VSAQ
23.	State the location & parts of Corpus callosum.	VSAQ

#### UNIT: 9 GENERAL EMBRYOLOGY

Q.NO	TOPICS	TYPE
1.	Discuss the stages of Spermatogenesis.	SAQ
2.	Discuss the stages of Oogenesis.	SAQ
3.	Discuss the Placenta under following headings - a) Definition, b) external features, c) functions.	SAQ
4.	Write a note on Fertilization & state its phases.	VSAQ
5.	Write a note on Implantation.	VSAQ
6.	Write a note on Ovulation.	VSAQ

## PAPER 2 - PHYSIOLOGY

### UNIT - I

#### GENERAL PHYSIOLOGY

##### Very short answer questions (VSAQ)

1. Draw labeled diagram of human cell and mention any four functions of cell organelles.
2. Explain one function of
  - a) Mitochondria, b). Golgi apparatus
  - c) Endoplasmic reticulum d) Ribosome
3. Give two differences between mitosis and meiosis.
4. Name the phases of mitosis
5. Name different types of intercellular connections?
6. Classify various mechanisms of transport across cell membrane.
7. Describe different mechanism of passive transport across the cell membrane
8. Describe different mechanism of active transport across the cell membrane
9. Define osmosis. Give examples.
10. Define symport. Give one example.
11. Define antiport. Give one example.
12. Define homeostasis. Name the types of feedback mechanisms involved in homeostasis with one example.
13. Briefly explain negative feedback mechanisms with examples.
14. Briefly explain positive feedback mechanisms with examples.
15. Give normal values of i) Intracellular fluid (ICF), ii) Extracellular fluid (ECF), iii) plasma and iv) Interstitial fluid

#### HEMATOLOGY (BLOOD)

##### Long answer questions (LAQ)

1. What is erythropoiesis? Describe the stages and factors influencing it.
2. What is anemia? Describe the types of anemia. Give the blood picture in each of them.
3. What is immunity? Explain its types.
4. Explain the mechanism of hemostasis.
5. Explain intrinsic and extrinsic mechanisms of blood clotting.
6. Name the blood group systems. Explain the basis for its classification. Add a note on its clinical importance.

##### Short answer questions (SAQ)

1. Briefly describe the composition of blood.
2. Write the functions of blood.
3. List the plasma proteins. Write its functions.
4. What is Erythropoiesis? List its stages.
5. Define anemia with types. Explain iron deficiency anemia.
6. Briefly explain ABO and Rh system.
7. Erythroblastosis fetalis.
8. Define hemostasis with stages.
9. Name the clotting factors.
10. Define immunity. What are its types?

### Very short answer questions (VSAQ)

1. Classifications of WBC.
2. Functions of neutrophil.
3. What is Phagocytosis?
4. Functions of eosinophil.
5. Functions of basophil.
6. Functions of lymphocytes.
7. Functions of red blood cell (RBC).
8. Write the normal values of hemoglobin in adults male and female.
9. Functions of hemoglobin.
10. Functions of platelets.
11. What is hemophilia?
12. What is anticoagulant?
13. Name any two anticoagulants.
14. Name the blood group systems.
15. Define Landsteiner's law.  
Mismatch transfusion.

## UNIT - II

### CARDIOVASCULAR SYSTEM

#### Long answer questions (LAQ)

1. Define cardiac cycle. Explain with the help of a diagram the mechanical and pressure changes during cardiac cycle.
2. Draw a labelled diagram showing the innervations of heart. Describe the regulation of heart rate.
3. Define blood pressure. Give its normal values. Write the factors controlling blood pressure.
4. Define cardiac output and cardiac index. Give its normal values. Describe the factors regulating cardiac output.
5. What is shock? What are its types? Discuss the cardiovascular compensatory changes that occur during shock.

#### Short Answer Questions (SAQ)

1. Write the difference between pulmonary and systemic circulation.
2. Briefly describe the conducting system of heart.
3. Draw labeled diagram of conducting system of heart.
4. List out the properties of cardiac muscle. Briefly explain any two properties.
5. Draw a normal Lead II ECG indicating its waves and segments.
6. Define blood pressure (BP). What are the components of it and write its normal range.
7. List the factors affecting blood pressure
8. Define cardiac cycle. List the events during cardiac cycle.
9. Define shock. Name its types.
10. Briefly explain the types of heart sounds.

### **Very Short Answer Questions (VSAQ)**

1. Write any two differentiating points between pulmonary and systemic circulation.
2. Define blood pressure.
3. What is systolic blood pressure? Write its normal value.
4. What is diastolic blood pressure? Write its normal value.
5. Define pulse. Write its normal range.
6. Write any two differences between tachycardia and bradycardia.
7. Define cardiac output. Write its normal values.
8. Define stroke volume. Write its normal values.
9. What is electrocardiogram (ECG)?
10. List any four properties of cardiac muscle.

### **UNIT III**

### **RESPIRATORY SYSTEM**

#### **Long answer questions (LAQ)**

1. Describe the mechanics of breathing.
2. Explain oxygen transport in the blood. Describe the oxygen dissociation curve.
3. Discuss the transport of carbon dioxide in the blood.
4. Name the respiratory centers. Explain the neural regulation of respiration.
5. Classify hypoxia. Describe the types with suitable examples.

#### **Short answer questions (SAQ)**

1. Briefly explain the mechanism of inspiration.
2. Briefly explain the mechanism of expiration.
3. Draw labeled diagram of pontine and medullary respiratory centers.
4. Briefly explain the transport of oxygen in the blood.
5. Briefly explain the transport of carbon dioxide in the blood.
6. Draw labeled diagram of normal spirogram indicating lung volume and capacities.
7. Define and give normal values of lung volumes.
8. Define and give normal values of lung capacities.
9. What is surfactant? Give its function.
10. Define hypoxia. List its various types.
11. Classify and explain any one type of hypoxia.

#### **Very short answer questions (VSAQ)**

1. Name the inspiratory muscles.
2. Name the expiratory muscles.
3. Name the respiratory and non-respiratory functions of lungs.
4. Write any four functions of respiratory system.
5. Function of surfactant.
6. Name the respiratory centers.
7. Normal values of lung volumes.
8. Normal values of lung capacities.
9. Draw labeled diagram of respiratory center.
10. List the types of hypoxia.
11. Vital Capacity.

12. What is dead space?
13. What is hypoxia?
14. What is dyspnea?
15. What is cyanosis?
16. What is periodic breathing?

#### **UNIT - IV**

#### **IV - GASTRO-INTESTINAL PHYSIOLOGY**

##### **Long Answer Questions (LAQ)**

1. Describe the phase and control of deglutition. Add a note on its applied importance.
2. Write the composition of saliva? Describe the regulation of salivary secretion. Discuss its functions.
3. Describe the composition and phases of gastric secretion. Briefly explain the HCl secretion in stomach.
4. Describe the phases of pancreatic secretion.

##### **Short Answer Questions (SAQ)**

1. Give the composition and functions of saliva?
2. Give composition and functions of gastric secretion?
3. Briefly explain mechanism of HCl secretion
4. Give composition and functions of pancreatic secretion?
5. Briefly explain entero-hepatic circulation with neat diagram.
6. Briefly explain the functions of liver.
7. Classify gastro intestinal (GI) hormones and write its actions of any two hormones.
8. Peptic ulcer.

##### **Very Short Answer Questions (VSAQ)**

1. What is mastication?
2. What is deglutition?
3. Write any four functions of saliva.
4. Write any four functions of liver.
5. Functions of pancreatic juice.
6. Name any four GI hormones.
7. Functions of gastrin.
8. Functions of secretin.
9. Functions of cholecystokinin pancreozymin.
10. What are the movements of stomach?
11. What are the movements of small intestine?
12. What are the movements of large intestine?
13. Write any four functions of bile.
14. What is the difference between liver and gall bladder bile?

#### **UNIT - IV**

#### **RENAL PHYSIOLOGY (EXCRETORY SYSTEM)**

##### **Long Answer Questions (LAQ)**

1. Describe the mechanism of urine formation.
2. Define GFR (Glomerular filtration rate). Write its normal values. Briefly explain the factors affecting GFR.

3. Describe the Structure and functions of juxta glomerular apparatus
4. Draw a labeled diagram showing nerve supply to the urinary bladder. Explain the mechanism of micturition. What is a neurogenic bladder?
5. Describe the role of counter current multiplier and exchange system in concentrating urine.
6. Discuss the role of different buffer systems in regulation of acid - base balance.

#### Short Answer Questions (SAQ)

1. Briefly explain the functions of kidney.
2. Briefly explain the formation of urine.
3. Briefly explain mechanism behind voiding of urine.
4. Define GFR (Glomerular filtration rate). Write its normal values. List the factors affecting GFR.
5. What is the normal renal blood flow? How is it measured?
6. List the Special features of renal blood flow.
7. List any three differences between Cortical and Juxtamedullary nephrons.
8. Draw a labeled diagram of juxtaglomerular apparatus. What are its functions?
9. With a flow chart and suitable diagram, indicate the process of micturition reflex.
10. Briefly explain the role of ADH (Anti-diuretic hormone) on kidney?
11. Briefly explain renal dialysis.

#### Very Short Answer Questions (VSAQ)

1. Draw labeled diagram of a nephron.
2. Draw labeled diagram of filtration membrane
3. Write any four functions of kidney.
4. Functions of macula densa and Juxtaglomerular cells
5. What are the steps of urine formation?
6. Give one substances used to measure GFR and renal plasma flow.
7. What is micturition reflex?
8. What is cystometrogram?
9. Filtration fraction.
10. Define renal clearance.
11. Name the types of renal clearance.
12. List any three differences between cortical and medullary nephrons.
13. What is diuresis?
14. What is diuretics?
15. Name any two diuretics.
16. Give two functions of skin?

### UNIT - V

#### V - ENDOCRINE PHYSIOLOGY

#### Short Answer Questions (SAQ)

1. List the anterior pituitary (Adenohypophysis) hormones. Give any two hormone functions.
2. Mention the physiological role of GH (Growth hormone). Add a note on its hyper and hypo secretion.
3. Name the posterior pituitary hormones. Give their functions.
4. Name the adrenal cortical and medullary hormones. Mention the functions of glucocorticoids.

5. Mention the functions of aldosterone.
6. Name the thyroid hormones. Write its functions.
7. Name the hormones synthesized by pancreas. Mention their role in maintaining blood glucose.
8. Explain the actions of hormones on hyperglycemia and hypoglycemia.

### **Very Short Answer Questions (VSAQ)**

1. Name any four hypothalamic hormones.
2. Name the anterior pituitary (Adenohypophysis) hormones.
3. List the posterior pituitary (Neurohypophysis) hormones
4. What is diabetes mellitus? What are its types?
5. What is the difference between gigantism and acromegaly?
6. What is dwarfism?
7. Name the thyroid hormones.
8. Write any two functions of thyroid hormones.
9. What is Grave's disease?
10. What is myxedema?
11. What is cretinism?
12. What is the difference between myxedema and cretinism?
13. Functions of parathormone.
14. Functions of mineralocorticoids (Aldosterone).
15. Functions of glucocorticoids.
16. What is Cushing's syndrome?
17. What is Addison's disease?
18. What is the difference between diabetes mellitus and diabetes insipidus?
19. Name the hormones secreted by pancreas.
20. Name the diabetogenic and antidiabetogenic hormones.
21. Functions of insulin.
22. Functions of glucagon.
23. What is diuresis? What are its types?
24. Functions of adrenal medullary hormone.
25. What is fight or flight response?

## **V- REPRODUCTIVE SYSTEM**

### **Short answer questions (SAQ)**

1. What is spermatogenesis? Mention its stages.
2. Briefly explain the ovarian cycle.
3. Briefly explain ovulation with hormonal regulations.
4. What is menstrual cycle? Briefly explain its phases.
5. Briefly explain any two female contraceptive methods.
6. List the contraceptive methods in male and female.
7. Explain the IUCD (Intrauterine contraceptive device).
8. List the functions of estrogen.
9. List the functions of progesterone.

### **Very short answer questions (VSAQ)**

1. Write any two functions of testosterone.
2. What is menarche and menopause?
3. What is menstrual cycle?
4. List the placental hormones.
5. List the functions of Follicular stimulating hormone (FSH).

6. List the functions of sertoli cells
7. Functions of placenta.
8. Name the factors influencing spermatogenesis.
9. What is fertilization?

## UNIT - VI

### NERVE MUSCLE PHYSIOLOGY

#### Short answer questions (SAQ)

1. Draw the labeled diagram of neuromuscular junction (NMJ).
2. Briefly explain the ionic basis of action potential in a neuron.
3. Briefly explain the steps of neuromuscular transmission of signal impulse.
4. With the help of a flow chart, depict the steps of muscle contraction.
5. Briefly explain the excitation - contraction coupling in a skeletal muscle
6. Write any four differences between skeletal, cardiac and smooth muscles.
7. Myasthenia gravis

#### Very short answer questions (VSAQ)

1. Describe the structure of a neuron.
2. Give the normal value of resting membrane potential of i) motor neuron and ii) skeletal muscle.
3. Give normal resting membrane potential of neuron and skeletal muscle.
4. List any two properties of nerve fibers.
5. Name any two neuromuscular blocking agent
6. Draw the structure of sarcomere
7. Name the muscle proteins.
8. List any four properties of skeletal muscle.
9. Rigor mortis

## VI - CENTRAL NERVOUS SYSTEM (CNS)

#### Short answer questions (SAQ)

1. Briefly explain the divisions of nervous system.
2. With a flow chart and suitable diagram briefly explain the synaptic transmission of excitatory postsynaptic potential (EPSP).
3. With a flow chart and suitable diagram briefly explain the synaptic transmission of inhibitory postsynaptic potential (IPSP).
4. Briefly explain the functions of cerebral cortex.
5. What are the functions of cerebellum?
6. What are the functions of basal ganglia?
7. What are the functions of hypothalamus?

#### Very short answer questions (VSAQ)

1. Name any four properties of synapse.
2. Write any two functions of thalamus.
3. Functions of medulla oblongata.
4. Functions of cerebro spinal fluid (CSF).
5. Name any two neurotransmitters.
6. Name any four hypothalamic hormones.
7. Name the anterior pituitary (Adenohypophysis) hormones.
8. List the posterior pituitary (Neurohypophysis) hormones

## VI - SPECIAL SENSES

#### Short answer questions (SAQ)

1. Trace the visual pathway with a neat labeled diagram
2. Explain the errors of refraction

3. Trace the auditory pathway with a neat labeled diagram
4. Functions of Middle ear.
5. Trace the olfactory pathway.

**Very short answer questions (VSAQ)**

1. Name the receptors for vision, smell, taste and hearing.
2. Functions of eye
3. List the primary colors of vision
4. Accommodation reflex.
5. What are the functions of rods and cones in eye?
6. Explain the terms ageusia, hypogeusia, dysgeusia.
7. Name the primary taste sensations

# PAPER-3: BIOCHEMISTRY

## UNIT-I: INTRODUCTION TO BIOCHEMISTRY

### Long answer questions

(10 marks)

1. How is acid base balance maintained in the body?
2. Write in detail about Acid base disorders

### Short Questions

(6 marks)

1. Discuss the different buffer system of acid base homeostasis.
2. What is the normal PH of blood? How is it maintained?
3. Explain the role of lungs in acid base system
4. Glass electrode and determination of pH
5. Explain the Metabolic acidosis & Metabolic alkalosis
6. Explain the Respiratory acidosis & Respiratory alkalosis
7. Role of kidney in the regulation of blood pH
8. Biochemical assessment of acid base balance

### Very Short answer questions:

(3 marks)

1. Define pH. What is the normal values of blood & urine PH
2. Define buffer and give 2 examples.
3. Define acid/ base with example
4. Write any 2 conditions for acid base imbalance.
5. What is Henderson Hasselbalch equation
6. Define Anion gap with example
7. List out any 2 causes & symptoms for Respiratory acidosis & alkalosis
8. List out any 2 causes & symptoms for Metabolic acidosis & alkalosis
9. Define isoelectric PH.

## PROTEINS

### Long answer questions

(10 marks)

1. Define proteins & detail in classification of Proteins with suitable examples
2. Describe the different levels of protein structure in detail with suitable diagram

### Short Questions

(6 marks)

1. What are Essential amino acids & mention its clinical significance
2. Mention any five biologically important peptides & its clinical role
3. Define Protein denaturation & causes, characteristics with example
4. Classify amino acids in detail with example.
5. Explain Transamination & Give one example.
6. Functions of plasma proteins
7. Define Electrophoresis & its clinical significance
8. Define Chromatography & its clinical significance
9. Explain the secondary structural organization of proteins
10. Mention the hydrolytic products of proteins
11. Precipitation reactions of protein
12. Define peptide bond formation & characteristics of peptide bond
14. Determination protein structure
15. Biological functions of amino acids
16. Biological functions of proteins.

**Very Short answer questions:****(3 marks)**

1. Name any 4 agents causing denaturation of protein
2. Name any 2 defense & buffer proteins
3. Name the Sulphur containing essential amino acid & functions.
4. Explain oxidative deamination with example
5. Explain decarboxylation with example
6. Mention the Properties of proteins
7. Name the conjugated protein with example
8. Name the derived protein with example
9. Define A:G ratio
10. Nutritional classes of proteins with example
11. Define zwitterion
12. Fibrous & globular proteins

**ENZYMES****Long answer questions****(10 marks)**

1. Classify enzymes? Explain any 4 factors affecting the enzymes activity
2. Explain the different types of enzyme inhibition with suitable examples

**Short Notes****(6 marks)**

1. How are enzymes classified and give one example for each class?
2. Explain factors affecting enzyme activity
3. Mention the clinical applications of enzymes and how they are useful in diagnosis of disease
4. Explain the features of active site of enzyme
5. Explain the competitive inhibition with suitable example
6. Explain the non-competitive inhibition with suitable example
7. What are the Co-enzymes & Explain the features with example
8. Explain the regulation of enzyme activity
9. Define Iso-enzyme? Give two examples and its importance in clinical diagnosis
10. Explain the types of specificity

**Very Short answer questions****(3 marks)**

1. Define Enzymes & Catalyst
2. Define Active site
3. What is Co-enzymes, mention any 2 examples with significance.
4. Define Enzyme unit
5. Define Apo enzyme & Holoenzymes
6. What is Suicide Inhibition
7. List any 3 Therapeutic uses of enzymes.
8. Plasma enzymes
9. Define km
10. Koshland's induced fit theory
11. Fischer's template theory
12. Prosthetic groups
13. Examples of Metalloenzymes & Metal activated enzymes

## UNIT II - CARBOHYDRATES

### Long answer questions

(10 marks)

1. Write in detail about the Polysaccharides and mention its importance.
2. Properties of Monosaccharides
3. Define Carbohydrates & detail in classification of carbohydrates with examples
4. Explain the reaction of Monosaccharides.

### Short Questions

(6 marks)

1. Define carbohydrate and classify with examples
2. Write a note on Mucopolysaccharides & mention one function of each
3. Differentiate between Glycogen and Starch
4. Define Mutarotation
5. List out the functions of carbohydrates
6. Explain the Clinical importance of monosaccharides
7. Properties of monosaccharides
8. Explain Homopolysaccharides & mention their function
9. Write a note on Disaccharides
10. Define glycosides? Name any 3 glycosides & mention their function

### Very Short answer questions

(3marks)

1. What is heparin? Mention its composition & function
2. List any 2 reducing sugars
3. List any 4 functions of glycoprotein
4. Difference between glycoprotein & proteoglycan
5. Why is sucrose a non-reducing sugar
6. Mention the clinical application of Inulin & Dextran
7. Difference between reducing and non-reducing sugars
8. Define invert sugar
9. What is cellulose? Mention its function
10. Note on Anomers
11. Define Epimers with examples
12. Biological importance of mannitol
13. Optical isomerism with examples.
14. Define amino sugars with examples
15. Define glycosides

## NUCLEIC CHEMISTRY

### Short Answer Questions

(6 marks)

1. List any 5 synthetic analog bases and mention its function
2. Short notes on types of RNA & mention its function
3. Define nucleoside and nucleotide by giving suitable examples.
4. Describe the structure of t-RNA and mention its function
5. List the important functions of nucleotides
6. Give a detailed account on Secondary structure of DNA
7. Difference between DNA and RNA
8. Difference between Purines and Pyrimidines

**Very Short Answer Questions****(3 marks)**

1. Name the purine and pyrimidine bases of DNA & RNA
2. Differentiate Ribose and Deoxy ribose.
3. Name any 4 minor bases
4. Draw a neat labeled diagram of DNA
5. Mention the types of DNA and give 3 points each
6. What are the biological important bases and its function
7. Define Chargaff's rule
8. Functions of nucleic acid
9. What is ribosomal RNA
10. Draw a neat labeled diagram of t-RNA

**UNIT III - LIPIDS****Long answer questions****(10 marks)**

1. what are lipids? classify them. Give biological significance of lipids.
2. what are fatty acids? classify them. Give biological significance of polyunsaturated fattyacids
3. Explain the phospholipids with examples and its function.

**Short Questions****(6 marks)**

1. Explain in detail about Sphingomyelins & their function
2. Write a short note on Micelles, Bio membranes
3. Write a short note on Sphingophospholipids
4. Write a short note on Liposomes
5. Write a short note on Triacylglycerol
6. What is saturated fatty acid and give three examples with biological significance
7. What are prostaglandins? Mention their function
8. What is unsaturated fatty acid? Explain the types and biological significance
9. Write a short note on Properties of fatty acids
10. Write a short note on Essential Fatty Acids?
11. Write a short note on Trans fatty acids
12. Write a short note on cholesterol
13. Describe briefly about the classifications of lipids with suitable examples
14. What are the compounds formed from cholesterol?
15. Write in detail about the lipoprotein & its functions

**Very Short answer questions****(3 marks)**

1. Lung surfactant
2. Saponification number
3. Iodine number
4. Acid number
5. What are Apo Lipoproteins?
6. Respiratory Distress Syndrome (RDS)
7. Define halogenation
8. What is rancidity of lipids?
9. Omega 3 Fatty acids
10. Cardiolipin
11. Free Fatty Acids

12. Leukotriene's (LTs)
13. Thromboxane's (Tx)
14. Write the products formed due to complete hydrolysis of triacylglycerol
15. What is cephalin

#### UNIT IV - ENERGY METABOLISM AND NUTRITIONAL BIOCHEMISTRY

##### Long answer questions

(10 marks)

1. Write in detail about the RDA, dietary sources, biochemical role and deficiency manifestations of folic acid/ vitamin B12/ calcium /Iron
2. Explain the RDA, dietary sources, biochemical role and deficiency manifestations of vitamin A/ vitamin D/ vitamin C/ vitamin K

##### Short Notes

(6 marks)

1. List out the clinical significance of Vitamin E/ Vitamin K
2. Coenzymes & functions of any 1 B-complex vitamin (Thiamine/ Riboflavin/ Niacin/Pyridoxine/ Folic acid etc.)
3. Explain the Vitamin E has selenium sparing action.
4. Discuss the steps involved in digestion & absorption of calcium/ phosphorous / iron
5. How plasma calcium level is regulated
6. Functions of copper/ selenium/ zinc
7. Role of proteins in diets
8. Describe protein energy malnutrition
9. Nutritional value of protein
10. Dietary role of different lipids
11. Dietary fiber
12. Thermogenic effect of food
13. Obesity
14. Define nitrogen balance & Mention the factor that causes positive & negative nitrogen balance
15. Define BMR & factor affecting BMR
16. What are Essential Amino Acids? Mention their clinical importance
17. Explain the RDA, sources, biochemical role and deficiency of sodium / potassium
18. What are Essential Fatty Acids? Mention their clinical importance.

##### Very Short answer questions

(3marks)

1. Write any 3 causes for Tetany
2. Define Heme proteins/ non heme proteins
3. Hemochromatosis/ Hemosiderosis
4. Iron deficiency anemia
5. Wilson's disease
6. Fluorosis
7. Define balanced diet
8. Define calorific values & Its significance
9. Define Respiratory quotient
10. What is Glycemic index
11. What is pellagra
12. Ceruloplasmin

## UNIT V CLINICAL CHEMISTRY

### Short Notes

(6marks)

1. Detail account on basic principle, methodology and diagnostic significance of electrophoresis.
2. Detail account on basic principle, methodology and diagnostic significance of paper chromatography
3. Short notes on Osmolality, significance and measurement.
4. write about the different types of electrophoresis & application of each type
5. Explain the method of cholesterol /urea /glucose estimation
6. write about the different types of electrophoresis & application of each type

### Very Short answer questions

(2 marks)

1. Define Osmolality/ Osmolarity
2. Write the principle of (GOD-POD) method
3. List any 3 simple test to identify Carbohydrates, lipids and proteins
4. Mention the normal values of glucose/ cholesterol/ protein/ urea/ creatinine
5. Define osmolal gap
6. what is Rf value
7. Write the principle of Molisch test /Benedict's test
8. List out the normal/ abnormal constituents of urine

## ENVIRONMENTAL CHEMISTRY

### Short Notes

(6 marks)

1. Explain in detail about biomedical waste management
2. Write short notes on air pollution
3. Write short notes on Acid Rain.
4. Write short notes on carbon monoxide
5. Write short notes on mutagenesis.
6. Explain in detail about bio pesticides & its types
7. Explain briefly about the harmful effects of plastics to human health

### Very Short answer questions

(3marks)

1. Define pollutants & give 2 examples
2. What are biomedical wastes?
3. Name five categories of bio pesticides
4. Write about biological water borne disease
5. What are the problems caused by plastics?
6. Name some chemicals causing water borne disorders
7. What is Bio-degradable & Non-biodegradable Waste?
8. Define greenhouse effects
9. What is Ames test?
10. What is meant by carcinogens, and list any three chemicals causing carcinogens
11. What is biosafety?

## PAPER 4A - GENERAL MICROBIOLOGY

### UNIT -I : GENERAL BACTERIOLOGY

#### 10 MARKS

1. Discuss the methods of collection and transportation of specimens.
2. Define the terms sterilization, disinfection and antisepsis. Name various agents used for sterilization and discuss the role of hot air oven in sterilization.
3. Define the terms sterilization. Discuss the role of moist heat in sterilization and their sterility control methods.
4. Discuss the various types of disinfectants and discuss the role of halogens in chemical disinfection.

#### 6 MARKS

1. Write a short note on contribution of Louis Pasteur.
2. Write a short note on contribution of Robert Koch.
3. Write a short note on contribution of Edward Jenner.
4. Write a short note on Koch postulates.
5. Tabulate the difference between prokaryotes and Eukaryotes .
6. Draw a labeled diagram of a bacterial cell. Describe the cell wall of bacteria.
7. Draw a labeled diagram of Autoclave. Describe the structure and functioning.
8. Draw a labeled diagram of Hot air oven. Describe the structure and functioning.
9. Tabulate the difference between differentiate between flagella and fimbria .
10. Write a short note on spores.
11. Describe bacterial growth curve.
12. What are culture media? Classify and discuss them in brief.
13. Discuss in detail anaerobic methods of cultivation of bacteria.
14. Discuss the methods of preservation of microorganisms.
15. Write a short note on phenols as disinfectant.
16. Write a short note on Aldehydes as disinfectant.
17. Write a short note on Antimicrobial sensitivity testing.
18. Discuss the methods of collection and transportation of specimens.
19. Outline the steps in Gram staining and interpretation.
20. Outline Ziehl-Neelsen staining procedure and interpretation.
21. Name the different types of hospital wastes and discuss in detail the methods of disposal of hospital wastes

#### 3 MARKS

1. Write four functions of bacterial cell wall.
2. Write four differences between gram positive & gram negative bacterial cell wall.
3. What is protoplast & spheroplast.
4. What are the functions of capsule.
5. How will you classify bacteria based on position of flagella.
6. Write four examples of spore producing bacteria.
7. Write four examples of capsule producing bacteria.
8. Write four examples of capnophilic bacteria.
9. Write four examples of strict aerobic bacteria.
10. Write four examples of strict anaerobic bacteria.

11. Write four examples of microaerophilic bacteria.
12. Define sterilization .
13. Define disinfectant .
14. Name the types of filters and their uses.
15. What is cold sterilization.
16. Define inspissation.
17. What is an agar? write its role in preparation of media.
18. Name four selective media.
19. Name four differential media.
20. Name four transport media.
21. Write the composition of TSI agar.
22. Write the principles of catalase test.
23. Write the principles of oxidase test.
24. Name the two motile and non-motile organisms

## UNIT -2 : IMMUNOLOGY

### 6 MARKS

1. Discuss the mechanism of innate and acquired immunity.
2. What is hypersensitivity? Classify hypersensitivity reactions? Describe in detail about type I reactions.
3. Discuss the principle and clinical applications of immunofluorescence technique.
4. Discuss the principle and clinical applications of ELISA technique.
5. Describe the structure and functions of Ig M, Ig G & Ig A.
6. Write a short notes on autoimmunity.
7. Discuss about delayed type hypersensitivity.
8. Describe about phagocytosis process.
9. Herd immunity.
10. Type III Hypersensitivity.

### 3 MARKS

1. Write the difference between active & passive immunity.
2. Define Immunity.
3. Write two examples of each , live attenuated bacterial & viral vaccines.
4. Write two examples of each , killed bacterial & viral vaccines
5. Write four difference between live & killed vaccines.
6. Define hapten.
7. What is heterophile antigen? write two examples.
8. Write two uses of ELISA.
9. Define hypersensitivity.
10. Difference between immediate and delayed type of hypersensitivity.
11. Define autoimmunity

## UNIT -3 SYSTEMIC BACTERIOLOGY

### 10 MARKS

1. Discuss the pathogenicity and laboratory diagnosis of *Staphylococcus aureus*.
2. Name various organism causing sore throat and discuss in detail the laboratory diagnosis of diphtheria.
3. Classify Streptococci. Discuss the pathogenesis and lab diagnosis of *S.pyogenes*.

4. Classify the Clostridia of medical importance. Describe the pathogenesis, laboratory diagnosis of gas gangrene.
5. Classify Mycobacteria. Give an account on pathogenesis and laboratory diagnosis of pulmonary tuberculosis. Add a note on BCG vaccine.
6. Discuss the morphology, pathogenesis and laboratory diagnosis of syphilis.
7. Discuss in detail about pathogenesis and laboratory diagnosis of enteric fever.
8. List the diarrhea causing bacteria. Write in detail about pathogenesis and laboratory diagnosis of *vibrio*.

### 6 MARKS

1. Name four causative agents of enteric fever and explain about WIDAL test.
2. Name the UTI causing bacteria. How to collect urine & laboratory diagnosis of *E.coli*.
3. Describe about Toxin produced by *staphylococcus aureus*.
4. Discuss about prophylaxis of diphtheria.
5. Difference between *Streptococcus viridians* & *Streptococcus pneumoniae*.
6. Coagulase test.
7. Tetanus.
8. Explain about morphology and pathogenicity of *Bacillus anthracis*.
9. Classification of shigella and explain the antigenic structure and toxins produced by *Shigella*.
10. Weil's diseases.
11. Laboratory diagnosis of syphilis
12. Discuss the pathogenicity of Chlamydia.

### 3 MARKS

1. Name the pigments produced by *Pseudomonas*.
2. Name two toxins produced by *Clostridium tetani*.
3. Define Asepsis.
4. Enumerate any four diseases caused by *Streptococcus pyogenes*.
5. Gas gangrene.
6. Name four first line drugs used to treat tuberculosis infections.
7. List four species of *Shigella*.
8. List the cultivation methods of leprae.
9. MRSA.
10. ASO
11. CRP
12. Non -gonococcal urethritis (NGU).
13. Name two selective media for *V.cholera*
14. Significant bacteriuria.
15. Meningitis .
16. Selective medium of Salmonella
17. VDRL and RPR.
18. Name two transport and enrichment media for *V.cholerae*.
19. What are coliform bacilli? write two examples.
20. Actinomycosis
21. List the atypical mycobacteria.
22. Ghon's focus.
23. BCG vaccine
24. Name the two beta hemolytic bacteria.

25. Mantoux test.

#### UNIT -4 : VIROLOGY

##### 10 MARKS

1. Name two RNA viruses. Name four methods of transmission of Hepatitis B virus infection in man. Mention the schedule of Hepatitis B vaccination.
2. Mention the modes of transmission of HIV in humans. Draw a neat diagram of HIV and label the parts. List the tests available for the confirmation of HIV in the microbiology laboratory.
3. Describe the laboratory diagnosis and prophylaxis of poliomyelitis.
4. Explain the laboratory diagnosis and prophylaxis of Rabies.

##### 6 MARKS

1. Describe the serological markers of Hepatitis B virus.
2. Describe the prophylaxis of polio virus.
3. Complications of dengue virus.
4. Write a short note on adenovirus.
5. Infectious mononucleosis.
6. List the opportunistic infections in AIDS patient.

##### 3 MARKS

1. Name four DNA virus.
2. Name four RNA virus
3. Haemorrhagic causing virus.
4. MMR vaccine.
5. Draw a neat labeled diagram of HIV.
6. Rabies vaccine.
7. List the cultivation methods of virus.

#### UNIT -5: PARASITOLOGY

##### 6 MARKS

1. Difference between amoebic and bacillary dysentery.
2. Describe the life cycle of *Entamoeba histolytica*.
3. Describe the life cycle of *Giardia lamblia*
4. Describe the life cycle of *Malaria*
5. Describe the life cycle of *hookworm*
6. Describe the life cycle of *Roundworm*
7. Lab diagnosis of Plasmodium.
8. Describe the lab diagnosis of parasitological samples.

##### 3 MARKS

1. Morphology of *E. histolytica*.
2. Black water fever.
3. Vectors.
4. Morphology of Leishmania.
5. Peripheral blood smear of Malaria.
6. Dog tapeworm.
7. *Cysticercus bovis*.
8. *Cysticercus cellulose*.
9. *Microfilaria*.

## UNIT -6: MYCOLOGY

### 6 MARKS

1. Discuss the laboratory diagnosis of fungal infections.
2. Write a short notes on zygomycosis.
3. Aspergillosis
4. Describe about systemic mycoses.
5. Cryptococcosis - Lesions caused & Laboratory diagnosis.
6. Discuss the opportunistic mycoses.
7. Describe the morphology & cultural characteristics of Dermatophytes.
8. Describe the morphology& cultural characteristics of *Candida albicans*

### 3 MARKS

1. SDA
2. Name two selective culture media for *Candida* spp.
3. Name two selective culture media for *Cryptococcus* spp.
4. What is germ tube test.
5. Mention four fungal laboratory contaminants .
6. Name four dimorphic fungus.
7. Name two examples of yeast.
8. Name four opportunistic fungus.
9. Name four superficial mycoses.
10. Mycetoma

## UNIT -7: HOSPITAL INFECTION CONTROL

### 6 MARKS

1. Biomedical waste management.
2. Write a short note on universal precaution.
3. Write a short note on universal precaution.
4. Mode of transmission of infections.
5. Write short note on the vaccines recommended for health care workers.
6. Recall the procedure to be followed for sharp injury to health care workers.
7. Describe the prevention of Nosocomial infections.

### 3 MARKS

1. Define segregations.
2. List four infectious waste.
3. Define land filling.
4. What is HICC? List two roles of HICC.
5. List two techniques used for the treatment of infectious waste.
6. Define universal precautions.
7. Define PPE.
8. List four methods to control the Hospital acquired infections.

## PAPER 4B - GENERAL PATHOLOGY

### LONG ANSWER

(10 MARKS )

1. Mention the types of necrosis with two example each
2. Mention the types of cellular adaptations with one example each
3. Mention the types of cell injury and describe the changes seen in each type
4. Describe the morphological alterations in reversible cell injury
5. Describe the morphological alterations in irreversible cell injury

### SHORT ANSWERS

(6 MARKS )

1. Tabulate the differences between exudate and transudate
2. Tabulate the differences between benign and malignant tumor
3. Define Gangrene. Mention the types of gangrenes with one example each
4. Mention the factors that influence wound healing and repair
5. Tabulate the differences between acute and chronic inflammation
6. Describe the principle chemical mediators of inflammation
7. Tabulate the differences between necrosis and apoptosis
8. Write a short note on apoptosis
9. Describe causes and morphological features of chronic inflammation
10. Explain granulomatous inflammation with a neat labeled diagram
11. Tabulate the differences between dry and wet gangrene
12. Explain mode of spread of tumors in brief
13. Adverse effects of smoking
14. Write a short note on asbestosis
15. Write a short note on silicosis

### VERY SHORT ANSWERS

(3 MARKS)

1. Define apoptosis. Mention two examples.
2. List the cardinal signs of acute inflammation
3. Define acute inflammation reaction and mention its outcome
4. Define chronic inflammation and give 2 examples
5. Mention the components of granulation tissue
6. Mention the parts of microscope
7. Give 2 examples of granulomatous inflammation
8. Define neoplasia
9. Define hypertrophy. Give 2 example
10. Define atrophy. Give 2 example
11. Define hyperplasia. Give 2 example
12. Define metaplasia. Give 2 example
13. Define reversible cell injury and mention two features
14. Define phagocytosis.
15. Define Virchow triad

### HAEMATOLOGY

#### SHORT ANSWERS

(6 MARKS )

1. Define anemia. Mention the types of anemia on the basis of etiology.
2. Classify leukemia. Mention general features of acute leukemia.
3. Enumerate various color codings of various biomedical waste disposal with 4 examples

4. Describe the collection, transport, preservation and processing of clinical specimen
5. Describe the structure and function of different types of WBC'S with a neat labeled diagram
6. Write a short note on occupational health hazards.
7. Describe mechanism of homeostasis
8. Describe various types anticoagulant and its uses with its color coding
9. Explain microscopic examination of urine samples.
10. Describe the method of collection, transport, preservation of CSF.
11. Write short note on Coomb's test
12. Define anemia . Mention the general clinical features and basic interpretation of anemia.
13. Classify hemolytic anemia and mention in brief the laboratory findings

#### **VERY SHORT ANSWERS**

**(3 MARKS )**

1. Define Landstenier's Law
2. Define blood group
3. Mention the normal platelet count and function of platelets.
4. Mention the types of transfusion transmitted infection
5. Mention 2 causes of Eosinophilia.
6. Mention 2 causes of Neutrophilia.
7. Mention 4 preservative of urine and its indication
8. Define cross matching
9. Mention Principle of major cross matching
10. Mention Principle of minor cross matching
11. Write about the principle of benedicts test.
12. Write about biomedical waste management.

#### **SYSTEMIC PATHOLOGY**

##### **LIVER**

1. Define Cirrhosis. (3M)
2. Describe in detail about viral hepatitis. (6M)
3. Mention the various stages of alcoholic liver disease(3M)
4. Describe in detail about gall stones. (6M)
5. Write about the etiology, pathogenesis and clinical features of chronic cholecystitis. (10M)

##### **BRAIN TUMOURS**

1. Classify brain tumours (3M)

##### **KIDNEY**

1. Mention the types of renal calculi. (3M)
2. Describe the clinical features of renal stones. (3M)
3. Define hydronephrosis (3M)
4. Classify renal tumours. (3M)

##### **BONE TUMOURS**

1. Classify bone tumours(3M)
2. Give two examples of benign bone tumors. (3M)
3. Give two examples of malignant bone tumours(3M)

## **FEMALE GENITAL TRACT**

1. Classify ovarian tumours(3M)
2. Describe the types of endometrial hyperplasia and risk factors associated with it.(6M)
3. Write a short note on risk factors for endometrial cancer.(6M)
4. Describe the etiopathogenesis and risk factors for cervical cancer.(10M)

## **BREAST**

1. Describe the risk factors and clinical features of breast carcinoma.(10M)
2. Give 2 example of benign breasts tumour (3M)
3. Give 2 example of malignant breast tumours.(3M)

## **CARDIOVASCULAR SYSTEM**

### **RHEUMATIC HEART DISEASES**

1. Enumerate the modified Jones criteria for rheumatic heart disease(6M)

### **INFECTIVE ENDOCARDITIS**

1. List the causative organisms for infective endocarditis(3M)
2. Enumerate the Dukes criteria for infective endocarditis.(6M)

### **ARTHEROSCLEROSIS**

1. Enumerate the risk factors for atherosclerosis.(6M)
2. Mention two complications of atherosclerosis (3M)\
3. Mention the types of Ischemic heart disease. (3M)
4. Write in detail about myocardial infarction. (10M)

## **RESPIRATORY SYSTEM**

### **LUNG INFECTIONS**

1. Describe the various Stages of Pneumonia.(6M)
2. Define Pneumonia.(6M)

### **COPD**

1. Define emphysema.(3M)
2. Define chronic bronchitis.(3M)
3. Define broncheactasis.(3M)
4. Tabulate the differences between chronic bronchitis and emphysema.(6M)
5. Mention various systemic effects of smoking (3M)

### **ASTHMA**

1. Describe the etiopathogenesis and clinical features of bronchial asthma.(6M)
2. Define ARDS(3M)
3. Give 2 examples for conditions associated with ARDS.(3M)

## **GASTROINTESTINAL SYSTEM**

1. Enumerate the clinical features of peptic ulcer.(3M)
2. Describe the Risk factors and clinical features of carcinoma stomach.(10M)
3. Describe the Risk factors and clinical features of carcinoma colon.(10M)

**ABILITY ENHANCEMENT COMPULSORY ELECTIVES  
AECC-1- ENGLISH QUESTION BANK**

**UNIT-1 - GRAMMAR**

**Six Mark Questions**

1. Define grammar, Explain the types of grammar with example.
2. What do you mean by noun and Explain its type with examples?
3. Write a brief note on types of sentences with examples.
4. How many types of tenses are there?

**Two Mark Questions**

1. Define verb.
2. Define Adjective with example.
3. Define Adverb with example.
4. Define Gerund and preposition.
5. What do you mean by conjunction and interjection?
6. How many types of tenses are there?
7. He Said, "My father is ill".(Change the sentence into indirect speech)
8. He said to her, "Where are you going"? (Change the sentence into indirect speech)
9. They said that they can't live without water.(change the sentence into direct speech)
10. Radha said, "I am very busy now".(Change the sentence into indirect speech)
11. She says that she is a little bit nervous.(change the sentence into direct speech)
12. You are busy, \_\_\_\_\_? (Fill the sentence with suitable question tag)
13. Helmet makes driving safe, \_\_\_\_\_? (Fill the sentence with suitable question tag)
14. Dogs cannot fly, \_\_\_\_\_? (Fill the sentence with suitable question tag)
15. She was talking, \_\_\_\_\_?(Fill the sentence with suitable question tag)
16. He won't come today\_\_\_\_?(Fill the sentence with suitable question tag)
17. He \_\_\_\_\_ (drink)tea every morning. (Fill the sentence with suitable tense)
18. I enjoy\_\_\_\_\_(read) at a cafe.(Fill the sentence with suitable tense)
19. We\_\_\_\_\_(see) a film last night.(Fill the sentence with suitable tense)
20. They went home, after they\_\_\_\_\_(finish) their work.(Fill the sentence with suitable tense)
21. I\_\_\_\_\_(stay) here till you return.(Fill the sentence with suitable tense)
22. I\_\_\_\_\_ do it tomorrow. (Fill the sentence with modal verb)
23. \_\_\_\_\_ you help me with the house work, please? (Fill the sentence with modal verb)
24. I \_\_\_\_\_ speak English.(Fill the sentence with modal verb)
25. The doctor\_\_\_\_\_ see you now.(Fill the sentence with modal verb)
26. He \_\_\_\_\_ be the love of my life.(Fill the sentence with modal verb)
27. All\_\_\_\_\_ submit your notebook.(Fill the sentence with modal verb)
28. Seetha loves Rama. (Change the sentence to passive voice)
29. The story has been read by me. (Change the sentence to active voice)
30. Do you speak English well? (Change the sentence to passive voice)
31. Open the door (Change the sentence to passive voice)
32. Let the T.V be watched by them. (Change into active voice)
33. He admitted his guilt. (Change the simple sentence into complex sentence)
34. In-spite of his hard work, he failed. (Change the simple sentence into compound sentence)

35. It was raining, but they went out. (Change the compound sentence into simple sentence)
36. He failed to prove that he was innocent. (Change the complex sentence into simple sentence)
37. If you do not work hard, you will fail. (Change the complex sentence into compound sentence)
38. Everest is \_\_\_\_\_ highest mountain in the world. (Fill up with the suitable article)
39. The rose is \_\_\_\_\_ beautiful flower. (Fill up with the suitable article)
40. \_\_\_\_\_ umbrella is useful in rain. (Fill up with the suitable article)
41. Do you play \_\_\_\_\_ Piano? (Fill up with the suitable article)
42. \_\_\_\_\_ unicorn is a special creature. (Fill up with the suitable article)
43. Red \_\_\_\_\_ danger. (Fill up with suitable prepositions)
44. I acted \_\_\_\_\_ him. (Fill up with suitable prepositions)
45. Mr. Kumar is \_\_\_\_\_ the office. (Fill up with suitable prepositions)
46. I am ready \_\_\_\_\_ help. (Fill up with suitable prepositions)
47. Put it \_\_\_\_\_ (Fill up with suitable prepositions)
48. Bharath is the cleverest of all the boys in the class. (Identify the degrees of comparison)
49. Seetha is taller than Geetha. (Identify the degrees of comparison)
50. Hyderabad is not so hot as Chennai. (Identify the degrees of comparison)
51. I am not so strong as he. (Identify the degrees of comparison)
52. Mumbai is bigger than Hyderabad. (Identify the degrees of comparison)

## UNIT-2 : VOCABULARY

### Six Mark Questions

1. Define vocabulary and explain its types.
2. How to improve our vocabulary.
3. Write the uses of Dictionary.

### Two Mark Questions

1. Use a prefix to make the word meaningful:  
Possible
2. Use a prefix to make the word meaningful:  
Legal
3. Use a suffix to make the word meaningful:  
Beauty
4. Use a suffix to make the word meaningful:  
Clever
5. Use a suffix to make the word meaningful:  
Danger
6. Give the antonym:  
Weak
7. Give the antonym:  
Open
8. Give the antonym:  
Narrow
9. Give the antonym:  
Expand
10. Give the antonym:  
Superior

11. Give the synonym:

Incredible

12. Give the synonym:

Ecstatic

13. Give the synonym:

Rest

14. Give the synonym:

Behavior

15. Give the synonym:

Tired

16. Use the following idioms / phrases into sentence:

In black and white

17. Use the following idioms / phrases into sentence:

Get away

18. Use the following idioms / phrases into sentence:

Come forward

19. Use the following idioms / phrases into sentence:

Break down

20. Use the following idioms / phrases into sentence:

Look after someone

21. Write any two words miss used or confused?

22. Define Homophones.

23. Use the homophonic words in the sentences.

Write & right

24. Use the homophonic words in the sentences.

Whole & hole

25. Use the homophonic words in the sentences.

Weight & wait

26. Use the homophonic words in the sentences.

Sell & cell

27. Use the homophonic words in the sentences.

Sum & some

### UNIT-3 : WRITING SKILLS

(Six Mark Questions)

1. Make a precise of the following passage and suggest a heading:

Effective speaking depends on effective listening. It takes energy to concentrate on hearing and to concentrate on understanding what has been heard. Incompetent listeners fail in a number of ways. First, they may drift. Their attention drifts from what the speaker is saying. Second, they may counter. They find counter-arguments to whatever a speaker may be saying. Third, they compete. Then, they filter. They exclude from their understanding those parts of the message which do not readily fit with their own frame of reference. Finally, they react. They let personal feelings about a speaker or subject override the significance of the message which is being sent. What can a listener do to be more effective? The first key to effective listening is the art of concentration. If a listener positively wishes to concentrate on receiving a message his chances of success are high. It may need determination. Some speakers are difficult to follow, either because of voice problems or because of the form in which they send a message. There is then a particular need for the determination of a listener to concentrate on what is being said. Concentration is helped by alertness. Mental alertness is helped by physical alertness. It is not simply physical fitness, but also positioning of the body, the limbs and the head. Some people also find it helpful to their concentration if they hold the head slightly to one side. One

useful way for achieving this is intensive note-taking, by trying to capture the critical headings and sub-headings the speaker is referring to. Note-taking has been recommended as an aid to the listener. It also helps the speaker. It gives him confidence when he sees that listeners are sufficiently interested to take notes; the patterns of eye-contact when the note-taker looks up can be very positive; and the speaker's timing is aided-he can see when a note-taker is writing hard and can then make effective use of pauses. Posture too is important. Consider the impact made by a less competent listener who pushes his chair backwards and slouches. An upright posture helps a listener's concentration. At the same time it is seen by the speaker to be a positive feature amongst his listeners. Effective listening skills have an impact on both the listener and the speaker.

**2. Make a precise of the following passage and suggest a heading:**

Despite all the research every one of us catches cold and most of us catch it frequently. Our failure to control one of the commonest of all ailments sometimes seems ridiculous. Medical science regularly practises transplant surgery and has rid whole countries of such killing diseases as Typhus and the Plague. But the problem of common cold is unusually difficult and much has yet to be done to solve it. It is known that a cold is caused by one of a number of viral infections that affect the lining of the nose and other passages leading to the lungs but the confusing variety of viruses makes study and remedy very difficult. It was shown in 1960 that many typical colds in adults are caused by one or the other of a family of viruses known as rhinoviruses, yet there still remain many colds for which no virus has as yet been isolated. There is also the difficulty that because they are so much smaller than the bacteria which cause many other infections, viruses cannot be seen with ordinary microscopes. Nor can they be cultivated easily in the bacteriologist's laboratory, since they only grow within the living cells of animals or plants. An important recent step forward, however, is the development of the technique of tissue culture, in which bits of animal tissue are enabled to go on living and to multiply independently of the body. This has greatly aided virus research and has led to the discovery of a large number of viruses. Their existence had previously been not only unknown but even unsuspected. The fact that we can catch a cold repeatedly creates another difficulty. Usually, a virus strikes only once and leaves the victim immune to further attacks. Still, we do not gain immunity from colds. Why? It may possibly be due to the fact that while other viruses get into the bloodstream where antibodies can oppose them, the viruses causing cold attack cells only on the surface. Or it may be that immunity from one of the many different viruses does not guarantee protection from all the others. It seems, therefore, that we are likely to have to suffer colds for some time yet.

**3. Make a precise of the following passage and suggest a heading:**

There is nothing more frustrating than when you sit down at your table to study with the sincerest of intentions and instead of being able to finish the task at hand, you find your thoughts wandering. However, there are certain techniques that you can use to enhance your concentration. "Your concentration level depends on a number of factors," says Samuel Ghosh, a social counsellor. "In order to develop your concentration span, it is necessary to examine various 2 facets of your physical and internal environment," she adds. To begin with one should attempt to create the physical environment that is conducive to focussed thought. Whether it is the radio, TV or your noisy neighbours, identify the factors that make it difficult for you to focus. For instance, if you live in a very noisy neighbourhood, you could try to plan your study hours in a nearby library. She disagrees with the notion that people can concentrate or study in an environment with distractions like a loud television, blaring music etc. "If you are distracted

when you are attempting to focus, your attention and retention powers do not work at optimum levels,” cautions Ghosh. “Not more than two of your senses should be activated at the same time,” she adds. What that means is that music that sets your feet tapping is not the ideal accompaniment to your books. Also do not place your study table or desk in front of a window. “While there is no cure for a mind that wants to wander, one should try and provide as little stimulus as possible. Looking out of a window when you are trying to concentrate will invariably send your mind on a tangent,” says Ghosh. The second important thing, she says, is to establish goals for oneself instead of setting a general target and then trying to accomplish what you can in a haphazard fashion. It is very important to decide what you have to finish in a given span of time. The human mind recognizes fixed goals and targets and appreciates schedules more than random thoughts. Once your thoughts and goals are in line, a focussed system will follow. She recommends that you divide your schedule into study and recreation hours. When you study, choose a mix of subjects that you enjoy and dislike and save the former for the last so that you have something to look forward to. For instance, if you enjoy verbal skill tests more than mathematical problems, then finish Maths first. Not only will you find yourself working harder, you will have a sense of achievement when you wind up. Try not to sit for more than 40 minutes at a stretch. Take a very short break to make a cup of tea or listen to a song and sit down again. Under no circumstances, should one sit for more than one and a half hours. Short breaks build your concentration and refresh your mind. However, be careful not to overdo the relaxation. It may have undesired effects.

**4. Make a precise of the following passage and suggest a heading:**

Research has shown that the human mind can process words at the rate of about 500 per minute, whereas a speaker speaks at the rate of about 150 words a minute. The difference between the two at 350 is quite large. So a speaker must make every effort to retain the attention of the audience and the listener should also be careful not to let his mind wander. Good communication calls for good listening skills. A good speaker must necessarily be a good listener. Listening starts with hearing but goes beyond. Hearing, in other words is necessary but is not a sufficient condition for listening. Listening involves hearing with attention. Listening is a process that calls for concentration. While, listening, one should also be observant. In other words, listening has to do with the ears, as well as with the eyes and the mind. Listening is to be understood as the total process that involves hearing with attention, being observant and making interpretations. Good communication is essentially an interactive process. It calls for participation and involvement. It is quite often a dialogue rather than a monologue. It is necessary to be interested and also show or make it abundantly clear that one is interested in knowing what the other person has to say. Good listening is an art that can be cultivated. It relates to skills that can be developed. A good listener knows the art of getting much more than what the speaker is trying to convey. He knows how to prompt, persuade but not to cut off or interrupt what the other person has to say. At times the speaker may or may not be coherent, articulate and well organized in his thoughts and expressions. He may have it in his mind and yet he may fail to marshal the right words while communicating his thought. Nevertheless, a good listener puts him at ease, helps him articulate and facilitates him to get across the message that he wants to convey. For listening to be effective, it is also necessary that barriers to listening are removed. Such barriers can be both physical and psychological. Physical barriers generally relate to hindrances to proper hearing whereas psychological barriers are more fundamental and relate to the interpretation and evaluation of the speaker and the message.

**5. Make a precise of the following passage and suggest a heading:**

The term dietary fibres refers collectively to indigestible carbohydrates present in plant foods. The importance of these dietary fibres came into the picture when it was observed that the people having diet rich in these fibres, had low incidence of coronary heart disease, irritable bowel syndrome, dental caries and gall stones. The foodstuffs rich in these dietary fibres are cereals and grains, legumes, fruits with seeds, citrus fruits, carrots, cabbage, green leafy vegetables, apples, melons, peaches, pears etc. These dietary fibres are not digested by the enzymes of the stomach and the small intestine whereas most of other carbohydrates like starch and sugar are digested and absorbed. The dietary fibres have the property of holding water and because of it, these get swollen and behave like a sponge as these pass through the gastrointestinal tract. The fibres add bulk to the diet and increase transit time in the gut. Some of these fibres may undergo fermentation in the colon. In recent years, it has been considered essential to have some amount of fibres in the diet. Their beneficial effects lie in preventing coronary heart disease, and decreasing cholesterol level. The fibres like gums and pectin are reported to decrease postprandial (after meals) glucose level in the blood. These types of dietary fibres are recommended for the management of certain types of diabetes. Recent studies have shown that the fenugreek (Methi) seeds, which contain 40 per cent gum, are effective in decreasing blood glucose and cholesterol levels as compared to other gum containing vegetables. Some dietary fibres increase transit time and decrease the time of release of ingested food in colon. The diet having less fibres is associated with colon cancer and the dietary fibres may play a role in decreasing the risk of it. The dietary fibres hold water so that stools are soft, bulky and readily eliminated. Therefore, high fibre intake prevents or relieves constipation. The fibres increase motility of the small intestine and the colon and by decreasing the transit time there is less time for exposure of the mucosa to harmful toxic substances. Therefore, there is a less desire to eat . and the energy intake can be maintained within the range of requirement. This phenomenon helps in keeping a check on obesity. Another reason in helping to decrease obesity is that the high-fibre diets have somewhat lower coefficients of digestibility. The dietary fibres may have some adverse effects on nutrition by binding some trace metals like calcium, magnesium, phosphorus, zinc and others and therefore preventing their proper absorption. This may pose a possibility of nutritional deficiency especially when diets contain marginal levels of mineral elements. This may become important constraints on increasing dietary fibres. It is suggested that an intake of 40 grams dietary fibres per day is desirable.

6. Write a letter to your uncle thanking him for the birthday present he had sent for you.
7. Write a letter to your mother about your daily routine.
8. Write a letter to your younger brother who has grown very weak. Suggest ways how he can improve his health.
9. Write a letter to your younger brother who has grown very weak. Suggest ways how he can improve his health.
10. Write a letter to your father requesting him to buy you a cycle.
11. Write an application to your Principal requesting him to grant leave. Also mention reason/reasons.
12. You are Nirmal/Nirmala, a student of Government High School, Gurgaon. Write an application to the Principal of your school, requesting him to allow you full fee concession.

13. Write an application to the Principal of your school to allow you to change your section.
14. You have lost your library card. Write a letter to the librarian to issue you a duplicate card.
15. Write a letter to the Chairman of the Municipal Board regarding insanitary conditions of the locality you live in.

**Rearrange the following jumbled sentences to meaningful sentences:**

1. are machines/to think/robots/that use/a computer brain
2. are sent/computer brain/in the robot's parts/messages/from the/to motors
3. can be/to do/of work/robots/programmed/many kinds
4. is the/computer science/concerned with/robotics/field/and engineering/creating robots

**Two Mark Questions**

1. How is note making important in your profession?
2. How many types of letters are there?
3. Define skimming.

**UNIT-4 : SPOKEN COMMUNICATION**

**Six Mark Questions**

1. Write a Dialogue between a shopkeeper and a customer.
2. Write a Dialogue between two friends on the topic of air pollution.
3. Write a Dialogue between two new comers in college campus.
4. Write a Dialogue between a Nurse and a doctor.
5. Write a Dialogue between a student and a teacher.
6. Why is phonetics important in studying English.
7. Write a conversation two friends discussing about the online classes.
8. Describe a brief note on group discussion.
9. What are the good qualities of debater?

**Two Mark Questions**

1. Write a short note on hazards of cell phone usage?
2. Describe your favorite friend.
3. Define pronunciation.
4. Define intonation.
5. Write any two words in British English and American English.
6. Define debate.

**UNIT-5 : LISTENING AND READING SKILLS**

**Six Mark Questions**

1. Read the following and answer the questions given below  
"I Have a Dream" is a public speech delivered by American civil rights activist Martin Luther King Jr. during the March on Washington for Jobs and Freedom on August 28, 1963, in which he calls for an end to racism in the United States and called for civil and economic rights. Delivered to over 250,000 civil rights supporters from the steps of the Lincoln Memorial in Washington, D.C., the speech was a defining moment of the civil rights movement.  
Beginning with a reference to the Emancipation Proclamation, which freed millions of slaves in 1863, King observes that: "one hundred years later, the Negro still is not free". Toward the end of the speech, King departed from his prepared text for a partly improvised peroration on the theme "I have a dream", prompted by Mahalia Jackson's cry: "Tell them about the dream, Martin!" In this

part of the speech, which most excited the listeners and has now become its most famous, King described his dreams of freedom and equality arising from a land of slavery and hatred. Jon Meacham writes that, "With a single phrase, Martin Luther King Jr. joined Jefferson and Lincoln in the ranks of men who've shaped modern America". The speech was ranked the top American speech of the 20th century in a 1999 poll of scholars of public address.

Q1. What issues does Martin Luther King's speech address?

1. Continuation of racism
2. End to racism and civil and economic rights
3. Civil rights
4. Civil War

Q2. What pushes King to speak: "I have a dream"?

1. He reads out the Emancipation Proclamation
2. He is prompted by Mahalia Jackson
3. He is overwhelmed by the crowd
4. Lincoln had asked him to give the speech.

Q3. From the last paragraph, give one word for "to leave"

1. Departed
2. Proclamation
3. Improvised
4. Address

Q4. What is the name of Martin Luther King's famed speech?

1. The Emancipation Proclamation
2. An Improvisation
3. A Peroration
4. I Have a Dream

Q5. In front of whom does King speak?

1. The civil rights supporters
2. His friends
3. Lincoln
4. The Negroes

**Read the following and answer the questions given below**

Conflict had existed between Spain and England since the 1570s. England wanted a share of the wealth that Spain had been taking from the lands it had claimed in the Americas.

Elizabeth I, Queen of England, encouraged her staunch admiral of the navy, Sir Francis Drake, to raid Spanish ships and towns. Though these raids were on a small scale, Drake achieved dramatic success, adding gold and silver to England's treasury and diminishing Spain's supremacy. Religious differences also caused conflict between the two countries. Whereas Spain was Roman Catholic, most of England had become Protestant. King Philip II of Spain wanted to claim the throne and make England a Catholic country again. To satisfy his ambition and also to retaliate against England's theft of his gold and silver, King Philip began to build his fleet of warships, the Spanish Armada, in January 1586.

Philip intended his fleet to be indestructible. In addition to building new warships, he marshaled 130 sailing vessels of all types and recruited more than 19,000 robust

soldiers and 8,000 sailors. Although some of his ships lacked guns and others lacked ammunition, Philip was convinced that his Armada could withstand any battle with England.

The martial Armada set sail from Lisbon, Portugal, on May 9, 1588, but bad weather forced it back to port. The voyage resumed on July 22 after the weather became more stable.

The Spanish fleet met the smaller, faster, and more maneuverable English ships in battle off the coast of Plymouth, England, first on July 31 and again on August 2. The two battles left Spain vulnerable, having lost several ships and with its ammunition depleted. On August 7, while the Armada lay at anchor on the French side of the Strait of Dover, England sent eight burning ships into the midst of the Spanish fleet to set it on fire. Blocked on one side, the Spanish ships could only drift away, their crews in panic and disorder. Before the Armada could regroup, the English attacked again on August 8.

Although the Spaniards made a valiant effort to fight back, the fleet suffered extensive damage. During the eight hours of battle, the Armada drifted perilously close to the rocky coastline. At the moment when it seemed that the Spanish ships would be driven onto the English shore, the wind shifted, and the Armada drifted out into the North Sea. The Spaniards recognized the superiority of the English fleet and returned home, defeated.

**Q1. Sir Francis Drake added wealth to the treasury and diminished Spain's \_\_\_\_.**

- unlimited power
- unrestricted growth
- territory
- treaties

**Q2. King Philip recruited many \_\_ soldiers and sailors.**

- warlike
- strong
- accomplished
- timid
- inexperienced

**Q3. The \_\_ Armada set sail on May 9, 1588.**

- complete
- warlike
- independent
- isolated

**Q4. The two battles left the Spanish fleet \_\_\_\_.**

- open to change
- triumphant
- open to attack
- defeated
- discouraged

**Q5. The Armada was \_\_ on one side.**

- closed off
- damaged
- alone
- circled

## **2. Read the following and answer the questions given below**

Opera refers to a dramatic art form, originating in Europe, in which the emotional content is conveyed to the audience as much through music, both vocal and

instrumental, as it is through the lyrics. By contrast, in musical theater an actor's dramatic performance is primary, and the music plays a lesser role. The drama in opera is presented using the primary elements of theater such as scenery, costumes, and acting. However, the words of the opera, or libretto, are sung rather than spoken. The singers are accompanied by a musical ensemble ranging from a small instrumental ensemble to a full symphonic orchestra.

1. It is pointed out in the reading that opera ----.
  - A) has developed under the influence of musical theater
  - B) is a drama sung with the accompaniment of an orchestra
  - C) is not a high-budget production
  - D) is often performed in Europe
  - E) is the most complex of all the performing arts
2. We can understand from the reading that ----.
  - A) people are captivated more by opera than musical theater
  - B) drama in opera is more important than the music
  - C) orchestras in operas can vary considerably in size
  - D) musical theater relies above all on music
  - E) there is argument over whether the music is important or the words in opera
3. It is stated in the reading that ----.
  - A) acting and costumes are secondary to music in musical theater
  - B) many people find musical theater more captivating than opera
  - C) music in musical theater is not as important as it is in opera
  - D) an opera requires a huge orchestra as well as a large choir
  - E) opera doesn't have any properties in common with musical theater.

**Read the following passage and answer the questions given below.**

Dolphins are regarded as the friendliest creatures in the sea and stories of them helping drowning sailors have been common since Roman times. The more we learn about dolphins, the more we realize that their society is more complex than people previously imagined. They look after other dolphins when they are ill, care for pregnant mothers and protect the weakest in the community, as we do. Some scientists have suggested that dolphins have a language but it is much more probable that they communicate with each other without needing words. Could any of these mammals be more intelligent than man? Certainly the most common argument in favor of man's superiority over them that we can kill them more easily than they can kill us is the least satisfactory. On the contrary, the more we discover about these remarkable creatures, the less we appear superior when we destroy them.

1. It is clear from the passage that dolphins ----.
  - A) don't want to be with us as much as we want to be with them
  - B) are proven to be less intelligent than once thought
  - C) have a reputation for being friendly to humans
  - D) are the most powerful creatures that live in the oceans
  - E) are capable of learning a language and communicating with humans
2. The fact that the writer of the passage thinks that we can kill dolphins more easily than they can kill us ----.

- A) means that they are better adapted to their environment than we are
- B) shows that dolphins have a very sophisticated form of communication
- C) proves that dolphins are not the most intelligent species at sea
- D) does not mean that we are superior to them
- E) proves that Dolphins have linguistic skills far beyond what we previously thought

3. One can infer from the reading that ----.

- A) dolphins are quite abundant in some areas of the world
- B) communication is the most fascinating aspect of the dolphins
- C) dolphins have skills that no other living creatures have such as the ability to think
- D) it is not usual for dolphins to communicate with each other
- E) dolphins have some social traits that are similar to those of humans.

**Read the following and answer the questions given below.**

Naval architects never claim that a ship is unsinkable, but the sinking of the passenger-and-car ferry Estonia in the Baltic surely should have never have happened. It was well designed and carefully maintained. It carried the proper number of lifeboats. It had been thoroughly inspected the day of its fatal voyage. Yet hours later, the Estonia rolled over and sank in a cold, stormy night. It went down so quickly that most of those on board, caught in their dark, flooding cabins, had no chance to save themselves: Of those who managed to scramble overboard, only 139 survived. The rest died of hypothermia before the rescuers could pluck them from the cold sea. The final death toll amounted to 912 souls. However, there were an unpleasant number of questions about why the Estonia sank and why so many survivors were men in the prime of life, while most of the dead were women, children and the elderly.

1. One can understand from the reading that ----.

- A) the lifesaving equipment did not work well and lifeboats could not be lowered
- B) design faults and incompetent crew contributed to the sinking of the Estonia ferry
- C) 139 people managed to leave the vessel but died in freezing water
- D) naval architects claimed that the Estonia was unsinkable
- E) most victims were trapped inside the boat as they were in their cabins

2. It is clear from the passage that the survivors of the accident ----.

- A) helped one another to overcome the tragedy that had affected them all
- B) were mostly young men but women, children and the elderly stood little chance
- C) helped save hundreds of lives
- D) are still suffering from severe post-traumatic stress disorder
- E) told the investigators nothing about the accident

3. According to the passage, when the Estonia sank, ----.

- A) there were only 139 passengers on board
- B) few of the passengers were asleep
- C) there were enough lifeboats for the number of people on board
- D) faster reaction by the crew could have increased the Estonia's

chances of survival  
E) all the passengers had already moved out into the open decks

**6. Medical report writing.**

You are a staff nurse in the psychiatry ward. Mr. Rammohan aged 40 was admitted in your ward with the complaint of Dengue. Write a report of this to your clinical instructor.

**7. Medical report writing.**

You are a staff nurse in the psychiatry ward. Ms. Lalitha aged 34 was admitted in your ward with the complaint of Alzheimer disorder (memory loss). Write a report of this to your clinical instructor.

**8. Medical report writing.**

You are a staff nurse in the psychiatry ward. Mr. Ranjith aged 50 was admitted in your ward with the complaint of Obsessive compulsive disorder. Write a report of this to your clinical instructor.

**9. Medical report writing.**

You are a staff nurse in the special ward. Mrs. Jaya Priya aged 30 was admitted in your ward with the complaint of Diarrhea. Write a report of this to your clinical instructor.

**10. Medical report writing.**

You are a staff nurse in the psychiatry ward. Mr. Vijay aged 20 was admitted in your ward with the complaint of Anxiety disorder. Write a report of this to your clinical instructor.

11. Write a Comprehensive Report on the outbreak of Covid-19 in your Locality.

12. Write a Comprehensive Report on the outbreak of Malaria in your Locality.

13. Write a Comprehensive Report on the outbreak of Dengue in your Locality.

14. Write a Comprehensive Report on the outbreak of Cholera in your Locality.

15. Write a Comprehensive Report on the outbreak of Pneumonia in your Locality.

**Two Mark Questions**

1. How to make effective reading?
2. What are the types of reading?
3. Why medical report writing is important in your profession?
4. What are the skills you should have for successful Telephone conversation.

**II YEAR**  
**PAPER 5 - CLINICAL PHARMACOLOGY**

**UNIT 1: ANTISIALOGUES, ANTIEMETICS**

**6 Marks**

1. Compare and contrast pharmacology of atropine & glycopyrolate.
2. Discuss briefly about the indications, contraindications systemic effects, and adverse effects of glycopyrolate.
3. Discuss briefly about the pharmacodynamics & clinical uses of atropine.
4. Discuss briefly about mechanism of action, uses & adverse effects of proton pump inhibitors.
5. Classification of antiemetic's.
6. Write about the mechanism of action & pharmacokinetics of ondansetron?
7. Write the clinical uses of atropine?
8. Mention the clinical use of glycopyrolate?
9. Mention the types of muscarinic receptors & their location?
10. Mention the drugs used to treat PONV?
11. What are the prophylactic drugs used for PONV?

**3 Marks**

1. What is meant by atropine flush?
2. What is meant by atropine fever?
3. Mention any 2 clinical uses of atropine?
4. Mention any 2 clinical uses of glycopyrolate?
5. What is the premedication dose of glycopyrolate?
6. Mention any 2 adverse effects of ondansetron?
7. Mention any 2 adverse effects of metaclopramide?
8. Mention the clinical uses of dexamethasone?
9. Mention the adverse effects of dexamethasone?
10. Mention any 2 clinical uses of ondansetron?
11. Mention any 2 clinical uses of metaclopramide?
12. Mention the vagolytic dose of atropine.
13. Mention the antisialogue of glycopyrolate

**UNIT 2: SEDATIVES/ANXIOLYTICS AND NARCOTICS**

**6 Marks**

1. What is the mechanism of action and clinical uses of benzodiazepines?
2. Explain about the systemic effects of diazepam?
3. Write any 5 clinical uses of midazolam?
4. Explain about the pharmacokinetics of midazolam?
5. Compare & contrast of neuroaxial opioids v/s intravenous opioids?
6. Describe the pharmacokinetics of morphine?

7. How are the pharmacokinetics of fentanyl different from morphine?
8. List the commonly used opioids agonist and there relative potencies?
9. What are the different types of opioids receptors and the effects at these receptors?
10. Discuss the routes of delivery for analgesic drugs with example?
11. Classification of opioids receptors?
12. Write short note on opioids antagonist?
13. Discuss briefly about the clinical uses, adverse effects of pentazocine?
14. Mention the clinical uses & adverse effects of fentanyl?
15. Classifications of NSAIDS?
16. Explain briefly about paracetamol poisoning -clinical features, toxicity and treatment.
17. Classifications of OPIODS?

### **3 Marks**

1. Write about benzodiazepine antagonist?
2. Clinical uses of lorazepam?
3. Mention any 4 clinical use of midazolam?
4. Mention the dose of diazepam for induction & sedation?
5. Mention the dose of midazolam for premedication & sedation?
6. What are the side effects of morphine?
7. What about naloxone?
8. Write about transdermal fentanyl patch?
9. Mention the side effects of diclofenac?
10. Clinical uses of paracetamol?
11. Write dose of fentanyl, morphine for induction?

### **UNIT 3: H2 BLOCKERS & ANTACIDS**

#### **3 Marks**

1. Name any 2 drugs for treating peptic ulcer disease?
2. Mention the clinical uses of ranitidine?
3. Mention the adverse effects of ranitidine?
4. Write about the pharmacokinetics of ranitidine?
5. Clinical uses of cimetidine.
6. Clinical uses of famotidine.
7. Mention the advantage of gelusil?
8. Mention any 2 indications for using sodium citrate?
9. Mention the advantages of muccine gel?

### **UNIT 4: INDUCTION AGENTS**

#### **10 Marks**

1. Discuss briefly about the mechanism of action, systemic effects of propofol?

2. Explain about the pharmacokinetics, pharmacodynamics of thiopentone sodium?
3. Discuss briefly about the pharmacokinetics, systemic effects of ketamine?
4. Compare & Contrast pharmacology of thiopentone and propofol.
5. Compare& Contrast pharmacology of ketamine and propofol.

### 6 Marks

1. Discuss briefly about the systemic effects of thiopentone sodium?
2. Explain about the pharmacokinetics of thiopentone?
3. Discuss briefly about the complication of thiopentone?
4. Discuss briefly about the systemic effects of propofol?
5. Mention the complication of propofol?
6. Explain about the clinical uses of propofol?
7. Mention the advantage & contraindication of ketamine?
8. Explain briefly about the systemic effects of ketamine?
9. Mention the clinical uses of ketamine?

### 3 Marks

1. Mention any 4 physical properties of thiopentone sodium?
2. Mention the composition of propofol?
3. Mention any 2 physical properties of propofol?
4. Write any 2 clinical uses of ketamine?
5. Mention any 4 contraindications of ketamine?
6. Any 2 clinical uses of propofol?
7. Write about Etomidate?
8. What are the drugs that decrease ICT?
9. Mention the advantage of Etomidate?
10. What is meant by dissociate ANAESTHESIA?
11. Mention the clinical uses of thiopentone sodium?
12. Mention the contraindication of thiopentone?

## UNIT 5: MUSCLE RELAXANTS

### 6 Marks

1. Classify neuromuscular blockers?
2. Describe the difference between phase1 and phase2 block?
3. Describe the mechanism of action of NMBD at neuromuscular junction?
4. Discuss about the systemic effect of depolarizing agents?
5. Distinguish between steroidal & benzyl Isoquinolinium compound?
6. What are the factors prolonging the nm blockade?
7. Explain briefly about the pharmacokinetics & adverse effects of vecuronium?
8. Write about the clinical effects & pharmacokinetics of atracurium?
9. Mention the clinical uses of neostigmine?

10. Compare & contrast non-depolarizing and depolarizing muscle relaxants.
11. Write about the systemic effects of NMBDS?

### 3 Marks

1. What are the signs of adequate reversal?
2. How is succinylcholine metabolized?
3. What is the intubating dose of succinylcholine?
4. Mention the side effects of succinylcholine?
5. What is the choice of NMBD influenced by?
6. Difference between cisatracurium & atracurium?
7. What are the drugs which decrease pseudo cholinesterase?
8. Name the conditions increasing pseudo cholinesterase?

## UNIT 6: INHALATIONAL AGENTS

### 6 Marks

1. Discuss the factors which increase & decrease MAC?
2. Discuss the factors which influence transfer of inhaled anesthetic from machine to lungs?
3. What is a blood gas partition coefficient? Mention BG coefficient for the drugs?
4. What is second gas effect?
5. What is diffusion hypoxia?
6. Discuss the effects of inhaled anesthetics on mean arterial pressure, cardiac output, SVR?
7. What are the effects of inhaled anesthetics on cerebral blood flow?
8. Mention the properties of nitrous oxide?
9. Discuss about the systemic effects, contraindication of N<sub>2</sub>O?
10. Discuss briefly about MAC? Write MAC value for any 4 agents?

### 3 Marks

1. What are the MAC values of isoflurane?
2. Mention the complication of halothane agents?
3. Mention the anesthetic properties of isoflurane?
4. Mention the anesthetic properties of desflurane?
5. What are the agents that increase ICT?
6. Write about laughing gas?
7. Mention the contraindication of nitrous oxide?

## UNIT 7: REVERSAL AGENTS

### 3 Marks

1. Mention the dose of neostigmine?
2. Mention the adverse effects of neostigmine?

3. What is the dose of atropine for reversal?
4. What is the dose of glycopyrolate for reversal?
5. Mention some conditions where atropine is preferred to glycopyrrolate for reversal?

## **UNIT 8: LOCAL ANESTHETICS**

### **10 Marks**

1. Write about the classification of local anesthetics? Compare any 2 local anesthetics.
2. Explain the mechanism of action of local anesthetics. Discuss the preparation & therapeutic uses of xylocaine & bupivacaine?
3. Write about the various concentrations of bupivacaine and its clinical uses.

### **6 Marks**

1. Discuss briefly about local anesthetic toxicity?
2. What are the available preparation of xylocaine & one clinical uses of each?
3. Explain briefly about the systemic effects of LA?
4. Classification of local Anesthetic drugs?
5. Compare & contrast bupivacaine & levo-bupivacaine.
6. Write about the clinical uses & advantages of Ropivacaine.

### **3 Marks**

1. Mention any 2 clinical uses of 2% lignocaine jelly?
2. Mention the indication of emia ointment & its adverse effects?
3. What are the available percentage of xylocaine?
4. Name the drugs used for epidural ANAESTHESIA?
5. Clinical symptoms of toxic reactions of LA?
6. Mention the advantages of amide linked local anesthetic?
7. Mention the disadvantage of ester linked local anesthetic?
8. Mention the toxic dose of lignocaine & bupivacaine?
9. List out the difference between xylocaine 2% and xylocard 2%?
10. Mention the advantages of lignocaine with adrenaline 2%?
11. Mention the contraindications of lignocaine with adrenaline %?

## **UNIT 9: EMERGENCY DRUGS**

### **6 Marks**

1. Discuss the mode of administration, dilution, dosage, systemic effects, indications, side effects of adrenaline?
2. Classification of diuretics.
3. Mention the clinical uses of adrenaline?
4. Write about dopaminergic receptors and drugs acting on it?
5. Mention the therapeutic uses of nor adrenaline?

6. Discuss briefly about the systemic effects & clinical uses of dobutamine?
7. Explain briefly about pharmacokinetics & clinical uses of ephedrine?
8. Clinical uses of xylocard?
9. Mention the clinical uses, systemic effects, dosage & mode of administration of vasopressin?
10. Classify oral hypoglycemic agents?

**3 Marks**

1. Write any 2 clinical uses of furosemide?
2. Write any 2 drugs for bronchial asthma treatment?
3. Mention the therapeutic uses of hydrocortisone?
4. Write any 4 indications of steroid therapy?
5. Role of oxytocin during LSCS?
6. Name any 2 uterine relaxants used clinically?
7. Write about adverse effects of furosemide?
8. Name any four emergency conditions in which hydrocortisone is used?
9. Name the drugs used in hypertensive emergencies?
10. Name any 2 side effects of insulin?
11. Mention any 2 anticonvulsant drugs?
12. Mention four drugs for congestive heart failure?

**UNIT 10: SYSTEMIC DRUGS**

**3 Marks**

1. What are the drugs used in anaphylactic shock?
2. Mention the location of alpha receptors?
3. Mention the location of beta receptors?
4. Define inotropes? Name any 2 drugs?
5. Mention the indications of dopamine?
6. Mention the indications of dobutamine?
7. Write the dosage atropine and glycopyrolate?

**6 Marks**

1. Classify anti arrhythmic drugs with suitable examples?
2. Explain the mechanism of action & therapeutic uses of any one class of anti arrhythmic drug?
3. Write about classification of bronchodilators add note on theophylline?
4. Classify antihypertensive drugs?
5. Classify beta blockers. Write about the clinical uses & adverse effects of beta blockers?
6. Therapeutics uses & adverse effects of beta blockers?
7. Classify antihistamines. Explain briefly the clinical uses of antihistamines?
8. Explain the mechanism of action, pharmacodynamics of NTG?

9. Mention the clinical uses & adverse effects of NTG?
10. Compare & contrast NTG & SNP?
11. Classification of diuretics?
12. Clinical uses of furosemide?
13. Discuss about clinical uses & adverse effects of metformin?
14. Classify oral hypoglycemia agents?
15. Mention the uses & adverse effects of mannitol?
16. Discuss in detail about the clinical uses & adverse effects and mechanism of action of calcium channel blockers?
17. Mention any 5 adverse effects of systemic steroids on prolonged drug therapy?

#### **UNIT 11: MISCELLANEOUS DRUGS**

##### **3 Marks**

1. Write about the composition of ringer lactate?
2. Mention the contraindication of RL?
3. Write about haemaccel?
4. Mention any 2 clinical uses of protamine?
5. Mention the clinical uses of ketorolac?
6. Name any 2 antipsychotic drugs?
7. List out the commonly used surgical prophylactic antibiotics?
8. Mention the commonly uses IV fluids inside the OT?
9. Difference between crystalloids and colloids?

### **PAPER 6A - CLINICAL MICROBIOLOGY**

#### **UNIT -1 : Importance of sterilization and disinfection**

##### **10 MARKS**

1. List the chemical disinfectants used to sterilize the hospital instruments? Explain in detail about Quaternary ammonium compounds?
2. Describe in detail about the infection control measures for Intensive care units?
3. Discuss in detail about the etiology, diagnosis and control of Nosocomial infections?
4. Define Sterilization? Describe in detail about physical methods of sterilization?

##### **6 MARKS**

1. Brief note on Hot-air oven and its uses with suitable diagram?
2. Difference between Sterilization and Disinfection?
3. Brief note on Autoclave and its uses with suitable diagram?
4. Biomedical waste management
5. Describe the steps for cleaning and disinfection of respiratory equipment
6. Describe the disinfecting agents used for drinking water?
7. Write a short note on occupationally acquired infections in Health Care and Laboratory Workers?

### **3 MARKS**

1. Define Sterilization?
2. Define Disinfection?
3. Pasteurization
4. Testing of disinfectants
5. Sterilization controls
6. Membrane filters
7. Name the biological controls used for testing efficacy of sterilization techniques?
8. Tyndallization

### **UNIT -2: Health care associated infections**

#### **10 MARKS**

1. Enumerate bacteria causing Urinary Tract Infection. Describe the laboratory diagnosis and interpretation of UTI?
2. List out the infections associated with blood transfusion? Explain in detail about catheter associated blood infections?
3. List the microbial etiology of Diarrheal diseases. Describe the pathogenesis and lab diagnosis of Shigellosis.
4. Enumerate the microbes causing PUO. Describe laboratory diagnosis of Scrub typhus?
5. List microbes causing Lower Respiratory tract infections. Describe lab diagnosis of pulmonary tuberculosis?
6. Describe in detail about the risk factors, pathogenesis and lab diagnosis of ventilator associated pneumonia?
7. List out the microbes causing surgical site infections? Explain in detail about the pathogenesis and laboratory diagnosis of surgical site infections?
8. List the etiological agents of Meningitis. Describe laboratory diagnosis of Meningococcal meningitis

#### **6 MARKS**

1. Describe the details of Personal Protective Equipment (PPE)?
2. Brief an account on Potential strategies to prevent ventilator-associated pneumonia (VAP)?
3. Brief an account on preventive measures of catheter-related bloodstream infection (CRBSI)?
4. Brief an account on preventive measures of urinary tract infection (UTI)?
5. Brief account on antibiotic associated diarrhea?
6. Write about the measures used to prevent the occupational acquired infections?
7. Write about the clinical manifestations of Varicella - Zoster infection?
8. Brief account on Chickenpox?
9. Describe the role of microbiologic diagnosis on ventilator associated pneumonia?
10. Describe an algorithm for diagnosis and treatment of Ventilator associated pneumonia?
11. Explain how to manage the multi-drug resistant organisms in Ventilator associated pneumonia?
12. Explain about the General Management of Catheter-Related Infection?
13. Describe the management of patients with short-term central venous catheter-related or arterial catheter-related bloodstream infection

14. Describe the types of intravascular devices and comments on their use?
15. Write a brief summary on good laboratory practices?
16. Write a short note on occupationally acquired infections in agricultural workers?

**3 MARKS**

1. Define Negative-pressure ventilation?
2. Name the types of surgical site infections?
3. List the causative agents of occupationally acquired infections?
4. Explain Clinical pulmonary infection score (CPIS)
5. List out the microbes of occupationally acquired pneumonia?

**UNIT -3: Drug resistant bacteria**

**10 MARKS**

1. Write a detailed account on the Recommendations for Antimicrobial Stewardship?

**6 MARKS**

1. Vancomycin Resistant Enterococci (VRE)
2. Methicillin Resistant Staphylococcus aureus (MRSA)

**3 MARKS**

1. MRSA
2. List the ESBL producing bacteria
3. Name the antibiotic inhibiting the cell wall synthesis of bacteria.
4. Name the antibiotic inhibiting the protein synthesis of bacteria.
5. Name the antibiotic inhibiting the DNA synthesis of bacteria.

**UNIT -4 : Occupationally acquired infections and its prevention**

**10 MARKS**

1. Classification of human Herpes viruses? Describe pathogenesis and laboratory diagnosis of Human herpes viruses?
2. List out the microbes causing oral-fecal route of infection? Explain in detail about pathogenesis and lab diagnosis of Salmonella?
3. Discuss Infective Endocarditis- its etiology, lab diagnosis and treatment?
4. Describe the antigenic properties, pathogenesis and laboratory diagnosis of hepatitis B viruses?
5. Describe the antigenic, genomic properties, pathogenesis and laboratory diagnosis of Human Immunodeficiency virus?

**6 MARKS**

1. Enumerate the Bacterial pneumonia
2. Presumptive coliform count
3. Pseudomembranous colitis
4. Non gonococcal Urethritis
5. Enumerate microbes causing food poisoning
6. Describe the mechanism of drug resistant of bacteria
7. Enumerate the etiological agents of viral pneumonia?
8. Describe the pathogenesis of Respiratory syncytial virus?
9. Describe the antigenic structure of Influenza virus?
10. List out the important causative agents of bioterrorism?

11. Enumerate Zoonotic diseases
12. Describe the laboratory acquired infections?
13. Multi-drug resistant tuberculosis (MDR-TB)
14. Describe the Pathogenesis of congenital cytomegalo virus infection?
15. Application of molecular techniques in Clinical microbiology.
16. Write about a key fact on Ebola Viral Diseases?
17. Short notes on antigenic variations of Salmonella?
18. List the salient features for identifying *Salmonella typhi*?
19. Describe the pathogenesis of Herpes Zoster infection?
20. Describe the clinical manifestations of Hepatitis C virus?
21. Describe the complications of Hepatitis A viruses?
22. Western Blotting
23. Describe the strategies for HIV testing in India?
24. Describe the role of screening the blood and blood products of HIV infections?
25. Describe the role of preventive measures on AIDS disease?
26. Difference between endotoxins and exotoxins?
27. Difference between *Mycobacterium tuberculosis* and *Mycobacterium bovis*?

### 3 MARKS

1. List out the Normal flora of skin
2. Significant bacteriuria
3. List out the microbes designated as carrier in humans
4. Define Cross infections
5. Petroff's method
6. Tzanck smear
7. Lymphocytic Choriomeningitis
8. Latent Tuberculosis
9. Types of cytomegalo virus infection
10. Complications of cytomegalo virus infection
11. BCG vaccine
12. Craigie's tube method
13. Flagellar antigen
14. Endotoxin
15. Shiga toxin
16. Name the pigments produced by *Pseudomonas aeruginosa*?
17. Acute Brucellosis
18. Chronic Brucellosis
19. Ghon's focus
20. Cord Factor of *Mycobacterium tuberculosis*
21. Mantoux Test
22. Name the Hepatitis viruses caused by fecal-oral route of infection?
23. List out the screening tests for the diagnosis of HIV infection?
24. List out the antiviral drugs against HIV infection?
25. Paucibacillary tuberculosis
26. Koch's Phenomenon
27. List out the complications of pulmonary tuberculosis?

## PAPER 6B- RENAL PATHOLOGY

### 10 MARKS

1. Classify cystic disease of the kidney and explain in detail about adult and childhood polycystic kidney disease.
2. Classify Glomerular diseases and mention the salient features and difference between nephritic and nephrotic syndrome.
3. Classify testicular tumor and write in detail about seminoma.

### 6 MARKS

1. Explain normal anatomical features of kidney with a neat labeled diagram
2. Enumerate congenital and developmental anomalies
3. Classify Glomerular diseases
4. Describe about chronic glomerulonephritis
5. Write a short note on minimal change disease
6. Explain in detail about adult polycystic kidney disease
7. Write in detail about post streptococcal glomerulonephritis
8. Enumerate and describe the different methods of collection of urine
9. Explain in detail about the physical examination of urine
10. Enumerate the renal function test
11. Enumerate the cystic lesion of the kidney
12. Difference between acute and chronic pyelonephritis
13. Write briefly on Wilms tumour
14. Classify renal tumors
15. Write in detail about RCC
16. Difference between RCC and Wilms tumors
17. Describe the types of renal calculi
18. Write a short note on benign prostate hyperplasia
19. Write short notes on etiopathogenesis & clinical features and morphology of penile cancer
20. Classify Testicular tumors
21. Write in detail about seminoma
22. write about Causes, Symptoms, & Treatments Kidney Failure (ESRD).

### 3 MARKS

1. Draw and label a nephron
2. Enumerate the function of kidney
3. Classify renal diseases
4. Name any two congenital & developmental anomalies
5. Enumerate the factors that influence Glomerular filtration
6. Write the composition of urine
7. Name any two chemical preservatives of urine
8. Define Hydronephrosis
9. Describe the clinical features of renal stones
10. Write the complication of renal stones
11. Mention any two risk factors for urothelial carcinoma
12. Name any two premalignant lesion of penis
13. What stage is ESRD?
14. Write the cause for ESRD?

## **PAPER 7 - INTRODUCTION & PRINCIPLES OF OPERATION THEATRE MANAGEMENT**

### **UNIT-1 BIO PHYSICS**

#### **3 MARKS**

1. Mention 3 gas laws applied in ANAESTHESIA?
2. Define Bernoulli's principle?
3. Define venturi principle?
4. Mention the application of venturiprinciple?
5. Define diffusion?
6. What is meant by critical temperature?
7. Define Boyle's law and its applied aspects?
8. Define Charles law and its practical aspects?

### **UNIT-2 THEATRE ORGANIZATION**

#### **10 Marks**

1. Define Sterilization, classify it. Describe about the principles, advantages of moist heat sterilization in detail.
2. What is chemical sterilization? Discuss its classification and some common agents used in hospital setup.
3. Explain in detail about the functional flow of a CSSD.
4. Explain briefly about the steps involved in maintenance of theatre asepsis for the effective functioning of operating room.

#### **6 Marks**

1. Discuss about the advantages and disadvantages of E-o sterilization.
2. Describe the operation theatre air condition system how laminar flow reduces the incidence of infection.
3. Describe some factors affecting the efficacy of disinfection & sterilization.
4. Explain briefly about the fumigation & carbolization methods in operating room.
5. Mention the advantages and disadvantages of autoclave.
6. Discuss about the aldehydes as a disinfectants.
7. Mention the clinical use of chemical disinfectant used in hospital setup.
8. Define the role of theatre technician in monitoring safety of OT.
9. What are the available percentages of betadine solution? Mention its clinical uses.
10. What are the composition of surgical spirit, cidex? Mention its clinical uses
11. Discuss the occupational hazards for health workers in operation theatre and advocate prophylactic measures.
12. Define suture materials? Write about the types of sutures with examples?
13. Explain about the types of access zones in OT?

#### **3 Marks**

1. What are the biological indicators of effective sterilization?
2. Write about Categories of people working in operating theatre.
3. Name some parameters to be monitored in autoclaving.

4. Define sterilization?
5. What is antiseptis?
6. Mention the sterilization control used in autoclave & shelf life of items.
7. What are the drawbacks of Eo-sterilization?
8. What is the shelf life of items sterilized by autoclave & Eo-sterilization?
9. What are the chemical indicators?
10. What are steps will be you take if indicators fail?
11. What is the use of bowie-dick strips in sterilization?
12. Distinguish dry heat and moist heat sterilization.
13. Define CSSD?
14. Mention the importance of instrument inspection and checking in the packing?
15. How will you sterilize heat labile instrument?
16. How will you check the sterility of instrument?
17. Define operating department?
18. Define disinfection with examples?
19. Mention the uses of suture materials?
20. List out the various packaging material for sterilization .

### **UNIT -3 INFECTION CONTROL**

#### **10 Marks**

1. Write in detail about universal safety precaution.
2. What is Nosocomial infection .Explain its causes precaution measures and treatment?
3. What are the steps involved in disinfection of HIV, HBV contaminated devices?

#### **6 Marks**

1. Mention the personal protective equipment and describe the role in infection control?
2. How laminar flow reduces the incidence of infections?
3. What are the steps involved in surgical hand wash?
4. What are the precautions to be taken for prevention of hospital acquired infection?
5. What are the steps for the decontamination of suction apparatus?
6. What is the precaution techniques involved in handling serology positive patients?
7. What are the precaution techniques in the protection of personnel working in operating theatre?
8. Explain the steps involved in management of blood & body fluid spillage.
9. Write about the classification of equipment in the operating room.
10. What are the precaution techniques in handling sharps?
11. Describe briefly about the types of hand washing?
12. Mention the 5 main infection control manoeuvres to control transmission?
13. What are the general principles to be followed in the high risk areas?
14. Discuss about post exposures prophylaxis of hepatitis & HIV disease?

### **3 Marks**

1. Define concurrent infection?
2. Define terminal infection?
3. Define droplet infection?
4. Mention the special care for sharp instrument?
5. What are the causes of cross infection?
6. Mention the steps of surgical hand wash?
7. How will you dispose waste sharps?
8. Define Nosocomial infection?
9. Mention any 2 preventive measures to avoid nosocomial infection?
10. What is meant by high level disinfection?
11. Mention the importance of hand hygiene?
12. What are the stages of decontamination?
13. Mention any 2 universal safety precautions?
14. Mentions do's and don'ts of needle stick injury?
15. Expand the following: - NABH, ICN, ICC, JCI
16. Mention the types of hand wash.
17. Mention the principles of aseptic techniques?

### **UNIT 4-BIOMEDICAL WASTE MANAGEMENT**

#### **6 Marks**

1. Define biomedical waste? Classify hospital waste?
2. Describe about the steps of biomedical waste management.
3. Write in detail about hospital waste segregation.

### **UNIT 5- PATIENT AND STAFF SAFETY**

#### **3 Marks**

1. Define adverse drug reactions?
2. Define High risk medication?
3. Define -documentation & its purposes?
4. Define Medication errors?
5. Name any 2 look alike drugs? With color coding?
6. Name any 2 sound alike drugs? With color coding?
7. Name any 4 high risk medications? With color coding?
8. Mention the types of medication errors?
9. Write about the narcotic handling techniques inside the OT?
10. Mention the types of communication?

### **UNIT 6-TRANSPORT MEDICINE**

#### **6 Marks**

1. Mention the goals of first aid? What are the tools of first aid kit?
2. Discuss briefly about the primary survey of trauma patient.
3. Types of patient transport ambulance.
4. Mention the equipments used for spinal immobilization .
5. List out the common emergency codes followed in hospital.
6. List out the emergency drugs in crash cart - one indications of each.

## **UNIT 7- MEDICAL, LEGAL & ETHICAL ISSUES**

### **6 Marks**

1. Explain in detail about the informed consent.
2. Explain in detail about the types of consent followed in the hospital.
3. Write about Therapeutic misadventure & Professional negligence
4. Explain briefly about the four major principles of medical ethics?
5. Mention the duties & responsibilities of physician in general?
6. What are the major three reasons for need of confidentiality?
7. What are the importance of medical ethics ?
8. What do you mean by euthanasia & mention the kinds of euthanasia .

### **3 Marks**

1. Professional secrecy.
2. Define medical malpractice?
3. What is meant by medical negligence?
4. Mention the 3 common types of malpractice?
5. Mention the importance of informed consent?
6. What do you mean by patient's right?
7. What is meant confidentiality?
8. Mention the duties owed by a medical practitioner?

## **UNIT 8- INVENTIONARY PROCEDURES**

### **6 Marks**

1. Explain briefly about the prevention of fire safety & electric hazards in OT.
2. Define inventory control & explain about the types of inventory.
3. Discuss in detail about the surgical safety checklist following inside the OT?  
Flowchart of Store requisition process in operation theatre complex.

## **PAPER 8 - BASICS OF SURGERY & INTRODUCTION TO UROLOGY TECHNOLOGY PART-1**

### **10 MARKS**

1. Explain hemorrhage? Types of hemorrhage and its management?
2. Define wound healing? Explain the process of wound healing and its complication
3. Describe the preoperative, intraoperative and postoperative care of patients and explain the importance of personal cleanliness and aseptic techniques?
4. How will you prepare urology operation theatre for nephrectomy procedure?

### **6 MARKS**

1. What is inflammation and explain its types and treatment in detail?
2. Explain I&D of abscess?
3. What are the types of tourniquet and indications for using tourniquets?
4. List out the emergency procedure and explain the stress that arises during operative procedures?

5. Discuss briefly about surgical scrub procedures?
6. Explain in detail about surgical draping?
7. What are the available percentage of betadine solution? mention its clinical uses?
8. What are the common problems encountered in the recovery room?
9. Explain the team approach in management of the patient?
10. What are the factors affecting surgical care?
11. Define PPE? And describe the role in infection control?
12. Major urological procedures and mention its indication?
13. Nutrition management for urology patients?
14. Explain the principles of ESWL?
15. Define SIRS? Describe SIRS in association with surgery?
16. Explain the tourniquet related problems?

### 3 MARKS

1. Define wound? Write about the classification of surgical wound?
2. Factors affecting wound healing?
3. Complications of wound healing?
4. Explain the Steps involved in management of wound?
5. Name the organism responsible for wound infection?
6. Name the Instruments used for I&D procedure?
7. Explain PPE? List out the available PPE'S?
8. Name the solutions used for skin preparations?
9. Management of inflammation?
10. Explain any 2 emergency procedures?
11. Define aseptic techniques?
12. Mention the duties of surgical assistant?
13. Expand the following surgical procedures?
  - a. PCNL
  - b. TURP
  - c. I&D
  - d. URS
14. Write a short note on URS tripsy?
15. Tourniquet deflation problem?
16. Write a short description and definition of some of the surgical terms?
  - a. Cystectomy
  - b. Embolectomy
  - c. Fasciotomy

## III YEAR

### PAPER UT-9- UROLOGICAL PROCEDURES PART II

#### UNIT- I GENERAL

##### 6 MARKS

1. Write about Diagnostic ultrasound
2. Describe the indication of PCN and procedure step of PCN
3. Discuss briefly about Catheterization procedure
4. Write about DJ stenting procedure

##### 3 MARKS

1. What is AV fistula?
2. Mention the uses of ultrasound in urology
3. Mention the type of catheter used during PCN
4. Write a note on DJ stent

#### UNIT- II KIDNEY

##### 10 MARKS

1. Describe the indication, operative steps and complication for nephrectomy procedure?
2. Describe the indication, operative steps and post operative complication of PCNL
3. Describe the indication, types, operative steps and complication for pyeloplasty

##### 6 MARKS

1. Explain about Donor nephrectomy
2. Explain about operative steps for nephrectomy procedure
3. Types of pyeloplasty
4. Explain about operative steps of PCNL

##### 3 MARKS

1. What is pyeloplasty? Mention the indication of pyeloplasty?
2. Mention type of pyeloplasty
3. Write about Pelvi Ureteric Junction Obstruction (PUJO) and its cause
4. Mention the indication of Simple nephrectomy
5. Mention the indication of radical nephrectomy
6. Mention the indication of Partial nephrectomy
7. Mention the indication of PCNL
8. Write note on pyelolithotomy
9. Components of nephroscope

#### UNIT- III URETER AND BLADDER

##### 10 MARKS

1. Describe the indication and operative steps of ureterorenoscopy

2. Describe the indication, operative steps and post operative complication of cystoscope
3. Discuss briefly about Urinary diversion

**6 MARKS**

1. Mention about indication of URS and its procedure
2. What are indication and procedure for diagnostic and therapeutic cystoscopy?
3. What is TURBT and explain about the procedure
4. Discuss briefly about cystolithotomy

**3 MARKS**

1. Components of Semi rigid ureteroscope
2. What is SPC? Mention the indication of SPC?
3. Complications of urinary diversion
4. Goals of urinary diversion
5. Write about VUR and its cause
6. What is Augmentation Cystoplasty?
7. Write a note on Ureteric reimplantation
8. Components of cystoscope
9. Flexible uretero-rensoscopy
10. What is cystectomy and mention about the types?
11. Write note on Ureterectomy
12. Write note on Ureterolysis

**UNIT- IV PROSTATE AND URETHRA**

**10 MARKS**

1. Describe the indication, operative steps and post operative complication of Trans-urethral prostatectomy (TURP)
2. What is AV fistula? Describe in detail about AV fistula

**6 MARKS**

1. What is TUR syndrome and explain briefly about TUR syndrome
2. Discuss briefly about prostatectomy
3. What are hypospadias and its management?
4. Explain briefly about Urethral sling procedure
5. Discuss briefly about optical urethrotomy
6. Describe about Bladder neck incision

**3 MARKS**

1. What are types of prostatectomy? Mention the indication of prostatectomy?
2. Write about Urethral dilatation
3. Write note on TVT
4. Write note on TOT
5. Write note on urethroplasty
6. Insertion of an artificial urinary sphincter

## **UNIT- V PENIS AND TESTICLES**

### **10 MARKS**

1. Describe briefly about suture material and suture needle

### **6 MARKS**

1. What is circumcision and explain briefly about circumcision
2. Discuss briefly about penile prosthesis placement
3. Discuss briefly about Radical orchidectomy
4. Technique of sperm retrieval

### **3 MARKS**

1. Write note on Orchidopexy
2. Mention about Scrotal exploration
3. Management of hydrocele
4. Mention about Insertion of testicular prosthesis
5. Write about diathermy
6. Mention about Penectomy for cancer

## **PAPER UT-10- BASICS OF DIALYSIS & ORGAN TRANSPLANTATION**

### **UNIT- I BASICS OF DIALYSIS**

#### **10 MARKS**

1. Describe about principal of dialysis and apparatus of hemodialysis
2. Discuss briefly about Dialysis reuse and water treatment
3. Explain briefly about peritoneal dialysis and its fluids

#### **6 MARKS**

1. Discuss briefly about vascular access in hemodialysis
2. Write a note water treatment
3. Anticoagulation use in hemodialysis
4. Dialysis reuse

#### **3 MARKS**

1. Write a note dialysis and its types?
2. Write a note on flux
3. Indication of dialysis
4. Write a note on dialyzer
5. What is Plasmapheresis?
6. Contraindication of dialysis
7. Complication of hemodialysis
8. Write note on peritoneal dialysis
9. Complication of peritoneal dialysis
10. Medications in dialysis patients
11. Nutrition management in dialysis patients
12. Psychosocial aspects & patient education
13. Quality assurance in dialysis

## **UNIT- II ORGAN TRANSPLANTATION**

### **10 MARKS**

1. Describe the pre operative evaluation and preparation of renal transplant recipient
2. Describe about criteria living donor transplantation and their step for transplantation
3. Describe the cadaver donor criteria. Explain pre operative care and techniques for cadaver renal transplantation

### **6 MARKS**

1. Discuss briefly about renal transplant act and documentation
2. Describe about renal allograft rejection
3. What is immunosuppression and discuss briefly about immunosuppressive drugs
4. Write note on major histocompatibility complex (MHC)
5. Organ preservation
6. List out post transplant complication
7. Note on Donor card
8. Role of Renal transplant co-ordination
9. Management of post-op renal transplant
10. Principles of organ allocation
11. Discuss briefly about renal biopsy
12. Write note on perfusion fluids

### **3 MARKS**

1. Mention about Expanded Criteria Donor (ECD)
2. What are Human Leukocyte Antigen and its types?
3. What is ischemic injury?
4. What is ESRD?
5. What is swap donor?
6. Who are not eligible for organ donation?
7. What are the various types of donor?
8. Note on Donor card
9. What is altruistic kidney donor?
10. Write a note on Recipient workup
11. Write a note on donor workup
12. What is ABO compatibility?
13. Principles of organ allocation

# PAPER UT-11- MEDICINE OUTLINES AND MEDICAL ETHICS

## UNIT- I CARDIAC AND RESPIRATORY DISEASES

### 10 MARKS

1. Discuss briefly shock and its types
2. What is arrhythmias and discuss briefly about the types

### 6 MARKS

1. Describe about Tuberculosis
2. Explain in detail about Pneumothorax
3. Describe about Pneumonia

### 3 MARKS

1. What are step involved in measurement of blood pressure
2. What is Pleural Effusion?
3. What is Ischemic Heart Disease?
4. Management of Hypertension
5. What is Congestive Heart Failure?
6. Write a note on Myocardial Infarction

## UNIT- II NEUROLOGICAL, RENAL, GI AND INFECTIOUS DISEASES

### 10 MARKS

1. Discuss briefly about acute kidney injury
2. Describe about Chronic Kidney Disease

### 6 MARKS

1. Mention about seizure disorder
2. Explain in detail about stroke
3. Hepatitis
4. Explain in detail about prerenal acute renal failure
5. Mention about postrenal acute renal failure
6. Explain in detail about acute tubular necrosis
7. Mention about acute interstitial nephritis

### 3 MARKS

1. What is Polio myelitis?
2. Note on Gullian Barre Syndrome
3. What is Myasthenia Gravis?
4. Write a note on epilepsy
5. Write a note on Gastritis
6. Write a note on peptic ulcer
7. What is Rhabdomyolysis?
8. What is Hemolysis?

### **UNIT- III BLOOD, FLUID, ELECTROLYTE AND ACID BASE ABNORMALITIES**

#### **10 MARKS**

1. Describe about fluid electrolyte imbalance and corrective methods
2. Explain in detail about acid base abnormalities and corrective methods

#### **6 MARKS**

1. Describe about Hypovolemia Hypervolemia
2. Explain in detail about Sodium imbalance and corrective methods
3. Explain in detail about Calcium imbalance and corrective methods
4. Explain in detail about Potassium imbalance and corrective methods
5. Describe about metabolic acidosis and alkalosis
6. Describe about respiratory acidosis and alkalosis

#### **3 MARKS**

1. Define Anemia
2. Define thrombocytopenia
3. Write a note on hyponatremia
4. Write a note on hypernatremia
5. Write a note on hypocalcemia
6. Write a note on hypercalcemia
7. Write a note on hypokalemia
8. Write a note on hyperkalemia
9. Write a note on hypomagnesemia
10. Write a note on hypermagnesemia
11. Write a note on hypophosphatemia
12. Write a note on hyperphosphatemia

### **UNIT- IV PULMONARY OEDEMA, SEPSIS AND MODS**

#### **10 MARKS**

1. Explain in detail about respiratory failure

#### **6 MARKS**

1. Discuss briefly about asthma
2. Explain in detail about chronic obstructive pulmonary disease (COPD)
3. Mention about Diabetes mellitus
4. Explain in detail about AIDS

#### **3 MARKS**

1. Write a note on Dengue
2. Write a note on malaria

### **UNIT- V HEALTH PROBLEMS IN SPECIFIC CONDITIONS AND TOXICOLOGY**

#### **6 MARKS**

1. Write a note on Poisoning
2. Write a note on Drowning and Hanging
3. Basic principles of medical ethics

4. Write a note on organ transplantation act

**3 MARKS**

1. What is leptospirosis?
2. Define Systemic Inflammatory Response Syndrome (SIRS)
3. Write a note food Poisoning
4. Write a note medical Records and document