

# **BABA FARID UNIVERSITY OF HEALTH SCIENCES**

## **ORDINANCES FOR**

### **BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (M.B.B.S.)**

(Approved by the Board of Management on 11.10.2000, vide para 35(a)  
and  
revised on 28.5.2004, vide para 76 to be effective from May/June, 2004 examinations  
irrespective of year of admission of the students)

## **FARIDKOT**

**BACHELOR OF MEDICINE AND BACHELOR OF SURGERY  
(M.B.B.S.)**

(Approved by the Board of Management on 11.10.2000, vide para 35(a) and  
revised on 28.5.2004, vide para 76)

**Selection of Students**

1. The admission to the course of Bachelor of Medicine and Bachelor of Surgery (MBBS) shall be made on the basis of inter-se merit of the candidates appearing in the common entrance test conducted for the purpose under the aegis of the Government of Punjab and as per notification of the govt. from time to time.

**Eligibility**

2. As prescribed in the Notification issued by the Government of Punjab from time to time.

**Duration of the Course**

- 3.1 The Course of study for the degree of MBBS shall consist of 5½ years (nine semester of 6 months each), including one year of compulsory rotating internship, as outlined under Ord. 13 infra. The period of 4 ½ years of study shall be divided into three phases as under:-

- (i) Phase I (Pre-Course) of a duration of one Year (Two Semesters)
- (ii) Phase II (Para-Clinical Subjects) of a duration of one-and-a-half year (Three Semesters); and
- (iii) Phase III (Clinical Subjects) of a duration of two years (four Semesters).

Note: During 2<sup>nd</sup> phase pra and clinical subjects shall be taught concurrently

- 3.2 Each Semester will consist of approximately 120 teaching days consisting of 8 hours each of college working time including one-hour break for lunch. During third to ninth semester, clinical postings of three hours duration daily, as

specified hereunder, shall be compulsory for various departments, after introductory course in clinical methods in Medicine and Surgery of two weeks each for the whole class :

<u>Subject</u>	<u>Total (Weeks)</u>
General ***	
Medicine	26
Paediatrics	10
Tuberculosis and Chest Diseases	02
Skin & STD	06
Psychiatry	02
Radiology*	02
General ****	
Surgery	26
Orthopaedics **	10
Ophthalmology	10
Ear Nose and Throat	08
Obstetrics & Gynaecology*****	24
Including Family Welfare Planning	
Community Medicine	12
Casualty	02
Dentistry	02
Total (in Weeks)	142

Clinical methods in Medicine and Surgery for whole class will be for 2 weeks each respectively at the start of 3<sup>rd</sup> semester.

\* This posting includes training in Radiodiagnosis & radiotherapy where existent

\*\* This posting includes exposure to Rehabilitation and Physiotherapy

\*\*\* This posting includes exposure to laboratory medicine and infectious diseases

\*\*\*\* This posting includes exposure to dressing and Anaesthesia

\*\*\*\*\* This includes maternity training and Family medicine and 3<sup>rd</sup> semester posting shall be in Family Welfare Planning

### **University Examinations**

4. All University examinations shall be held twice a year

- a. First Professional examination at the end of Phase I during the second semester.
- b. Second Professional examination at the end of Phase II during the fifth semester
- c. Third Professional Part I examination at the end of the 7<sup>th</sup> semester, and
- d. Third Professional part II examination at the end of the ninth semester

**Note:** Supplementary examinations for First Prof MBBS students shall be conducted within 6 months after the Annual Examination.

5. Every candidate shall be required to offer the following subjects for various Professional Examinations.

Subject	Theory			Total	Practical /Clinical/Oral			Total
	Written	Oral/Viva	Internal Assessment		Practical/ Clinical	Internal Assessment	Total	
<b>1<sup>st</sup> Prof. Exam</b>								
111 –Anatomy	50+50*	20	20	140	40	20	60	200
112- Physiology including Biophysics	50+50*	20	20	140	40	20	60	200
113 – Biochemistry	50+50*	20	20	140	40	20	60	200
<b>Total (1<sup>st</sup> Prof.)</b>								<b>600</b>

<b>2<sup>nd</sup> Prof. Exam.</b>	40+40*	15	15	110	25	15	40	150
121 – Pathology								
122 – Microbiology	40+40*	15	15	110	25	15	40	150
123 – Pharmacology	40+40*	15	15	110	25	15	40	150
124- Forensic Medicine	40	10	10	60	30	10	40	100
<b>Total (2<sup>nd</sup> Prof.)</b>								<b>550</b>

<b>3<sup>rd</sup> Prof. Part-I Exam</b>	40**	10	10	60	30	10	40	100
131- Ophthalmology								
132-Oto-Rhino Laryngology (ENT)	40**	10	10	60	30	10	40	100
133- Community Med. Including Humanities	60+60	10	20	150	30	20	50	200
<b>Total 3<sup>rd</sup> Prof. Part – I</b>								<b>400</b>

<b>3<sup>rd</sup> Prof. Part-II Exam</b>	60+60**	20	30	170	100	30	130	300
141 –Medicine								
142-Surgery	60+60**	20	30	170	100	30	130	300
143-Obstetrics & Gynaecology	40+40**	30	30	140	30	30	60	200
144- Paediatrics (including Neonatology)	40**	10	10	60	30	10	40	100
<b>Total 3<sup>rd</sup> Prof. Part – II</b>								<b>900</b>

\* Each theory paper will contain one applied question of 10 marks

\*\* Each paper will contain one question on clinical therapeutics

6. The First Professional examination shall be held during the 2<sup>nd</sup> semester in the month of May/June or on such dates as may be decided by the Vice-Chancellor and shall be open to a student who was selected for the course under the procedure outlined in Ordinances 1-2 supra, and has been enrolled in an affiliated college for one academic year preceding the examination, and:-

- (1) has his name submitted to the Registrar by the Head of the College/Institution in which he is enrolled; and
- (2) produces the following certificates signed by the Head of the College/Institute concerned;
  - (i) of being of good moral character
  - (ii) of having attended not less than 75 per cent of lectures in theory and 80 percent in non-lecture teaching (such as seminars, group discussions, tutorials, demonstrations and practical, in the prescribed subjects

Provided that a deficiency in the number of lectures in theory and/or non-lecture teaching (Practical etc. ) may be condoned by the Principal/Head of the Institute up to 5%.

Provided further that if a candidate fulfils the conditions laid down for one or more subjects and not for the other(s), he may be allowed to take examination only in such subject(s) in which he fulfils the conditions; and

- \*(iii) having secured at least 50% marks of the total marks fixed for internal assessment in each subject separately

**\*Note:** Internal Assessment should be submitted to the University at least two weeks before the commencement of theory examinations. All the colleges shall adopt uniform criteria for Internal Assessment for which a record of each student shall be maintained in each department, which should be made available for inspection by the student concerned as well as University authorities.

The re-appear/fail students will not be re-assessed every time for the purpose of Internal Assessment and their previous score of assessment will be carried forward.

7. The Second Professional Examination shall be held during the fifth semester in the month of November/December or on such other dates as may be fixed by the Vice-Chancellor, and shall be open to a person who after having passed the First Professional Examination, remained on the rolls of an affiliated college for one and-a-half academic year preceding the examination, and has his name submitted to the Registrar through the Head of the College/Institute along with the certificates as required by Clause (2) of Ord. 6 Supra.
8. A candidate who fails/fails to appear (if otherwise eligible) in the Second Prof. examination shall not be allowed to appear in the Final Prof MBBS Part I examination unless he passed all the subjects of Second Prof. MBBS examination although he may attend the training programme of Phase III. The head of the College/Institute shall submit the name of the candidate to the Registrar along with the certificates as required by clause (2) of Ord.6 supra.
9. A candidate who fails in the Final Prof MBBS Part I examination may enter for 8<sup>th</sup> & 9<sup>th</sup> Semester training but he /she shall not be allowed to appear in the Final Prof MBBS Part II Examination unless he clears all the subjects of Final Part I examination. The head of the College/Institute shall submit the name of the candidate to the Registrar along with the certificates as required by clause (2) of Ord.6 supra.

#### **Pass Percentage**

10. To pass in each of the subjects, a candidate must obtain 50 per cent marks in aggregate with a minimum of 50% in theory including orals and a minimum of 50% in practical/clinical. A candidate, who secures 80% marks or above in a subject shall be declared to have passed with distinction in that subject, provided he passes in all the subjects of the relevant professional examination at the first attempt.
11. A candidate who passes in one or more subjects shall be exempted from appearing in these subject at a subsequent examination, but the candidate must pass the examination in a maximum of six attempts, failing which he/ she shall have to appear in all the subjects of the examination.

**Note:** A candidate who does not pass in all the subjects of the First Professional examination shall not be allowed admission in the phase II training programme.

#### **Declaration of Result**

12. After the completion of examination as soon as possible, the Registrar/Controller of Examination shall publish the result of examination. The successful candidate of the First Prof. Second Prof. and Third Part I and Part – II examination will be awarded Detailed Marks Card.

### **Compulsory Rotating Internship**

13. Every candidate, on passing the final MBBS examination shall undergo 12 months of compulsory rotating internship to the satisfaction of the college authorities and of the University, as under, so as to be eligible for the award of the degree of Bachelor of Medicine and Bachelor of Surgery (MBBS) and full registration:-

#### **Compulsory**

Community Medicine	3 months
Medicine	2 months
Surgery (including Orthopaedics)	2 months (15 days Orthopaedics)
Obstetrics & Gynaecology (including Family Welfare Planning)	2 months
Paediatrics	15 days
Ophthalmology	15 days
Oto-Rhino-Laryngology	15 days
Casualty	15 days

#### **Elective Postings:**

Elective postings will include two of the following subjects for 15 days in each Subject

- a. Dermatology and Sexually transmitted diseases;
- b. Psychiatry
- c. Tuberculosis and Respiratory diseases;
- d. Anaesthesia
- e. Radio-diagnosis
- f. Physical Medicine and Rehabilitation;
- g. Forensic Medicine and Toxicology;
- h. Blood Bank and Transfusion

14. All the students of Baba Farid University of Health Sciences, Faridkot, will complete their internship in their parent colleges. In some exceptional circumstances a student may be permitted to complete his internship in another affiliated college if Principals of both the colleges give their consent and the University issues No Objection Certificate to this effect. This would be allowed only if a seat is vacant in the college in which the student wants to complete his internship. The students will not be allowed to do their Internship in a Civil Hospital

15. The intern shall maintain a record of work whose assessment and evaluation shall be done objectively and graded as follows:

Poor	Fair	Below average	average	Above average	excellent
0	1	2	3	4	5

A score of less than 3 in any of above items will represent unsatisfactory completion of Internship. The candidates shall repeat the period of Internship where it was assessed unsatisfactory.

16. **Grace Marks**

There shall be no grace marks in MBBS examinations.

\*\*\*\*\*



## **THEORY SYLLABUS IN THE SUBJECT OF ANATOMY**

A course of lectures and lecture demonstration on the :

1. Topographical Anatomy and applied Anatomy of Head and Neck, Brain, Upper Limb, Thorax, Abdomen and Lower Limb.
2. General Embryology :
  - i) Gross and microscopic anatomy of male and female genital organs.
  - ii) Menstrual cycle.
  - iii) Spermato genesis, spermeogenesis and congenesis.
  - iv) Fertilization of ovum.
  - v) Early embryogenesis
  - vi) Tissues and organ changes in mother during pregnancy
  - vii) Placenta and fetal membranes
  - viii) Terato genesis
  - ix) Multiple births
  - x) Family Welfare : Anatomical basis of methods contraception in male and female.
3. Organogenesis with special reference to congenital anomalies.
4. Principles of Genetics including Karyotyping.
5. Basic Anatomy – Skin, superficial fascia, deep fascia, cartilage, Bone, Joints, Muscle, Blood vesseles and Lymphatics.
6. Microscopic study of tissues and organs of the body.
7. Neuroanatomy : Nervous tissue, organization of the nervous system, spinal cord, medulla oblongata, Pons, Cerebellum, Midbrain, Cerebrum, Diencephalon, limbic system, Reticular system, autonomic nervous system, Meninges and blood vessles of the nervous system and applied aspects of the above.

## **PRACTICAL SYLLABUS IN THE SUBJECT OF ANATOMY**

1. Dissection of Head and Neck, Brain, Upper Limb, Thorax, Abdomen and Lower Limb.
2. Microscopic anatomy (Histology) :
  - i). Use of microscope and study of common objects.
  - ii). Study of Tissues.
  - iii). Circulatory System – Heart, Arteries and Veins.
  - iv). Lymphatic System – Lymph Node, Spleen, Thyroid and Tonsil.
  - v). Respiratory system – Epiglottis, trachea and lungs.
  - vi). Digestive system - Tongue, Salivary Glands, Oesophagus, stomach, small and large intestine, vermiform appendix, pancreas, liver, gall bladder.
  - vii). Excretory system - Kidney, Ureter and Urinary bladder.
  - viii). Skin
  - ix). Male and female reproductive system – Testis, Epididymis, Vas deferens, Urethra, Prostate, Penis, Ovary, Fallopian Tube, Uterus, Vagina and Mammary glands.
  - x). Nervous system – Spinal cord, cerebrum and cerebellum and special senses.
  - xi). Endocrine Glands – Thyroid, Parathyroid, Supra renal and pituitary.
3. Surface marking of clinically important structures.
4. Radiological Anatomy, Cross sectional anatomy and sonography.

## **COURSE DISTRIBUTION FOR EACH PAPER**

M. Marks : 50

### **THEORY PAPER – A :**

- Morphology of Head and Neck, Brain and Upper Limb.
- Neuroanatomy
- Basic Anatomy
- Special Embryology, Special Histology and applied anatomy of the related parts.

### **THEORY PAPER – B :**

M. Marks : 50

- Morphology of Thorax, Abdomen and Lower Limb.
- Central Embryology and Genetics.
- Special Embryology, Special Histology and applied anatomy of the related parts.

### **FORMAT OF THEORY QUESTION PAPER**

1. Each question paper will consist of six questions.
2. Each question will be divided in the form of short notes, enumerations and diagrams, marks for each part indicated separately.
3. Question on applied Anatomy of not less than 10 marks in each paper may be included as parts of questions.

## **COMPONENTS OF PRACTICAL EXAMINATION**

M. Marks : 40

- Dissection
- Histology
- Radiology
- Surface Marking

Viva Voce (Oral - to be included in Theory) - 20

Internal Assessment :	Theory	-	20
	Practical	-	20

**NOTE :** To pass in the subject of Anatomy, a candidate must obtain 50% marks in aggregate, with a minimum of 50% in Theory (Including Oral and theory internal assessment) and a minimum of 50% in

**BOOKS RECOMMENDED FOR THE SUBJECT OF ANATOMY  
FOR 1<sup>ST</sup> PROF. MBBS**

1. Clinical Anatomy - Richard S Snell.
2. Cunningham's Manual of Practical Anatomy, Vol – I, II, III.
3. Langman's Medical Embryology.
4. Text Book of Human Embryology by Inderbir Singh.
5. Text Book of Histology by F. Huwer.
6. Text Book of Histology by Krishna Garg, Indira Behl and Mohini Kaul.
7. Clinical Neuroanatomy for medical students by Richard S. Snell.
8. Text Book of Neuroanatomy by Inderbir Singh.
9. Osteology – by Joseph.

**BOOKS FOR FURTHER REFERENCE**

1. Gray's Anatomy by Gray's
2. Tissues of the body – Le Gross Clarke
3. Anatomy – Regional and Applied – R.J. last
4. Synopsis of Surgical Anatomy by McGregor
5. Human Embryology by Hamilton Boyd & Mossman
6. Text Book of Human Histology by Bloom and Fauneet
7. Atlas of Human Histology by Di-Fiore
8. Neuroanatomy – Ranson & Clark
9. Genetics – Thompson & Thompson
10. Text Book of Human Genetics by Gangane S.D.
11. Atlas of Surface & Radiological Anatomy – A Halim
12. Gross Sectional Human Anatomy – Dean.

## **CURRICULUM FOR THE SUBJECT OF PHYSIOLOGY** **COURSE CONTENTS FOR THEORY PAPER**

### **1. GENERAL PHYSIOLOGY**

Homeostasis, concept of physiological norms, range and variations. Structure of Cell membrane, Active and passive transport, Resting membrane potentials, Cellular receptors, intercellular communication, Cell organelles, inclusions and their functions.

### **2. NERVE AND MUSCLE**

Classification and structure of nerve and muscles. Electrical, mechanical properties. Mechanism of muscle contraction and its molecular basis, Neuromuscular transmission, thermal changes, oxygen debt and mechanical efficiency, smooth muscle-electrical and mechanical properties, Neuromuscular disorders and effects of denervation on muscle, E.M.G.

### **3. NERVOUS SYSTEM (Central and Autonomic)**

Organization of the central, peripheral and Autonomic, Nervous system, function and neuronal organization at spinal cord level, Synaptic transmission, motor and sensory systems and their lesions. Reticular system in brain stem, sleep, wakefulness, E.E.G. – waves and Physiological changes in E.E.G. Clinical lesions and Experimental sections at spinal cord, brain stem and sub-cortical levels, physiology of basal ganglia, Cerebellum, maintenance of muscle tone, posture and equilibrium, physiology of thalamus, hypothalamus, limbic system and cerebral cortex. Physiology of speech and its disorders, learning and memory, formation and functions of CSF and its composition, Blood brain barrier, Central neurotransmitters, Physiological basis of CNS disorders like Alzheimer's disease, Parkinsonism, Syringomyelia and Tabes dorsalis, Evoked potentials & Autonomic pharmacology.

### **4. ENDOCRINE GLANDS**

General principles of regulation of endocrine glands, hormones-functions, regulation of secretion, Experimental and clinical disorders of Anterior and Posterior Pituitary, thyroid, parathyroid, Adrenal Cortex, Adrenal Medulla, Endocrine Pancreas. Endocrine functions of other organs and local hormones e.g. pineal, placenta, thymus, lungs, kidneys, Endothelium, Stress and hormones, Physiology of Growth.

### **5. REPRODUCTION**

**MALE REPRODUCTION :** Spermatogenesis, regulation and function of testis, constituents of semen, ejaculation, Testicular hormones, puberty, Physiological basis of sex differentiation and disorders, abnormalities of testicular function, infertility.

**FEMALE REPRODUCTION :** Menstrual cycle-changes in ovary, uterus, cervical mucosa, vagina and hormonal regulation, ovulation and its detection, fertilization, Implantation, Physiological changes during pregnancy and parturition, placenta, physiology of lactation, menopause, Nutritional needs of mother and child during pregnancy and lactation, composition of milk, colostrum.

**FAMILY PLANNING AND WELFARE :** Physiological basis of contraception in males and females principles of use of oral contraceptives, safe period, rhythm and other methods of contraception.

## **6. SPECIAL SENSES**

**EYE :** Image formation on retina, Errors of refraction, functions of aqueous humour, intraocular tension and Glaucoma, Mechanisms of accommodation, Dark adaptation, pupillary reflexes, optic pathway and lesions, field of vision, colour vision, structure of Photoreceptors, generator potentials of rods and cones, Electroretinogram.

**AUDITORY APPARATUS :** Function of tympanic membrane, middle ear and cochlea, Auditory receptors and pathway, Deafness and its causes, Theories of hearing, Audiometry.

**VESTIBULAR APPARATUS :** Division, functions, connections and lesions, vestibulo cochlear function, Nystagmus, tests of vestibule function.

**TASTE AND SMELL :** Receptors, pathways and Cortical and limbic areas associated with taste and smell, Disorders of taste and smell.

## **7. BODY FLUIDS AND BLOOD**

Body fluid composition and Principles of estimation, oedema, Plasma proteins, cellular elements of blood, their formation and regulation, hemoglobin and functions, Anemias and their classification, jaundice, hemostatic mechanisms and anticoagulants, Blood group and Rh incompatibility, blood transfusion, E.S.R., Basic mechanisms of immunity with respect to lymphocytes, functions of W.B.C. and applied aspects, cell mediated immunity, Lymph.

## **8. G.I.T. AND NUTRITION**

Oral cavity-mastication and digestion in mouth and deglutition, functional morphology, functions, regulation of secretion of salivary glands, stomach, small intestine and large intestine, Regulation of G.I. Movements and Physiological basis of abnormalities like vomiting, Diarrhea, constipation, Achalasia, Megacolon and peptic ulcer, Functions of gall bladder, functions of liver, site of production and actions of G.I. Hormone. Defecation, Nutrition-Balanced Diet, Diet in Pregnancy and lactation, malnutrition.

## 9. KIDNEY

Structure and functions of different part of nephron, urine formation, Role of Kidney in water and electrolyte balance and acidification of urine, Renal blood flow, Physiological basis of kidney function tests, Juxtaglomerular apparatus, Renin Angiotensin system, structure and innervation of urinary bladder, Micturition, Cystometrogram and disorders of micturition, composition of urine, Artificial kidney, Dialysis and renal failure.

## 10. CARDIOVASCULAR SYSTEM

Functional anatomy of heart, properties of cardiac muscle, Electrical and mechanical changes in cardiac cycle, Normal E.C.G. Cardiac output, measurement of cardiac output in man and Physiological variations, Regulatory mechanisms of heart rate, cardiac output and blood pressure, Regional circulations-normal value, measurement and regulation of coronary, cerebral, skin and foetal circulation, change in C.V.S. during muscular exercise, postural changes, hypovolemia, Arrhythmia, Pathophysiology of cardiac failure and hypertension, valvular disorders.

## 11. SKIN AND BODY TEMPERATURE

Functional morphology, heat gain and loss mechanisms, role of skin in temperature regulation normal values and variations Hypothermia, fever, heatstroke.

## 12. RESPIRATORY SYSTEM

Functional anatomy of respiratory system, mechanism of normal respiration, Lung compliance, work of breathing, Alveolar ventilation, ventilation perfusion ratio, oxygen and carbon-di-oxide transport, diffusing capacity, pulmonary function tests, regulation of respiration, Respiratory acidosis and alkalosis, pulmonary blood flow, Hypoxia, Cyanosis, Asphyxia and dyspnoea, Respiratory adjustments during exercise Hyperbaric conditions and decompression sickness, High Altitude and aviation Physiology, Pathophysiology of obstructive and restrictive disorders, Hyaline membrane disease, Pulmonary oedema, Hyperbaric therapy, oxygen toxicity, Non-respiratory functions of respiratory system.

## **COURSE CONTENT (PRACTICALS)**

The following list of experiments and demonstrations is not exhaustive additional experiments can be included as and when feasible and required.

### **1. EXPERIMENT ON HEAMATOLOGY**

#### **MUST KNOW :**

Principles of microscopy and method of using microscope; general examination of blood under microscope; enumeration of red blood cells; enumeration of white blood cells; eosinophil count; preparation and staining of blood films; identification of blood cells in a stained film; differential leucocyte count; specific gravity of blood; fragility of red blood cell; erythrocyte sedimentation rate; haematocrit value; blood grouping; estimation of haemoglobin; laboratory classification of anaemias and determination of absolute indices like MCH, MCHC, MCV, colour index; bleeding and clotting time.

#### **DESIRABLE TO KNOW :**

Methods of blood collection; Arneth count; enumeration of reticulocyte and platelets (demonstration); viscosity of blood (demonstration); blood volume estimation (demonstration); bone marrow smear (demonstration).

### **2. NEURO-MUSCULAR PHYSIOLOGY**

#### **DESIRABLE TO KNOW :**

Study of laboratory appliances in experimental-physiology and dissection of frogs gastrocnemius – sciatic muscle nerve preparation; simple muscle curve; effects of increasing strength of stimuli; effects of temperature; genesis of fatigue; effects of two successive stimuli; genesis of tetanus; effects of after load and free load on muscle contraction and calculation of work done; velocity of nerve impulse in sciatic nerve of the frog; isometric contraction and determination of resting length.

### **3. SMOOTH MUSCLE EXPERIMENTS**

#### **DESIRABLE TO KNOW :**

Recording of contraction of frog's rectum; recording of movements of small intestine (rabbit) and effects of ions, drugs, temperature.

### **4. HUMAN NEURO-MUSCULAR PHYSIOLOGY**

#### **MUST KNOW :**

Mosso's ergography; effects of prolonged voluntary activity, rest motivation, fatigue on human muscle contractions and calculation of work done; bicycle ergometry and treadmill, mechanical efficiency of human body.



**DESIRABLE TO KNOW :**

Demonstration of electromyography; velocity of nerve impulse and strength duration curve in humans (demonstration); compound action potential (demonstration).

**5. EXPERIMENTS ON METABOLISM, BODY TEMPERATURE AND KIDNEY****MUST KNOW :**

Recording of body temperature and effects of exercise on body temperature.

**DESIRABLE TO KNOW :**

Basal metabolic rate in humans, water excretion test.

**6. EXPERIMENTS ON ENDOCRINES AND REPRODUCTIVE SYSTEM****DESIRABLE TO KNOW :**

Demonstration of vaginal smears of rats; identification of the phases of the estrus cycle; pregnancy diagnostic tests; effects of adrenaline, posterior pituitary extract on uterine muscle; examination of semen – sperm count, sperm motility (demonstration); Demonstration of slides showing the proliferative and secretory changes in the endometrium.

**7. CARDIOVASCULAR SYSTEM****MUST KNOW :**

Clinical examination of cardiovascular system; sphygmomanometry and exercise on blood pressure, effect of posture on B.P.; radial pulse; cold-pressor test; Electrocardiograph.

**DESIRABLE TO KNOW :**

Normal cardiogram; effect of warmth and cold on sinus venosus and ventricle; extra systole and compensatory pause; stannius ligatures; properties of cardiac muscle; effect of acetylcholine, adrenaline, nicotine and atropine on frog heart; perfusion of blood vessels of frog; perfusion of mammalian heart and effect of drugs on it; perfusion of frog's heart and effect of ions on it.

(DEMONSTRATIONS) : Echocardiography; cardiac output in dogs; record of blood pressure, venous pressure, respiration in animals (dog) and effects of various factors on it; phonocardiogram; effect of passive tilt on B.P.; effect of exercise on hemo-car-dio-respiratory system; Cardiac function tests; Cutaneous circulation in man.

## 8. RESPIRATORY SYSTEM

### MUST KNOW :

Pulmonary function tests including spirometry; clinical examinations of respiratory system; stethography; cardiopulmonary resuscitation; respiratory response to exercise.

### DESIRABLE TO KNOW :

(DEMONSTRATIONS) : Compliance and surfactant; Donder's model to demonstrate the mechanism of respiration; Dog/cat; intrapleural and intraoesophageal pressures and the effect of various influences on them; Muller's manoeuvre; Collection and analysis of respiratory gases; uses of Douglas bag for measuring M.V.V.

## 9. NERVOUS SYSTEM

### MUST KNOW :

Examination of motor functions, sensory functions and cranial nerves examination; examination of reflexes of normal subject.

### DESIRABLE TO KNOW :

(DEMONSTRATIONS) : E.E.G., E.M.G. and nerve conduction studies; sensory, motor, compound action potential; decerebrate rigidity in cat; reaction time; spinal frog and reciprocal innervation; decerebrate frog; examination of autonomic functions.

## 10. SPECIAL SENSUS

### MUST KNOW :

To study the model of eye; perimetry; acuity of vision-distant and near; colour vision; tests on smell and taste; tuning fork tests.

### DESIRABLE TO KNOW :

(DEMONSTRATIONS) : Principles of ophthalmoscopy and retinoscopy; audiometry; Purkinje-Samson images.

## LIST OF TOPICS FOR INTEGRATION

1. Endocrine glands : Biochemistry and Medicine
2. Family Planning & Welfare : Anatomy and Obstetrics & Gynaecology
3. Echocardiography : Cardiology

4. Basic Life Support (Module) : Anaesthesia and Anatomy
5. Cardiac Physiology : Medicine
6. Patho-Physiology of hypertension : Medicine
7. Clinical Disorders of CNS : Neurology and Medicine
8. Intraocular tension and Retinoscopy : Ophthalmology
9. Audiometry and Vestibular tests : Oto-rhino-laryngology (ENT)
10. Demonstration of patients with clear-cut signs of important diseases.

### **OUTLINE OF TESTS**

#### **THEORY**

Two papers of 50 marks each, and of 3 hours duration 100  
 (One applied question of 10 marks in each paper)

#### **PAPER-A :**

General Physiology, Biophysics, Nerve and Muscle Physiology, Nervous System, Special Senses, Endocrines, Reproduction including, Growth and senility.

#### **PAPER-B :**

Blood and Lymph, Circulation, Skin and body temperature, Respiration, Digestion & Nutrition, Kidney (Excretion).

Viva Voce		20	
Total of Theory + Viva Voce	=	120	-----

#### **PRACTICAL**

Practical, including Amphibian experiments, Human experiments, Blood film and Haematology and identification of Spots.		40	
--	--	----	--

#### **INTERNAL ASSESSMENT**

THEORY – 20,	PRACTICAL – 20	40	
GRAND TOTAL	=	200	-----

There shall be four examiners (Two Internals and Two Externals). External Examiners will Mark paper-A, (Part-I and Part-II separately) and Internal examiners will Mark paper-B (Part-I and Part-II separately). Oral and Practical Examination shall be conducted by all the four examiners.

## MODEL PAPER OF PHYSIOLOGY

### PAPER - B

All questions are compulsory.

Time : 3 Hours

- i) Answer should be to the point.
- ii) Use Separate answer books for Part-I & part-II

M.M. : 50

#### PART - I

I. Write notes on the following with the help of diagrams.

- a) Waves, intervals and segments of normal ECG. Tracing.
- b) Oxygen-Haemoglobin dissociation curve.
- c) Blood typing and Cross-matching.

3 X 3

II. Write notes on the following :

- a) Hering – Breur reflexes
- b) Balanced diet
- c) Tubulo-glomerular feed back
- d) Four hormones of GIT and their functions

2 X 4

III. Describe the following :

- a) Baroreceptors and their role in regulation of B.P.
- b) Composition, functions and regulation of pancreatic Secretion.

4 X 2

#### PART - II

IV. Write notes on the following with the help of diagram.

- a) Counter-Current multiplier system
- b) Left ventricular pressure curve during cardiac cycle
- c) Nervous regulation of respiration

3 X 3

V. Write notes on the following :

- a) Response of body to cold
- b) T – Lymphocytes
- c) GFR & factors affecting it
- d) Hypoxia

2 X 4

VI. Describe the following.

- a) Blood clotting and anti clotting systems and clinical Importance of each system.
- b) Effect of exercise on cardio-vascular and respiratory system.

4 X 2

-----\*\*\*\*\*-----

## Biochemistry Syllabi

### THEORY

#### PAPER – A

- Chemistry and Metabolism of Carbohydrates
- Chemistry and Metabolism of Lipids
- Chemistry and Metabolism of Amino Acids
- Chemistry and Function of Proteins
- Enzymes
- Vitamins and Coenzymes
- Biological Oxidation

#### PAPER – B

- Nucleic Acid and Molecular Biochemistry
- Minerals, Water and Electrolyte Balance and Imbalance
- Acid Base Balance and Imbalance
- Organ Function Tests
- Detoxication
- Radioisotopes
- Chromatography and Electrophoresis

### DISTRIBUTION OF MARKS

**THEORY :** Two papers of 50 marks each and each of 3 hours duration (Paper A and Paper B). Each paper will have 5 questions of 10 marks each with 2-3 sub parts including short answer question. There shall be no choice in any question.

#### THEORY :

Paper A	=	50
Paper B	=	50
Viva Voce	=	20

Total Theory & Viva Voce	=	120
--------------------------	---	-----

<u>PRACTICALS :</u>	<u>Practical</u>	=	40
---------------------	------------------	---	----

#### INTERNAL ASSESSMENT :

Theory	=	20
Practicals	=	20

Total	=	40	Grand Total	=	200
-------	---	----	-------------	---	-----

### **DETAILED SYLLABUS**

<b>ENZYMES :</b>	<p>Definition and classification of enzymes, co-enzymes, holoenzymes, apoenzymes, isoenzymes and metalloenzyme. Catalytic site : definition, mechanism of action. Factors effecting enzymes action e.g. pH, temperature and substrate concentration, concept of <math>K_m</math> and enzyme Inhibition (No derivation).</p> <p>Enzyme regulation (feedback and allosteric regulation). Diagnostic Importance of Enzyme (Emphasis on Liver and Heart).</p>
<b>VITAMINS AND CO-ENZYMES</b>	<p>Definition of metabolic reactions catalysed by : NAD, NADP, CoA, Lipoic acids, TPP, PLP, FMN, FAD, Folic Acid, Biotin and B12 (only general concept of biochemical reactions without structure).</p> <p>Vitamins : Biochemical role of Fat soluble Vitamins A.D.E.K. &amp; Ascorbic Acid.</p>
<b>BIOCHEMICAL OXIDATION</b>	<p>ETC (Electron Transport Chain along with uncouplers and inhibitors). Concept of High Energy compounds.</p> <p>Oxidative phosphorylation, Glycerophosphate shuttle, malate shuttle.</p>
<b>CARBO-HYDRATES</b>	<p><b>CHEMISTRY :</b> Chemistry of Mono, disaccharides and polysaccharides, Isomerism in carbohydrates (Stereo, optical, epimers, anomers and mutarotation). Concept of glycoproteins, proteoglycans, glycolipids, aminosugars and glycosides (without detailed structure).</p> <p><b>METABOLISM :</b></p> <p>Digestion and absorption of dietary carbohydrates, Glycolysis, HMP-shunt, TCA-Cycle and Uronic acid pathway and gluconeogenesis, bio-energetics, biomedical importance, metabolic disorders and regulations).</p> <p>Glycogen : Synthesis and breakdown (along with glycogen storage disorder and hormonal regulation). Concept of galactose and fructose metabolism.</p> <p>G.T.T : Clinical importance of GTT and study of abnormal glucose absorption curves, regulation of blood sugar, glycosurias and diabetes mellitus.</p>

**LIPIDS**

Classification, biomedical importance and functions of saturated, unsaturated and essential fatty acids, Triglycerides, phospholipids, glycolipids, sulfatides and lipoproteins.

Cholesterol :Structure, functions and its derivatives. Prostaglandins, classification, and functions. Concept of prostacyclins, leukotrienes and thromboxanes.

**METABOLISM :** Digestion and absorption of lipids, fatty acids, synthesis,  $\beta$ -oxidation of fatty acids, along with inborn errors.

**CHOLESTEROL :** Synthesis, catabolism, regulation inborn errors and atherosclerosis.

Concept of Apoproteins, lipoproteins, transport and disorders, lipotropic factors and fatty liver, ketosis lipid metabolic disorders (Lipidosis).

Lipid peroxidation and role of Antioxidants.  
Importance of liposomes.

**AMINOACIDS & PROTEINS**

Classification and structures of alpha-aminoacids found in proteins, Zwitterions and iso-electric pH.

Peptides of biological activity like glutathione, insulin. Classification structure and bonds-maintaining structure of proteins.

Functions of plasma proteins.

Structure function relationship with emphasis on haemoglobin and myoglobin.

Structure and functions of Immunoglobulins.

**METABOLISM OF AMINO ACIDS/ PROTEINS**

Digestion and absorption of proteins.

General reactions of aminoacids like oxidative and non-oxidative deamination, transamination and decarboxylation, transamidation.

Transport and formation of ammonia, urea cycle with inborn-errors of metabolism.

Catabolism including formation of specialised products and inborn errors of glycine, phenylalanine, tyrosine, tryptophan, methionine, cysteine, cystine, and histidine. Minor concept of metabolism of branched chain aminoacid Creatine metabolism.

<b>METABOLIC ACIDS</b>	<p>Basic concept of nucleosides and nucleotides. Common derivative of purines and pyrimidines. Uric Acid Metabolism.</p> <p>Structure of ANA and DNA (A, B &amp; Z).</p> <p>Definitions of Introns : Exons, clone, library, genome plasmid</p> <p>Fingerprinting, footprinting, vector, probe, hairpin, ligation, splicing</p> <p>Western blot, Northern blot, Southern blot.</p>
<b>MOLECULAR BIOCHEMISTRY</b>	<p>Replication, transcription, genetic code and translation.</p> <p>Definition and types of mutations :</p> <ul style="list-style-type: none"> <li>- Point mutations</li> <li>- Frameshift mutations</li> <li>- Missense mutations</li> </ul> <p>Concept of Recombinant DNA technology.</p> <p>Gene regulation on the basis of Lac operon concept.</p>
<b>MINERALS</b>	<p>Biochemical role of minerals (Sodium, Potassium, Magnesium Fluorine, Calcium, Phosphorus, Iron, Iodine Chloride, Copper, Zinc Selenium).</p> <p>Common clinical disorders associated with metabolism of these minerals.</p> <p>Water and electrolyte balance and Imbalance.</p>
<b>ACID BASE BALANCE</b>	<p>Definition of pH and Buffers, Handerson Hasselbarr Equation (Excluding derivation).</p> <p>Blood Buffers : Define metabolic and respiratory acidosis and alkalosis along with common causes.</p> <p>Role of lungs and kidneys in pH maintenance.</p>
<b>ORGAN FUNCTION TEST</b>	<p><u>Thyroid Function Tests</u> : (Radioactive iodine uptake, general concept of T3, T4, TSH).</p> <p><u>Liver Funtion Tests</u> : General concept and clinical importance of SGOT/SGPT, alkaline phosphatase, LDH, Gamma-GT, Total protein, Albumin and A.G. Ratio. Direct and indirect bilirubin and urinary bile salts and bile pigments.</p> <p><u>Renal Function Tests</u> : Significance of clearance tests (urea, creatinine and inulin).</p>
<b>DETOXICATION</b>	<p>Mechanism of detoxication.</p>
<b>RADIO - ISOTOPRES</b>	<p>Diagnostic and therapeutic importance of radio isotopes (Iodine phosphorous cobalt and technetium).</p>



**CHROMATO-  
GRAPHY**

General concept of paper chromatography, TLC, HPLC &amp; GLC.

**ELECTRO-  
PHORESIS**

Definition and minor concept of techniques (PAGE, paper electrophoresis and high voltage electrophoresis).

**DETAILED SYLLABUS****PRACTICALS**

1. Case study of interpretation of laboratory data.
2. Qualitative Analysis of Normal and Abnormal constituents of urine (Protein, Sugar, Bile, Blood and Ketone bodies) and interpretation of results of each analysis..
3. Principles of Colorimetry.
4. Quantitative Estimations :
  - A. Blood/Serum : Sugar, Urea, Creatinine, Bilirubins, (Total and conjugated), Total Protein, Albumin and A.G. Ratio, Cholesterol, Uric acid and interpretation of Results.
  - B. Urine, Estimation of Creatinine, Creatinine clearance and interpretation of results.
  - C. CSF : Estimation of sugar proteins and chlorides in CSF.
5. Demonstration of Enzyme Estimations : ALP, SGOT, SGPT, Amylase and interpretation of Results.
6. Demonstration of Chromatograph and the Electrophoretic techniques and interpretation of a chromatograph and the Electrophoretic pattern of serum proteins.
7. Demonstration of spectroscopy of Haemoglobin and derivatives.
8. Demonstration of Semi/Auto Analysers, flame photometer and pH Meters.

-----\*\*\*\*\*-----

## CURRICULUM FOR THE SUBJECT OF PATHOLOGY

2<sup>ND</sup> PROF. M.B.B.S

### I. Distribution of Marks

Paper A	=	40 Marks
Paper B	=	40 "
Oral Viva	=	15 "
Practical	=	25 "

#### Internal Assessment

Theory	=	15 "
Practical	=	15 "

- II. The minimum number of marks required to pass the subject shall be 50% in aggregate with minimum of 50% in theory including oral and minimum of 50% in practicals.

### III. General Instructions for paper pattern

Paper A will have two parts.

Part – I - General Pathology of 20 marks and will have 3 questions.

Part – II - Haematology of 20 marks and will have 3 questions.

Paper B - Systemic Pathology of 40 marks and there will be total six questions, care should be taken that question should cover the syllabus in a uniform manner.

**PAPER - A (THEORY)**

Time Allowed - 3 Hours

M.M. - 40  
 Part - I - 20  
 Part - II - 20

**GENERAL PATHOLOGY (PART - I)**1. **Cellular injury & cellular death**

Introduction to Pathology, Cell injury & Necrosis Apoptosis Intra cellular Accumulations of Lipid, Protein Glycogen, pigments, Pathological calcification and Hyaline change.

2. **Cellular adaptation of Growth and differentiation**

Control of cell growth, cellular Adaptations, Hypertrophy, atrophy, Hyperplasia Metaplasia and Dysplasia.

3. **Inflammation and repair**

Acute inflammation - Vascular changes, cellular events, chemical mediators of inflammation. Chronic inflammation including granulomatous inflammation systemic effects of inflammation. Wound healing and repair excluding fracture healing.

4. **Fluid and Haemodynamic disturbances**

Oedema, Hyperaemia and congestion, haemorrhage, Thrombosis, embolism, Infarction and shock.

5. **Basis of Genetic disorders with few common diseases**

Like Down's Syndrome, Turners and Kline Felter's syndrome.

6. **Diseases of Immunity**

Cells of Immune system, cytokines of system, Histocompatibility antigens, mechanism of immune injury (Hypersensitivity Reactions) Autoimmune diseases with special reference to SLE, Rheumatoid - Arthritis, Immunological deficiency syndrome with special reference to AIDS. Transplant - Rejection particularly of kidney. Amyloidosis in detail.

7. **Neoplasia**

Definition, nomenclature, Benign versus malignant, classification of tumours, Features of malignant tumours, spread of tumours, grading and staging of tumours, biopsy of tumour growth, Tumour antigens, Clinical features of

tumours, Paraneoplastic syndrome, Carcinogens and laboratory diagnosis of cancer.

8. Infectious Diseases

Viral Disease :

1. Infectious mononucleosis
2. Mumps
3. Measles
4. Chicken Pox
5. Herpes Simplex & zoster
6. Rabies

Bacterial Diseases :

1. Tuberculosis
2. Syphilis
3. Leprosy
4. Actinomycosis
5. Typhoid
6. Sexually transmitted disease
7. L G V
8. Toxoplasmosis
9. Cat Scratch disease

Fungal Disease :

1. Candidiasis
2. Aspergillosis
3. Histoplasmosis

Miscellaneous :

1. Sarcoidosis

9. Nutritional Diseases

Maramus - Kwashiorkor Vitamins and related disorders.

**HAEMATOLOGY (PART – II)**

Formation of blood cells, Bone Marrow, Biopsy and Bone Marrow Examination. Anaemia classification, Iron Deficiency Anaemia. Macrocytic anaemia with special reference to Megaloblastic anaemia. Haemolytic anaemias, Pancytopenia, and Aplastic anaemia, Disorders of haemoglobinopathies like sickle cell disease, Thalassemias. Sideroblastic anaemia. Neutrophilia and Eosinophilia, Neutropenia and Agnucleocytosis Leucocytosis, Leucopenia, Leukaemoid Reactions. Leukaemias classification with special reference to FAB classification Acute Lymphoblastic Leukaemia. Acute myeloblastic Leukaemia, chronic lymphocytic Leukaemia, chronic myeloid Leukaemia, Plasma cell disorders (Multiple myeloma) Myelodysplastic syndrome (MDS) Myeloproliferative disorders including myelofibrosis and polycythemia.

Bleeding Disorders - Investigations of Bleeding disorders, ITP and functional platelet disorders.

Coagulation Disorders - Haemophilia and Christmas disease.

**PAPER – B**

Time Allowed - 3 Hours

M.M. - 40

**SYSTEMIC PATHOLOGY****1. Cardiovascular System**

- A. Disease of Blood Vessels : Atherosclerosis Hypertensive vascular disease. Inflammatory disease. Vasculitis (Wegener's Granulomatosis, Polyarteritis nodosa) Raynaud's disease Buerger's disease. Aneurysm, vascular tumours (Haemangioma).

**1. Heart**

Ischaemic Heart disease (IHD), Rheumatic heart disease, Congestive heart Failure. Valvular Heart Disease, Infective Endocarditis Myocardial Heart disease, Pericardial Heart disease (Pericarditis) Cardiomyopathies in brief, Congenital Heart disease with special reference to Fallot's Tetralogy.

**2. Lymph Node and Spleen****Causes**

of Lymphadenopathy with special reference to tuberculosis. Malignant Lymphoma, Classification and description of Hodgkin and non Hodgkin's Lymphoma causes of splenomegaly. Infarct spleen and congestive splenomegaly.

**3. Lungs and Pleura**

Atelectasis, Pulmonary congestion and oedema, Chronic obstructive airway disease (emphysema Chronic Bronchitis Asthma and Bronchiectasis), Pulmonary Infections – Pneumonia Lung abscess, Pulmonary tuberculosis diffuse interstitial lung disease, pneumoconiosis, lung tumours, pleuritis with special reference to tubercular pleural effusion mesothelioma.

**4. G.I.T.**

Oral Cavity and Salivary Glands carcinoma of oral cavity, ulcers in mouth, Sialadenitis, tumours of Salivary glands, classification with special reference to pleomorphic adenoma and adamantinoma of Jaw.

Oesophagus Achalasia, oesophagitis and carcinoma of oesophagus.

Stomach Gastritis acute and chronic Peptic Ulcer, gastric carcinoma carcinoids.

Intestine Common ulcerative conditions like amoebiasis bacillary dysentery, typhoid and tuberculous ulcers. Idiopathic inflammatory bowel diseases-Chron's disease and ulcerative colitis, Polyps, carcinoma.

Appendix Acute appendicitis and carcinoid.

5. **Liver and Biliary Tract**

Pathophysiology of Jaundice, L.F.T., Cirrhosis, portal hypertension, hepatic encephalopathy, viral hepatitis, alcoholic liver disease, chronic hepatitis. Paediatric liver disease-Wilson's disease, Indian Childhood Cirrhosis, Antitrypsin deficiency, Neonatal Jaundice. Tumour – hepatocellular, Cholangio carcinoma and secondary deposits.

Gall Bladder - Cholecystitis, Cholelithiasis (Gall Stones) carcinoma of gall bladder.

6. **Pancreas**

Pancreatitis and carcinoma of pancreas.

7. **Kidney**

Aetiopathogenesis, pathological features, clinico pathological co-relation, prognosis and relevant Laboratory investigations of common renal diseases such as Glomerulonephritis, nephrotic syndrome, pyelonephritis, acute tubular necrosis, hypertensive kidney disease, polycystic kidney disease. Renal stones, hydronephrosis.

Tumours – Renal cell carcinoma, nephroblastoma.

Urinary Bladder - Carcinoma and urinary bladder.

8. **Male Genital System**

Carcinoma of penis, infarction testes, Epidydmits, tubercular epidydmits.

Testicular : Tumours – classification with special reference to seminoma and teratoma.

Prostate : Benign nodular hyperplasia and carcinoma of prostate.

9. **Female Genital System**

Endometrial pathology including endometrial hyperplasia, adenomyosis, endometriosis and carcinoma of endometrium. Tumours of myometrium – leiomyoma carcinoma of cervix including CIN and ovarian tumours. Classification and special reference to teratoma (Dermoid cyst) Dysgerminoma, Brenners tumour.

Placenta - Hydatidiform mole and chorio-carcinoma.

10. **Breast**

Fibrocystic disease, benign tumours – fibroadenoma, Phylloides tumour, Carcinoma of breast.

11. **C.N.S.**

Meningitis – viral, pyogenic and tubercular. Tubercular and fungal infection of CNS. Classification of tumours of CNS and brief introduction to common CNS tumours like Meningioma, glioma and medulloblastoma.

12. **Bones and Joints**

Healing of fracture, osteomyelitis, tubercular osteomyelitis. Classification of Bone tumours with special reference to Chondroma osteochondroma, osteogenic sarcoma, Ewing sarcoma and Giant cell tumour. Causes of arthritis – pyogenic arthritis, tubercular, rheumatoid arthritis, Gout.

13. **Endocrine System**

Thyroid – Hyperthyroidism, hypothyroidism, Grave's disease, Multinodular Goitre, Thyroiditis, Thyroid Tumours (Adenoma and Carcinoma).

Parathyroid - Hyperparathyroidism, parathyroid tumours – adenoma and carcinoma.

Endocrine Pancreas - Diabetes mellitus in detail and islet cell tumours.

Adrenal Glands - Hyperadrenalism, Cushing Syndrome, Conn's Syndrome. Hypoadrenalism - Addisons disease, Tumour of Adrenal Glands.

Pituitary Glands - Hyperpituitarism – Acromegaly, Hypopituitarism, Sheehan's Syndrome and Simmond's disease.

14. **Cytology**

General aspects and various types – Exfoliative cytology, Fluid Cytology, Sputum Cytology, Cervical PAP Smear and Fine Needle Aspiration Cytology (FNAC).

## **PRACTICAL (PATHOLOGY)**

### **1. Histopathology**

Introduction to Histopathology laboratory and Histopathology techniques like Grossing, Fixation, Processing, Cutting of Sections and H and E Staining in brief. Histopathology slides approximately 50 in number - Annexure No 1 attached.

### **2. Cytology**

Introduction to Cytology laboratory, FNAC, PAP and MGG staining.

### **3. Clinical Pathology**

Including Haematology, collection of blood, Haemoglobin estimation and anticoagulants, ESR, TLC, DLC, Peripheral Blood Film and identification of Blood Cell, PCV and Haematocrit Values, RBC Count, Blood Grouping.

Haematology slides - Approx 8-10 in number (Annexure No 2 attached).

### **4. Urine Analysis**

Physical, chemical and microscopic examination,

### **5. Postmortems (Autopsies)**

Every student will act as an assistant or a clerk for at least 10 post mortems or discussions on postmortem material available in the department. Annexure No 3 attached.

### **6. Museum Specimen Discussion/ Tutorials**

Discussion of instruments of Histopathology/ Cytology/ Haematology Lab.



**ANNEXURE - I****HISTOPATHOLOGY SLIDES**

1. Acute Appendicitis
2. Chronic Cholecystitis
3. Chronic Cervicitis
4. Tubercular Lymphadenitis
5. CVC Lung
6. CVC Spleen
7. CVC Liver
8. Infarct Spleen
9. Infarct Kidney
10. Dystrophic calcification
11. Hyaline change
12. Amyloid kidney/ Spleen/ Liver
13. Lipoma
14. Leiomyoma
15. Pigmented Naevus
16. Pleomorphic adenoma
17. Fatty change liver
18. Fibroadenoma Breast
19. Squamous cell papilloma
20. Squamous cell carcinoma
21. Basal cell carcinoma
22. Transitional cell carcinoma
23. Malignant Melanoma
24. Adenocarcinoma
25. Seminoma
26. Giant Cell Tumour
27. Dermoid Cyst Ovary (Benign Cystic Teratoma)
28. Hodgkin's Lymphoma
29. Non Hodgkin Lymphoma
30. Pericarditis
31. Atherosclerosis
32. Lobar Pneumonia
33. Miliary T.B. Lung
34. T.B. Intestine
35. Peptic Ulcer
36. Cirrhosis Liver
37. Secondary Deposits Liver
38. Renal Cell carcinoma
39. Chronic Pyelonephritis
40. Acute Glomerulonephritis
41. Endometrium proliferative phase
42. Secreting phase
43. Hydatidiform Mole
44. Multinodular Goitre

45. Benign Hyperplasia prostate
46. Wilms Tumour (Nephroblastoma)
47. T.B. Bone
48. Sarcoidosis Lymphnode
49. Reactive Hyperplasia
50. Secondary carcinomatous deposits

## **ANNEXURE - II**

### **HAEMATOLOGY SLIDES**

1. Neutrophilia
2. Lymphocytosis
3. Eosinophilia
4. Microcytic and Hypochromic anaemia
5. Macrocytic anaemia
6. Thalassemia
7. C.M.L
8. AML/ALL Acute Leukaemia.

## **ANNEXURE - III**

### **AUTOPSIES**

1. Hypertensive
2. Renal Failure
3. Myocardial Infarct
4. Cirrhosis Liver
5. Rheumatic Heart Disease
6. A.T.N. Acute Tubular Necrosis
7. Bronchogenic carcinoma
8. Miliary T.B. Lung
9. Malignant Lymphoma
10. Leukaemia

## MICROBIOLOGY SYLLABUS

### Distribution of marks

Theory: Two papers of 40 marks each (One applied question of 10 marks in each paper)	80 marks
Oral (Viva)	15 marks
Practical	25 marks
Internal Assessment (Theory: 15; Practical :15)	30 marks
Total	150 marks

### Paper A

- I. Historical : Contributions of - Louis Pasteur  
Robert Koch  
Anthony Van Leewenhock  
Edward Jenner  
Paul Ehrlich.
  
- II. General Microbiology : - Prokaryotes and Eukaryotes  
- Bacterial cell and various staining techniques  
- Cell wall structure – Antimicrobial action  
- Metabolism –Aerobes, anaerobes, capnophilic organisms.  
- Media – common and important media  
- Growth of Bacteria – Growth curve in batch culture.  
- Methods of anaerobiasis.  
- Killing of bacteria – Methods of sterilization  
- Disinfection  
- Asepsis and antisepsis

### Bacterial Genetics :

- Antimicrobial agents - Mode of action  
- Susceptibility tests  
- Resistances - Chromosomal  
- Plasmid Mediated
- Classification of bacteria - Morphological
- Source of infection
- Transmission of infections and agents including vectors
- Sites of entry into human host and spread.

### III. Immunology

Host-parasite relationship – Body defence mechanisms  
 - Bacterial factor in infection

- Antigen, Antibody, Ag, Ab reactions.  
Complement system
- Lymphoreticular system, HLA system
- Transplantation immunity and GVH reaction
- Hypersensitivity
- Autoimmunity, Tumour Immunity.

### V. Systemic Bacteriology

Systemic Bacteriology will be considered under the following headings :

- i) Collection and transport of samples for laboratory diagnosis
- ii) Interpretation of laboratory reports.
- iii) Rapid bedside diagnosis wherever feasible :
  - Pyogenic cocci - Staphylococci, streptococci, pneumococci, Neisseria, anaerobic cocci.
  - Corynebacterium diphtheriae, diphtherioides.
  - Mycobacterium tuberculosis, M. Lepae, Atypical mycobacteria.
  - Enterobacteriaceae : General properties, Enterobacteria with reference to urinary tract infections, enteric fevers, diarrhoeal diseases, pyogenic infections.
  - Vibrios : V Cholerae and other important campylobacters including H. pylori.
  - Pseudomonas
  - Bacillus anthracis
  - Clostridia : General properties with reference to tetanus, gas gangrene and food poisoning.
  - Rickettsiae, Chlamydiae, Mycoplasma, Actinomycetes, L. forms.
  - Anaerobes : Bacterioides, Fusobacteria.
  - Spirochaetes : Treponema, Borrelia, Leptospira.
  - Legionella pneumophila.

### Special Bacteriology

- a) Bacteriological examination of food, air, milk and water. Hospital acquired infections, collection and transportation of samples for microbiological investigations and newly emerging and re-emerging pathogens.
- b) Applied bacteriology : U.T.I. diarrhoeal diseases, P.U.O., Meningitis, wound infections, sore throat.

## PAPER - B

MARKS = 40

### 1. VIROLOGY :

General properties : Basic structure and broad classification of viruses. Pathogenesis and pathology of viral infections, Immunity and prophylaxis of viral diseases. Principle of laboratory diagnosis of viral diseases List of commonly used antiviral agents. Bacteriophage with relation to virulence mechanisms and epidemiology.

- a) Herpesviruses : List of viruses included, lesions produced, Pathogenesis and latency, principles of laboratory diagnosis.
- b) Arboviruses : List of arboviruses present in India, general properties, mode of transmission, disease syndromes produced, common diagnostic test, prevention of spread.
- c) Piconaviruses : common infections produced, classification and general properties, pathogenesis of poliomyelitis, immunoprophylaxis of poliomyelitis.
- d) Myxoviruses : General properties, classification according to diseases produced antigenomic variations in influenza virus with relevance to vaccine efficacy, measles, mumps and rubella. Important features and prophylaxis.
- e) Rabies Virus : General properties, antirabies vaccine, antemortem diagnosis in rabies.
- f) Hepatitis Viruses : List of viruses, pathogenesis, mode of infection. List of diagnostic tests and their interpretation, methods of prevention and control.
- g) Human immunodeficiency Viruses : Structure with relevance to laboratory diagnosis and type of infection, laboratory tests and their interpretation universal precautions, specific precautions, recent trends in diagnosis and prophylaxis.
- h) Viral Gastroenteritis : Causative viruses, laboratory diagnosis of rotavirus.
- i) Applied Virology : Viral conjunctivitis, respiratory viruses, viral meningitis/encephalitis. Viral (acute) hemorrhagic fevers, viruses causing fever with rash, viruses causing congenital malformations, oncogenic viruses.

### 2. MYCOLOGY

General mycology, superficial mycoses, deep mycoses, sub-cutaneous mycoses (Mycotic mycetoma, Chromoblastomycosis, Sporotrichosis, Rhinosporidiosis and subcutaneous phycomycosis) Systemic mycoses (Cryptococcosis, Blastomycosis, Paracoccidioidomycosis, Coccidioidomycosis & Histoplasmosis) Opportunistic mycosis. General Properties of fungal diagnosis, rapid diagnosis, methods of collection of samples, antifungal agents.

### 3. PARASITOLOGY

Intestinal gut protozan Protozoans in blood : Homoflagellates, Plasmodia. Acanthamoeba-pneumocystis, miscellaneous sporozoa, toxoplasma, genital protozoans. Trematodes, cestodes, Nematodes, medical Entomology with reference in vectors.

### 4. ENTOMOLOGY

Role of flies, mosquitoes, ticks, mites, lice and fleas in various human infections.

### GENERAL REMARKS

#### a) Deletion :

- 1) Life cycles of parasites which are not found in India e.g. trypanosome.
- 2) Certain exotic fungal infections e.g. coccidioidomycosis.
- 3) Detailed culture and biochemical reactions of bacteria.

#### b) De-emphasis :

- 1) Parasites not common in India
- 2) Culture and biochemical characteristics of micro-organisms.
- 3) Micro-organisms esp. viruses and fungi which are not found in India.

#### c) Strengthening :

- 1) Concept of clinical microbiology.
- 2) Tropical disease teaching

#### d) Addition :

- 1) National programs in infectious diseases.
- 2) Knowledge on AIDS
- 3) Epidemiology of infectious diseases.
- 4) Glimpses of molecular biology and biotechnology.

### SETTING OF QUESTIONS

- a) Questions should preferably of short answer type.
- b) Each paper should contain at least one question on applied aspects of Microbiology.

**EXAMINATION IN PRACTICAL SKILLS**

M.M. = 25

1. Stool examination for ova and cysts.
  - Students should be able to show and identify any two Abnormal findings. 05 Marks
2. Sputum smear for Z.N. staining.
  - Students should be able to correctly stain the given smear and focus under the microscope acid fast bacilli. 05 Marks
3. Bacterial Culture Plate
  - Identification of medium & describe colony characters.
  - Study bacterial morphology under Gram's stain.
  - Give provisional diagnosis.
  - Enumerate what further test to be done for confirmation of the diagnosis.
  - Give a list of infections produced by the organisms in human beings. 10 Marks
4. Spotters
  - Minimum five. 05 Marks

-----\*\*\*\*\*-----

**PHARMACOLOGY SYLLABUS FOR IIND PROFESSIONAL**  
**(2<sup>ND</sup> – 5<sup>TH</sup> SEMESTERS) M.B.B.S.**

Second Prof. Examination

5<sup>th</sup> Semester of Phase-II Training

Minimum teaching hours: 300(2<sup>nd</sup>-5<sup>th</sup> Semester) Out of these didactics will not exceed 1/3<sup>rd</sup>

**Theory Paper A :**

**40 Marks**

General pharmacology, Autonomic and Central nervous system Autocoids, Gastrointestinal system and toxicology.

(Including one question on clinical therapeutics).

**Theory Paper B :**

**40 Marks**

Blood, Vitamins, Cardiovascular & Renal System, Endocrines and Reproduction, Chemotherapy, Immunopharmacology, Dermal and Ophthalmic Pharmacology.

(Including one question on clinical therapeutics in each paper).

**Internal Assessment :**

**30 Marks**

(Theory : 15; Practical : 15 to be prepared by the head of department on the basis of term tests, practical work, tutorials/assignments).

**Oral Viva :**

**15 Marks**

**Practical :**

**25 Marks**

**Total :**

**150 Marks**

The practical exam will include :

- |    |                     |         |
|----|---------------------|---------|
| A. | Prescriptions (Two) | 4 Marks |
| B. | Interactions (Two)  | 4 Marks |

Note : Prescription and Interactions should be presented in the form of therapeutic problems.

- |    |                          |         |
|----|--------------------------|---------|
| C. | Drugs used in poisonings | 2 Marks |
|----|--------------------------|---------|

(Student shall be required to write specific antidotes in the given poisonings).



**D. Pharmacy exercise****5 Marks**

(Student shall be required only to write ingredients, brief procedure, storage, and directions for use and label of the provided preparation.)

**E. Experimental****5 Marks**

(Student shall be required only to interpret the given tracing/graph/data)

**F. Exercise on formulations/Spotting related to practical. 5 Marks**

(Student shall be required to give the generic name & group/ rationale for combining in case of fixed dose combinations, storage, route and technique of administration, directions to the patient and 2 adverse effects warranting consultation in relation to the given formulation & in case of spots write the answer of the questions asked.)

**Notes :**

1. Minimum pass marks required shall be 50% in aggregate with a minimum of 50% in theory including orals and minimum of 50% marks separately.
2. The nature of questions in theory shall be short answer type covering the syllabus in a uniform manner.
3. Practical exam shall be evaluated equally by all the examiners, and the senior external and the senior internal examiner will do the evaluation of theory.

**Paper - A**

1. Introduction to Pharmacology and general Pharmacology : History, development, branches and scope of pharmacology, Drug action, molecular basis and mechanisms of action, and their modifications due to different factors. Pharmacokinetics, routes of administration, absorption, distribution, biotransformation and excretion of drugs. Principles of loading and maintenance dose rate and therapeutic drug monitoring.

Adverse drug reactions, pharmacogenetics, hypersensitivity, overdose poisoning, drug-dependence and substance abuse and environmental pollutants.

Drug regulations, new drug development, Gene therapy, medico-legal and ethical issues related to drug development and prescribing.

Prescription writing, principles of therapeutic decision making, rational drug use, concept of essential drugs, mass therapy for national programs, community pharmacology, pharmacoeconomics and quality of life.

Drug usage in special populations i.e. extremes of ages, pregnancy and lactation, concurrent liver and kidney disease and drug interactions etc.

2. Drugs Acting on Autonomic Nervous System

General considerations, Cholinergic transmission, Parasympathomimetics, Anticholinergic drugs Adrenergic Neurotransmission, Sympathomimetics, Adrenoceptor blocking drugs, Skeletal muscle relaxants, and Drugs affecting autonomic ganglion and neurones.

3. Drugs Acting on the General Nervous System

Neurohumoral transmission and the central nervous system.  
General and local anesthetics, therapeutic gases.  
Basic and applied pharmacology of alcohol, sedatives and hypnotics.  
Drugs and the treatment of psychiatry disorders.  
Drugs effective in the therapy of epileptic disorders.  
Drugs for the Parkinson's disease, spasticity and acute muscle spasm.  
Drug addiction and drug abuse, Opioids Analgesics and Antagonists.  
Drug Addiction and Drug Abuse.

4. Autocoids and related Drugs

General considerations, Histamine and antihistaminic drugs, 5-hydroxytryptamine receptor- agonists and antagonists, Renin-Angiotensin Systems and related drugs, Eicosanoids, Platelets activating factors and related drugs.

Analgesis-Antipyretics and Anti-inflammatory Agents, drugs employed in the treatment of rheumatoid arthritis and gout.

Drugs used in the treatment of bronchial asthma and cough.

5. Gastrointestinal Drugs

Drug therapy of peptic ulcer, emetics and anti-emetics and Drugs affecting gastrointestinal motility.

6. Toxicology

Heavy metals and antagonists General principles of treatment of acute poisoning; environmental and occupational toxicology.

Paper - B

7. Drugs Acting on the Blood and the Blood Forming Organs

Hematopoietic agents, growth factors, minerals and vitamins; mass treatment of anaemias under national programs, coagulants, anticoagulants, thrombolytic, and antiplatelet drugs.

8. Drugs Affecting Cardiovascular System and Kidney

Drugs acting on the renin angiotensin-aldosterone system, basic and applied pharmacology of diuretics and other agents employed in the mobilization of oedema fluid, conservation of water volume and composition of body fluids and inhibitors of tubular transport.

Cardioglycoside and other drugs used for treatment of congestive heart failure. Drugs used for treatment of angina pectoris and myocardial infarction. Antihypertensive agents and drug therapy of hypertension. Drugs used in the treatment of hyperlipoproteinemias. Antiarrhythmic drugs and agents used in shock, stroke and other cardiovascular emergencies.

9. Hormones and Hormone Antagonists

Adenohypophyseal hormones and related substances. Thyroid and anti thyroid drugs, mass therapy in thyroid deficiency areas. Corticoids and related drugs, Diabetes, Insulin, oral hypoglycemia agents and other related drugs. Oestrogens, progestins, androgens, contraceptives and related drugs. Mass therapy and individualization of therapy for contraception. Calcium, Vitamin-D, Parathyroid hormones, calcitonin and related drugs and treatment of endocrinal emergencies.

10. Drugs Affecting Uterine Motility

Oxytocin, prostaglandins, ergot alkaloids, tocolytics and other related drug.

11. The Vitamins

Water soluble and, the fat soluble vitamins; mass therapy and individualization of treatment in Deficiency diseases.

12. Chemotherapy

General consideration and introduction. Sulfonamides, trimethoprim-sulphamethoxazole and related compounds, Quinolones and agents used for urinary tract infection. Penicillins, cephalosporins, and other beta-lactum antimicrobials, aminoglycosides and other agents used for gram negative infections, tetracycline chloramphenicol, erythromycin and other miscellaneous antimicrobial agents.

Drugs used in chemotherapy and leprosy and tuberculosis; Individualization of therapy and mass treatment under the national programs. Agents used for superficial and deep fungal infections. Antiviral agents; and drug treatment of AIDS. Antimalarial agents, individualization of therapy and mass treatment under the national program.

Agents used for the treatment of amoebiasis, trichomoniasis, leishmaniasis, trypanosomiasis and other protozoan infections.

Drugs used in the chemotherapy of helminthiasis with special reference to mass therapy.

Introduction to basic and applied aspects of antineoplastic drugs and related conditions.

Disinfectants, antiseptics and sterilants.

13. Immunopharmacology

Immunosuppressive, Immunostimulants and immunomodulators agents, Vaccines and sera for individual and mass therapy.

14. Miscellaneous Topics

Drugs used in dermatological disorders and ophthalmic diseases etc.

Pharmacological Practical :

A. Pharmacy and common formulations :

1. Introduction to pharmacy and instruments.
2. Weights and measurements etc.
3. Demonstration of common pharmaceutical preparations i.e. mixture, powder, lotion, ointment, paint and solution.
4. Demonstration of common dosage forms and formulations.
5. Demonstration of commonly used inhalation devices.
6. Demonstration of common intravenous devices and adjustment of infusion rates.
7. Use of common formulations/critical evaluation/ (oral and sublingual preparations including fixed dose drug combinations and single drug formulations used in common conditions and national Programs etc. Injections/Infusions like adrenaline, aminophylline, antimicrobials, dopamine, dextrose, insulin, metronidazole, oxytocin, phenytoin, saline, tetanus toxoids and serum etc. Inhalers of B-2 agonists, topical steroids etc. Topical preparations of nitroglycerine, antimicrobials and dermatological preparations etc. Vaccines used in National Immunization Program and other common conditions. Preparations used in ophthalmological and ENT diseases, vaginal preparations and Suppositories.)

B. Experimental Pharmacology

I. Demonstration in experimental animals.

To observe and interpret the effect of drugs on frog heart in 'situ'.

To observe and interpret the effect of drugs on isolated rabbit's heart.

To observe and interpret the effect of drugs on dogs blood pressure and respiration.

To observe and interpret the effect of drugs on rabbit's eye.  
 To observe and interpret the effect of drugs on the rabbit's gut.  
 To observe and interpret bioassay of a given drug on frog's rectus abdominis preparation.  
 To observe and interpret effect of C.N.S. active drugs in animals (only 2 experiments).

## II. Demonstration in human volunteers : (Two)

Student shall be given two demonstrations in human volunteers.

### C. Exercise in Therapeutics

Principles of prescription writing.  
 Prescribing for common conditions and emergencies.

### D. Problem solving exercises

20 problem-solving exercises shall be given involving different drugs and diseases.

### E. Therapeutic follow-up exercises

Therapeutic follow-up case taking exercises related to the primary drug prescribed for a particular disease covering indications, mechanism of action, drug interactions, adverse effect, precautions, contraindications, dose/route and investigations etc. Each student is expected to make record of five such drugs-follow-up from the hospital cases. The primary drugs should be chosen for 5 different diseases :

Followings is a sample distribution of time in hours :

Topic	Lecture	Tutorial/Group discussion/ Seminars
General Pharmacology	15	15
CMS	15	15
ANS	10	10
Git	05	05
Autocoids	03	03
Toxicology	02	02
CVS	15	15
Chemotherapy	15	15
Endocrinology	10	10
Blood	05	05
Immunology	03	03
Miscellaneous	02	02

Practical, follow up cases – 100 Hours.

### **PROPOSAL FOR FAILED CANDIDATES UNDER OLD REGULATIONS**

For failed candidates under old regulations we propose the following uniform mode of examination :

#### **Theory Paper**

#### **Maximum Marks**

One paper with two parts of 40 marks each	80
Internal Assessment	20 (10 Mks for & Practical each)
Practical	40

Break up of marks for Practical :

Pharmacy Exercise	10
Experimental Exercise	10
Prescription Writing Exercise	10
Spotting	10
Grand Viva (To be counted towards theory)	10

NOTE : The candidate should obtain 50% marks in aggregate.

-----\*\*\*\*\*-----

## **SYLLABUS IN THE SUBJECT OF FORENSIC MEDICINE INCLUDING TOXICOLOGY**

### **1. INTRODUCTION AND LEGAL PROCEDURES**

Definition of Forensic Medicine, Medical Jurisprudence, State Medicine Inquest, Criminal Courts and their powers, Procedure in court, Medical evidence, Witnesses, Doctor in the witness box.

### **2. PERSONAL IDENTITY**

Definition of personal identification, Corpus delicti, Establishment of identity : Race, religion, sex, age, general development, congenital features (anthropometry and finger prints (in brief), acquired peculiarities, miscellaneous.

### **3. MEDICOLEGAL AUTOPSY**

Aims and objectives, Essential requirements, Precautions, Preservation of Viscera and other tissues, Procedure including dispatch of viscera, Cause of death/ conclusions.

### **4. EXAMINATION OF : Mutilated bodies, Fragmented remains, Decomposed bodies and Bones.**

### **5. EXHUMATION**

### **6. DEATH AND MEDICOLEGAL ASPECTS**

Forensic thanatology, Stages of death, Modes of death, Sudden death, Signs of death, Postmortem interval.

### **7. VIOLENT ASPHYXIAL DEATHS**

Hanging, Strangulation, Suffocation, Drowning, Traumatic asphyxia.

### **8. DEATHS FROM : Starvation, Cold and Heat.**

### **9. MECHANICAL INJURIES : Including firearms.**

### **10. REGIONAL INJURIES**

### **11. TRAFFIC INJURIES**

### **12. MEDICOLEGAL ASPECTS OF INJURIES**

Examination of the injured person, Nature of injury, kind of weapon, Age of wound, Causes of death from wounds, Volitional acts after injury, Ante-mortem and postmortem wounds, Manner of death.

13. THERMAL INJURIES

Burns and scalds, electric current injuries, lightening, explosions.

14. IMPOTENCE, STERILITY, STERILISATION & ARTIFICIAL INSEMINATION

15. VIRGINITY, PREGNANCY AND DELIVERY

16. LEGITMACY

17. SEXUAL OFFENCES

18. ABORTION

Definition, classification, MTP Act of 1971 and MTP Rules, 1975; Criminal abortion, Doctors and criminal abortion, Method of procure abortion, Medico legal aspects, Distinction between natural and criminal abortion.

19. INFANTICIDE

General aspects, Autopsy of children and stillborns, Medico Legal Aspects, Concealment of birth, Abandoning of children, Violence in home (Domestic violence), Battered baby or Caffey syndrome, Battered wives/elderly, Cot or Crib deaths.

20. MENTAL ILLNESS (FORENSIC PSYCHIATRY)

Mental Health Act 1987, Definitions of key terms of mental illness: e.g. delirium, hallucinations, psychopath etc.

Criminal responsibility of mentally ill persons, Restraint of mentally ill patients, Difference between true and false mental illness.

21. MEDICAL LAW & ETHICS

The Indian Medical Degrees Act, 1916, The Indian Medical Council, The State Medical Councils including Geneva Declaration Public Duties of a RMP, Practitioner & patient, Professional secrets and privileged communication, Medical Examination and consent, Duties of a patient, Medical negligence including CPA, Doctor & anaesthesia, Malingering, Medical Idemnity Insurance.

22. WORKMAN'S COMPENSATION ACT



## FORENSIC TOXICOLOGY

(INCLUDING ENVIRONMENTAL & OCCUPATIONAL POISONING)

### 1. GENERAL CONSIDERATIONS OF POISONS

Definitions of Toxicology, Poisons and Medicine

Section of IPC relevant to poisons/poisoning, Human poisoning in India, Broad classification of poisons, Diagnosis of poisoning, Duty of Medical Practitioners in cases of suspected poisoning, General treatment of poisoning.

### 2. DIAGNOSES, MANAGEMENT, FATAL DOSE, FATAL PERIOD, IDENTITY, POSTMORTEM FINDINGS & MEDICOLEGAL ASPECTS OF THE FOLLOWING POISONS

- a). Corrosives : Mineral acids; Sulphuric acid, Hydrochloric acid, Nitric acid,  
Organic acids : Carbolic acid, Salicylic acid.  
Vegetable acids : Hydro-cyanic acid.
- b). Irritant Poisons : Organophosphorus compounds, Aluminum phosphide,  
Metallic poisons : Lead, Mercury, Thallium, Copper, Radioactive substances  
Vegetable Poisons : Ricinus communis, Croton Tiglium, Abrus precatorius.  
Animal Poisons : Snake bite poisoning.  
Food Poisoning.
- c). Somniferous Poisons : Opium and its alkaloids
- d). Inebriant Poisons : Ethyl & Methyl alcohol, Barbiturates, Insecticides, OPC & Chlorocompounds.
- e). Deliriant Poisons : Dhatura, Cannabis, Cocaine.
- f). Spinal Poisons : Strychnine.
- g). Cardiac Poisons : Aconite, Tobacco.
- h). Asphyxiants : Carbon monoxide, Hydrogen sulphide, Carbon-di-oxide.
- i). Miscellaneous : Paracetamol, Tranquillisers.

NOTE : This syllabus has been prepared keeping in view the aims, objectives and guidelines issued by MCI.

54

— 8 —

## **FORENSIC TOXICOLOGY**

**(INCLUDING ENVIRONMENTAL & OCCUPATIONAL POISONING)**

**1. GENERAL CONSIDERATIONS OF POISONS**

Definitions of Toxicology, Poisons and Medicine

Section of IPC relevant to poisons/poisoning, Human poisoning in India, Broad classification of poisons, Diagnosis of poisoning, Duty of Medical Practitioners in cases of suspected poisoning, General treatment of poisoning.

**2. DIAGNOSES, MANAGEMENT, FATAL DOSE, FATAL PERIOD, IDENTITY, POSTMORTEM FINDINGS & MEDICOLEGAL ASPECTS OF THE FOLLOWING POISONS**

- a). Corrosives : Mineral acids; Sulphuric acid, Hydrochloric acid, Nitric acid,  
Organic acids : Carbolic acid, Salicylic acid.  
Vegetable acids : Hydro-cyanic acid.
- b). Irritant Poisons : Organophosphorus compounds, Aluminum phosphide,  
Metallic poisons : Lead, Mercury, Thallium, Copper, Radioactive  
substances  
Vegetable Poisons : Ricinus communis, Croton Tiglium, Abrus  
precaurius.  
Animal Poisons : Snake bite poisoning.  
Food Poisoning.
- c). Somniferous Poisons : Opium and its alkaloids
- d). Inebriant Poisons : Ethyl & Methyl alcohol, Barbiturates, Insecticides,  
OPC & Chlorocompounds.
- e). Deliriant Poisons : Dhatura, Cannabis, Cocaine.
- f). Spinal Poisons : Strychnine.
- g). Cardiac Poisons : Aconite, Tobacco.
- h). Asphyxiants : Carbon monoxide, Hydrogen sulphide, Carbon-di-oxide.
- i). Miscellaneous : Paracetamol, Tranquilisers.

**NOTE :** This syllabus has been prepared keeping in view the aims, objectives and guidelines issued by MCI.

=

## **SOCIAL AND PREVENTIVE MEDICINE SYLLABI AND COURSE**

### **COMMUNITY MEDICINE**

The syllabus and course of reading in the subject of Social & Preventive Medicine is designed to equip a student with positive concept of Health and the understanding of Health & Disease in the individual and community in relation to physical, biological and social environment. The course should be designed to enable the student to understand the Health Services/Programme structure of the country of which he has to become an integral part eventually, stressing the need and importance of the application of preventive measures.

### **1<sup>ST</sup> AND 2<sup>ND</sup> SEMESTER**

#### **Didactic :**

1. History
2. Positive Health
3. Social Sciences
4. Growth & Development
5. Statistics
6. Personal Hygiene

#### **Practical :**

Field work in community  
Demographic study  
Statistics, Lab. Sessions

### **COURSE NO - 1**

History of Medicine with special reference to Social & Preventive medicine.

- Introduction
- Evaluation of Medicine
- Causation of Disease-supernatural, Physical, Biological, Social
- History of Preventive and Social Medicine
- Medical Ethics

### **COURSE NO - 2**

- Concept and meaning of positive health
- Definition and meaning, evaluation
- Need and Importance
- Factors influencing in the individual and community
- Need of the positive health conscious physician

### **COURSE NO - 3**

Social Sciences :

- Definition, Society, Community, Family
- Social Organization
- Social Institutions
- Social Change

- Social Control, Social Law
- Responsibility of Physician to Society
- Socio economic aspects of health & disease
- Doctor Patient relationship
- Hospital and Social Institution
- Social Security
- Social Psychology, Examination, Scope, Methods
- Social Anthropology
- Medico-Social work, methods, importance.

#### **COURSE NO – 4**

##### **Growth & Development**

- Introduction, meaning of normal & variation from normal
- Milestone and physical growth
- Growth of organs and systems
- Factors governing growth & development
- Emotional development through various phases of life
- Oral, Anal, Phallic, Potency, Puberty, Adult menopause
- Relationship of sexual growth with physical growth
- Personality Formation, Habits, Discipline.

#### **COURSE NO – 5 - Statistics**

##### **Correlation & Regression**

- Multivariate analysis (The theoretical basis and practical applicability only).
- Introduction to biostatistics difference between statistics, biostatistics and vital statistics.
- Use of statistical method in medical science.
- Collection, tabulation and presentation of statistical data.
- Interpretation of data, variation, frequency, normal curve, skewed curve.
- Average mean, medium, mode, standard deviation, standard error.

#### **COURSE NO - 6**

##### **Personal Hygiene**

- Introduction
- Individual's adjustment to environment
- Personal hygiene at different periods of the formation of habit.
- Sex education
- Dental & Oral Hygiene
- Value of physical exercise, postures and bearing of health
- Clothing and Health
- Effect of Heat, Cold, Light and attitude on health.
- Heredity and Evgenics

**PRACTICAL**

Field visits to places of Public health importance.

Posting in comprehensive immunization clinics/ F.P. Clinic Clinico-social case review (Student to be posted as clinical clerks).

**COURSE NO - 7****Applied Nutrition**

- Nutritive value of some commonly used food stuffs in India (Diets balanced and ill-balanced).
- Diets according to various psychological needs-diets in certain disease.
- Common nutritional deficiency diseases.
- Food adulteration, Fortification legislation.
- Diseases transmitted by food : Food poisoning, Food Hygiene
- Diet Survey, methods and techniques used.
- Nutrition education.
- Applied nutrition programme.
- National Nutrition oil programme.

**COURSE NO - 8**

Environmental Sanitation & Occupational Health. Concept of Ecology. The physical environment in which man lives. Man's dependence on his environment, Physical, Biological dependence. Changes in man and changes in environment.

- Climate and Health
- Air, ventilation and Atmosphere i.e. pollution
- Water Supply (Rural & Urban)
- Excreta disposal (Rural & Urban)
- Refuse disposal (Rural & Urban)
- Housing & Health
- Village & Town Planning
- Rat, Dog, Insect Control.

**Occupational Health :**

- Industrial health, Evaluation, Scope, Organization of medical & Health Services in the Industry, E.S.I.
- Problems of Sanitation in industry hazards and accidents and their prevention
- Rehabilitation and Industry.

**COURSE NO - 9**

- Introduction
- Concepts of Epidemiology
- Tools of Epidemiology
- Natural History of disease, Agent, Host and environment.
- Epidemiological Triangle and Balance.
- Ecology
- Levels of prevention : a) Primary b) Secondary c) Tertiary, Rehabilitation
- Research Methodology
- Prospective, Retrospective and Cohort Studies.

**COURSE NO - 10****Public Health Administration in India**

- Principles, Evaluation
- National Health set up, Role & Responsibilities.
- State Health set up Role & Responsibilities.
- District Health organisation, Role & Responsibilities.
- Local Health Organization, Role & Responsibilities.
- Voluntary Health Agencies; Role & Importance.
- International Health Agencies.
- Primary Health Centre complex, History, Functions, Functionaries.

**COURSE NO - 11****Family Welfare Programme**

- Demography/ Population Dynamics
- Need for Family Planning for Mother, Child, Family, Community, Nation.
- Family Planning, Methods/Methodology.
- Organization of Family Planning Services.
- National set up, Rural set up, urban set up.
- Health Education in relation to Family Planning.
- Social Barriers in Family Planning.

**COURSE NO - 12****Maternal & Child Health Programme**

- Need & Importance
- Organisation & Component of M.C.H. Programme
- M.C.H. & Primary Health Centre
- Common cause & prevention of Maternal, Neonatal, Infant Mortality & Morbidity.
- Role of L.H.V. & MCH Programme.

### **COURSE NO - 13**

#### **School Health Programme**

- Need & Importance
- Importance of regular medical examination/records
- Immunization
- Nutrition/ Mid-day meals
- Environmental Sanitation & School Health
- Health Education
- Involvement of social teacher, community in school health programme.
- Organization of School Health Services in India.

### **COURSE NO - 14**

#### **Immunization**

- Basic principles of Immunization.
- Importance of Immunization, Secondary Prevention.
- Common Immunization, their schedule, methods of vaccination, doses, contra-indications, complication.
- BCG, DTP, DT, TT, Anti Vg TAB, Anti Rabic Vaccination, Measles Vaccine and Newer vaccines.
- International Health Certificates.

### **COURSE NO - 15**

#### **Health Education**

- Meaning, Scope
- Methods, Media
- Health Education, Stages, Process
- Common Visual Aids
- Role of Health Education in Health Programme.

### **COURSE NO - 16**

#### **Principles of Epidemiology & Control of common communicable & Non-communicable diseases.**

- Chain of causation, common diseases, preventable disease.
- Importance of Isolation, Quarantine, Disinfection & Disinfectants.
- Epidemiology & Control of common communicable & non-communicable diseases to stress the role of social environmental factors in their causation and the need of e.g. Diabetes, I.H.D., Hypertension, Peptic Ulcer, R.H.D., Rheumatic fever, Dysentery, Hepatitis, Polio, Small Pox, T.B., Malaria, Rabies, Tetanus, Diptheria, Whooping cough, Chicken Pox, Mumps, Cholera.

Community Medicine.

### **COURSE NO - 17**

National Control/ Eradication Programme.

- N.M.E.P., N.S.E.P.
- N. Filaria Control Programme.
- N.T.B. Control Programme.
- N.Trachoma Control Programme.
- N.S.T.D. Control Programme etc.

### **COURSE NO - 18**

Vital Statistics

- Introduction about practice of vital statistics especially B.R., D.R., in India, I.M.R., M.M.R., N.M.R., Perinatal mortality.
- Collection of vital statistics – rural & urban area.
- Importance of cause & control of I.M. and M.M.
- Importance of vital statistics in Health assessment of Community.

### **PRACTICALS**

Filed visits to C.M.O., Municipal Medical Officer, Red Cross, Immunization Clinic, Anti Rabic Clinics by observation and participation.

### **BOOKS RECOMMENDED**

Text Books on :-

1. Preventive Medicine by J.E. Park
2. Preventive medicine by Laevelit Clark
3. Medical Statistics by Mahajan
4. Epidemiological Methods by Mac Mohan



### Distribution of Marks :

#### Community Medicine including Humanities :

**Theory** : Two papers of 60 marks each 120 Marks

(Includes problem solving, applied aspects of management at primary level including essential drugs, occupational (agro based) diseases, rehabilitation & social aspects of community)

**Oral (VIVA)** 10 Marks

**Practical/ Project Evaluation** 30 Marks

**Internal Assessment** 40 Marks

(Theory : 20, Practical : 20)

**Total Marks** 200 Marks

## SKILLS

### PART-I : GENERAL SKILLS

The student should be able to :

1. Elicit the clinico-social history to describe the agent, host and environmental factors that determine and influence health.
2. Recognise and assist in management of common health problems of the community.
3. Apply elementary principles of epidemiology in carrying out simple epidemiological studies in the community.
4. Work as a team member in rendering health care.
5. Carry out health education effectively for the community.

### PART-II : SKILLS IN RELATION TO SPECIFIC TOPICS

1. Communication :

The student should be able to communicate effectively with family members at home, patients at clinics or at homes, individuals, family or a group for health education, peers at scientific forums.

2. Team Activity :

Work as a member of the health team in planning and carrying out field work like school health.

3. **Environmental Sanitation :**

Collect water samples for microbiological evaluation, chlorination of water, estimate the chlorine demand of water, estimate the residual chlorine of water, insecticides their proper storage and use in control of vectors.

4. **Communicable and Non-communicable diseases (including social problems) :**

- a) Eliciting clinico-social history examining the patient for diagnosis and treatment.
- b) Collection of appropriate material for microbiological, pathological or biochemical tests.
- c) Fixing, staining and examining smear – peripheral blood smear for malaria and filariasis, sputum for AFB, slit skin smears for leprosy; Hb estimation, urine and stool examination.
- d) Assessing the severity and/or classifying dehydration in diarrhoea, upper respiratory tract infection, dog bite, leprosy.
- e) Adequate and appropriate treatment and follow-up of leprosy, malaria, filariasis, rabies, upper respiratory tract infections, diarrhoea and dehydration.
- f) Advise on the prevention and prophylaxis of common disease like vaccine preventable diseases, tetanus, malaria, filariasis, rabies, cholera, typhoid, intestinal parasites.
- g) Use of proper screening methods in early diagnosis of common diseases.
- h) Take necessary steps in disease outbreak/ epidemics/ natural disasters/ investigation of epidemic, food poisoning, notification, organising medical care following disaster.

5. **Maternal and Child Health**

- a) Antenatal – examination of the mother, application of the risk approach in antenatal care.
- b) Intranatal - conducting a normal delivery, early recognition of danger in intranatal period, referral of cases requiring special care.
- c) Postnatal - assessment of the mother and new born, advice on appropriate family planning method, promotion of breast feeding, advice on weaning.
- d) Assessment of growth and development of the child – use of the 'road to health' card; recording important anthropometric assessments of the child; giving immunisation to the child, identifying high risk infants.

6. **Statistics**

- a) Make proper sample.
- b) Apply appropriate tests of significance to make a correct inference.
- c) Simple analysis and presentation of data.

7. Nutrition
  - a) Conducting a diet survey
  - b) Community survey and clinical diagnosis of nutritional deficiencies : vitamin A deficiency, Iodine deficiency, malnutrition.
  - c) Making recommendations regarding diet.
8. Occupational Health
  - a) Inspection of work sites.
  - b) Recommendation in improving work sites.
  - c) Medical examination of workers.
9. Health Care of the Community
  - a) Ensuring community participation in health care.
  - b) Arranging intersectoral coordination where necessary
  - c) Working in liason with other agencies involved in health care in various National Health Programme.
10. Health Management
  - a) Be an effective team leader
  - b) Guide and train workers
  - c) Supervision of workers and programmes
11. Family Planning

Advise on appropriate methods.
12. Managerial

Organize antenatal and under five clinic.

## **SYLLABUS AND COURSE OF READING OF OPHTHALMOLOGY**

Distribution of Marks :

Theory :	One Paper	40 marks
(should contain one question on pre-clinical and para-clinical aspects, of 10 marks)		
Oral (VIVA)		10 marks
Clinical		30 marks
Internal Assessment		20 marks
(Theory : 10, Practical : 10)		
Total Marks		100 Marks

### **THEORY**

Anatomy, Physiology and detailed study of the Disease of :

#### **(I) Anterior Segment**

- Lids
- Orbit
- Lacrimal Apparatus
- Conjunctiva
- Cornea
- Sclera
- Anterior Chamber
- Iris, Ciliary body and Vitreous
- Lens
- Glaucoma
- Errors of Refraction
- Muscular Anomalies

#### **(II) Posterior Segment**

Anatomy, Physiology and detailed study of the diseases of :

- Choroid
- Retina
- Optic Nerve

#### **(III) Miscellaneous**

- Medical Ophthalmology
- Injuries of the Eye and Orbit
- Causes of Blindness and its preventions.

### **PRACTICAL**

- The students will be taught in demonstration/ the method of Examination that is oblique illumination, direct Ophthalmoscopy, distant direct Ophthalmoscopy, Indirect Ophthalmoscopy, Retinoscopy, their theoretical aspects and actual practice of these procedures.
- The students will discuss the diseases given in all the sections under "Theory".
- Identification and uses of various instruments.
- Students will also be taught various diagnostic procedures like recording of vision, tension recording, perimetry, Bjerrum Screen etc. In addition the investigations of lacrimal apparatus and in case of heterophoria/heterotropia staining for corneal pathology, perform sub-conjunctival Inj. Corneal and Conjunctival foreign body removal, carbolic cautry.

### **Books Prescribed for Ophthalmology**

- Text Book of Ophthalmology by Parson. OR
- Text Book of Ophthalmology by May and Worth.
- Ophthalmic Surgery by Stallard
- Practice of Refraction by Duke Elder.

## **SYLLABUS OF E.N.T.**

### **Distribution of Marks :**

<b>Theory :</b>	<b>One Paper</b>	<b>40 marks</b>
<b>(should contain one question on pre-clinical and para-clinical aspects, of 10 marks)</b>		
<b>Oral (VIVA)</b>		<b>10 marks</b>
<b>Clinical</b>		<b>30 marks</b>
<b>Internal Assessment</b>		<b>20 marks</b>
<b>(Theory : 10, Practical : 10)</b>		
<b>Total Marks</b>		<b>100 Marks</b>

### **A. NOSE AND PARA-NASAL SINUS**

Anatomy and Physiology, Investigations of nose and PNS. Diseases of external nose and nasal vestibule, foreign body nose and PNS. DNS, Epistaxis, Acute/Chronic Rhinosinusitis. Atrophic Rhinitis, Allergic Rhinitis and Vasomotor instability, Nasal Polyps, Benign and malignant tumours of the nose and PNS. Granuloma of nose and PNS, Nasofacial trauma, facial pain, cosmetic facial surgery, transseptal sphenoidal hypophysectomy, Differential diagnosis of unilateral rhinorrhoea.

### **B. EAR**

Anatomy and Physiology, Investigations of ear diseases, Audiology and Vestibular function test, diseases of external ear, foreign body ear, diseases of middle ear, infection, non-infection and tumours including complications and sequelae of ear disease. Otosclerosis, Meniere's disease, differential diagnosis of conductive and sensory-neural deafness, differential diagnosis of Tinnitus and vertigo, Facial Nerve Palsy, C.P. Angle tumours, Otological Traumas, rehabilitation of deaf patients, differential diagnosis of Otagia.

### **C. THROAT**

- (a) **Oral Cavity :** Trauma, Tumours and Infections/ Non-infective disorders.
- (b) **Pharynx :** Anatomy and Physiology of Pharynx. Infective conditions of the Pharynx, Neck-space infections, Tumours of Pharynx (Naso-oro-Pharynx and Hypopharynx), Foreign body Pharynx. Thornwall cyst.

- (c) **Larynx** : Anatomy and Physiology of the Larynx. Investigations in Laryngeal disease, Laryngeal infections, Foreign Bodies respiratory passage, Laryngeal tumour, Benign and Malignant, Vocal Nodule, Vocal Polyp and Papillomas. Vocal cord palsy, differential diagnosis of hoarseness of voice, Tracheostomy and other procedures for air way obstruction, Laryngotracheal traumas, Congenital disorders of Larynx, Malignant tumours of Larynx, Laryngocoele.
- (d) **Paediatric Otorhinolaryngology** : Tonsils and Adenoids, Laryngeal stridor, differential diagnosis of ulceromembranous conditions of the Pharynx, deafness in children, subglottic stenosis, intubation V/S Tracheostomy.
- (e) **Head and Neck Region** : Oesophagus, Anatomy and Physiology of oesophagus, Benign and malignant stricture of oesophagus, Corrosive burns of oesophagus, P/V syndrome, Neoplasm of the Oesophagus,
- (f) Differential diagnosis of dysphagia, Foreign Body oesophagus, Cardiac achlasia, Pharyngeal diverticula, Thyroid Gland and Salivary Glands Swellings, Differential Diagnosis of Neck masses and management, Anatomy of the Orbit and differential diagnosis of proptosis.
- (g) **Recent Advances** : Cryosurgery, Laser Surgery, HIV Infections in ENT, Radiotherapy, Chemotherapy.
- (h) **Operative Surgery** : Operation of the ear, Nose, Throat and Head and neck, (To be discussed in appropriate chapters).

### MEDICINE - SYLLABUS

- (a) Formulation of Examination Pattern in consonance with MCI regulations of 1997 for Final Professional MBBS Examination in Medicine.

Paper -1 : 3 questions in part(a) & (b) each (to consist of 2 parts of equal marks i.e. 30 marks each - Total 60 marks).

Portions to be covered :

General Medicine, History of Medicine, Diseases of CVS, Digestive System including Hepatobiliary System and Pancreas, Diseases of Blood, Musculoskeletal System including Joints, Connective Tissue, Locomotor System, Nervous System, Endocrine System, Metabolic Disorders, General Principles of Immunology and Genetics, Poisoning.

*Paper*

Part-II : (To consist of 2 parts of equal marks i.e. 30 each – Total 60 marks)

Part (a) : 30 marks : 3 Questions.

Diseases of Kidney, Infectious Diseases, Tropical Diseases, Tuberculosis, Respiratory System Diseases, Dietetics and Nutritional Deficiency Diseases, Malignant Disorders, Fluid & Electrolyte Disorders due to Physical Agents and Miscellaneous Diseases.

Part (b) : 30 Marks : 3 Questions.

Dermatology, STD, Leprosy, Psychiatry including Drugs used in Psychiatry, Radio-diagnosis.

Note : In general theory standard and course shall conform to what is given in the latest edition of Davidsons' Principles of Medicine.

Marks :

Theory : 2 papers each of 60 marks, Total 120 marks

Oral (Viva) : Interpretation of X-rays, ECG, Pathology specimens, slides, blood Films and spots. 20 Marks



**Clinical & Practical (Beside) :**

As follows :

Long case	50 marks	
Short case (1)	25 marks	
Short case (2)	25 marks	
Internal Assessment	Total	60 marks
Theory	30 marks	
Practical	30 marks	
Total		300 marks

Internal Assessment should be based on :

- |    |   |          |
|----|---|----------|
| a) | Examination at the end of 1 <sup>st</sup> Clinical year | 15 marks |
| b) | Examination at the end of 3 <sup>rd</sup> Clinical year | 15 marks |
| c) | Near the end of 9 <sup>th</sup> semester Prefinal       |          |
|    | Send up Examination in Theory & Practical               | 30 marks |

While giving marks for Internal Assessment due weightage should be given to day to day work and attendance in theory and clinical classes.

All students should submit at least 10 cases with detailed write up on history, physical examination, diagnosis, differential diagnosis and laboratory evaluation and treatment during their 3<sup>rd</sup> clinical year and final year.

For Clinical Examination standard and content expected will be that given in the latest edition of Hutchison & Hunter – Clinical Methods in Medicine.

For theory short answer type questions and MCQs should be progressively introduced.

In clinical examination psychomotor skill should be tested as well.

- (b) Developing Uniform Examination Schedule for Final Prof MBBS Examination for Final Prof. MBBS Examination (Part-I & II) in terms of existing rules and pattern of different universities.

It is suggested that any changes made in the existing rules for candidates appearing under old regulations will lead to legal mess and these should not be altered.

Once the new regulations come into force the pattern already mentioned under (a) should become applicable automatically. (The pattern is totally different in the three universities in the state that any attempt to make it uniform till new regulations come into effect is bound to fail).

- (c) For candidates (under new regulations) who fail in Part-I Final Prof MBBS Examination it is suggested that they may be allowed to reappear after 3 months in the first instance. However, those who fail in this repeat examination should be allowed to appear in these subjects along with their part-II Final Prof examination. After that a gap of 6 months should be maintained between successive examinations.
- (d) For failed candidates appearing under old regulations existing pattern of examination (as applicable under different universities) after 6 months each time shall continue to be followed. Any tinkering with the existing rules shall lead to unnecessary litigation.

### **SYLLABUS IN GENERAL SURGERY AND ALLIED SPECIALITIES**

1. Principles and practice of surgical asepsis, sterilisation, dressings, operation theatre technique, wounds and wound healing, haemorrhage, blood transfusion, immune response and immune deficiency states and organ transplantation etc.
2. Physiological responses and management of trauma, shock, burns, fluid and electrolyte balance, and nutritional deficiency states.
3. Common surgical problems related to arteries, veins and lymphatics.
4. Common surgical problems related to skin subcutaneous, connective tissues and other soft tissues including benign and malignant disorders.
5. Surgical disorders, including trauma, related to head and neck and thorax including salivary glands, thyroid, parathyroid, larynx, pharynx, chest wall, lungs, pleura, heart, major vessels, mediastinum, oesophagus and diaphragm etc.
6. Disease of the stomach, duodenum, small and large intestine, liver including biliary tract, spleen, pancreas, abdominal wall, mesentery, omentum, peritoneum and retroperitoneum.
7. Diseases of the kidney, supra renals, ureters, urinary bladder, urethra and external genitalia.
8. Common pediatric surgical, neurosurgical, plastic and reconstructive and dental surgical disorders, anaesthetic techniques and there problems and pain relief. Applied radiodiagnostic and imaging and radiotherapy techniques and applications.
9. Detection and management of accidental trauma, disaster related and other surgical emergency problems.
10. Recent advances in diagnosis and management of common surgical problems.
11. Common/ routine general surgical operative procedures/ techniques.
12. Common orthopaedic problems and there management including congenital, inflammatory, traumatic, degenerative and neoplastic disorders of bones and joints.

**EXAMINATION :****THEORY :**

Two theory papers of 60 marks each.

Paper A : Part I (General Surgery .. Syllabus items 1 to 4) .. 30 marks	
Part II (Orthopaedics) .. Syllabus item 2) .. 30 marks	60 Marks
Paper B : Part I (General Surgery .. Syllabus item 5) .. 30 marks	
Part II (General Surgery .. Syllabus items 6-11) .. 30 marks	60 Marks

**PRACTICAL :**

Clinical : (Surgical 75 marks + Ortho 25 marks)	100 Marks
Oral Viva (To be counted towards theory*)	20 Marks

**INTERNAL ASSESSMENT :**

Theory (30 marks), Practical (30 marks)	30 Marks	30 Marks
---	----------	----------

**Total Marks : Practical 130      Theory : 170 Marks**

=====

**Passing Marks :** Theory ... 50% collectively (Paper A + Paper B + Viva)  
Practical/ Clinical ... 50%

Internal Assessment... 50 % in theory and practical separately.

Eligibility of a candidate to be rejected if Internal Assessment of the candidate is less than 50% (as required under MCI guidelines). Candidates who do not comply with minimum requirements of Internal Assessment should not be allowed to appear in the subject. Since the application forms of the candidates are required to be submitted many months in advance of the examination, such candidates should be detained from appearing in the subject.

**No. of Exams :** Only two examinations one annual and one supplementary should be held in one calendar year for both old and new candidates.

**Guidelines for Questions :**

All questions should carry 10 marks each. Each paper to have two parts of three questions each. One question in each part should be descriptive with emphasis on basic sciences as relevant to the subject. The other two question should be split into 3-4 sub-sections (i.e. notes) requiring short answers. Each such sub-question should carry 2-4 marks as may be indicated by the examiner. Marks for all questions and sub-questions should be clearly indicated in the question papers.

**Co-ordinator for Theory paper Setting**

Theory paper setting co-ordinator should be from among the senior most faculty teachers of affiliated colleges by rotation.

## CURRICULUM IN OBSTETRICS & GYNAECOLOGY

### GOAL

- The broad goal of the teaching of undergraduate students in Obstetrics and Gynaecology is that he/she shall acquire understanding of anatomy, physiology and pathophysiology of the reproductive system and gain the ability to optimally manage common conditions affecting it.
- The undergraduate student should grasp the basic ability to resuscitate the new born, soon after birth and to look after the neonate in the lying in period and to have the capability to diagnose the problems of the neonates in the post-partum period.

### OBJECTIVES

#### (a) KNOWLEDGE

At the end of the course, the student shall be able to:-

1. outline the anatomy, physiology and pathophysiology of the reproductive system and the common conditions affecting it;
2. detect normal pregnancy, labour, puerperium and manage the problems he/she is likely to encounter therein;
3. list the leading causes of maternal and perinatal morbidity and mortality, identify the use, abuse, side effects of drugs in lactation also.
4. understand the principles of contraception and various techniques employed, methods of medical termination of pregnancy, sterilization and their complications;
5. identify the use, abuse and side effects of drugs in pregnancy, pre-menopausal and post-menopausal periods;
6. describe the national programme of maternal and child health and family welfare and their implementation at various levels, should know the routine post operative management soon after surgery and till the time the patient is discharged from the hospital;
7. identify common gynaecological diseases and describe principles of their management, should identify the importance of breast feeding;
8. state the indications, techniques and complications of surgeries like Caesarian Section, laprotomy, abdominal and vaginal hysterectomy, Fothergill's operation and vacuum aspiration for Medical Termination of Pregnancy MTP).
9. Should be conversant specifically with the resuscitation of the new born and care of the new born and the diseases of new born during perinatal period.
10. Should be well versed with the problems of the adolescents counselling the adolescents and the role of sex education.
11. Should also be conversant with the problems of Geriatrics and the specific diseases of this age group and therapeutic approach to their problems (with special reference to malignancies, osteoporosis and coronary disease).

(b) **SKILLS**

At the end of the course, the student shall be able to:-

1. examine a pregnant woman; recognize high risk pregnancies and make appropriate referrals and should be able to advise a pregnant patient with low risk pregnancy – regarding antenatal care.
2. conduct a normal delivery, anticipate and recognise well in time the complications and deal with them.
3. resuscitate the new born and recognize congenital anomalies and to diagnose the post-natal complications developing during the course of lying in period.
4. advise a couple on the use of various available contraceptive devices and assist in insertion and removal of intra-uterine contraceptive devices. Distinguish between normal newborn babies and those requiring special care and institute early care to all new born babies including care of preterm and low birth weight babies, provide correct guidance and counseling in breast feeding.
5. perform pelvic examination, diagnose and manage common gynaecological problems including early detection of genital malignancies.
6. Make a vaginal cytological smear, perform a post coital test and wet vaginal smear examination for *Trichomonas vaginalis*, moniliasis and gram stain for gonorrhoea;
7. interpretation of data of investigations like biochemical, histopathological, radiological, ultrasound etc.

(c) **INTEGRATION**

The student shall be able to integrate clinical skills with other disciplines and bring about coordination of family welfare programmes for the national goal of population control.

(d) **GENERAL GUIDELINES FOR TRAINING**

1. attendance of a maternity hospital or the maternity wards of a general hospital including (i) antenatal care (ii) the management of the puerperium and (iii) a minimum period of 5 months in-patient and out-patient training including family welfare planning. If the medical college has its own Obst. & Gynae department functioning well, the maternity training should be carried out there only and not in the maternity (specially) wards of a general hospital.
2. of this period of clinical instruction, not less than one month shall be spent as a resident pupil in a maternity ward of a general hospital;
3. during this period, the student shall conduct at least 10 cases of labour under adequate supervision and assist in 10 other cases.
4. a certificate showing the number of cases of labour attended by the student in the maternity hospital and/or patient homes respectively, shall be signed by a responsible medical officer on the staff of the hospital and shall state:-

- a) that the student has been present during the course of labour and personally conducted each case, making the necessary abdominal and other examinations under the supervision of the certifying officer who shall describe his official position.
- b) That satisfactory written histories of the cases conducted including wherever possible antenatal and postnatal observations, were presented by the student and initiated by the supervising officer.

#### 5. FAMILY WELFARE PLANNING

Training in Family Welfare Planning shall be emphasized in all the three phases and during internship as per guidelines provided in Appendix A.

#### 6. Community Medicine

The teaching and training of community medicine will continue during the first two semesters of phase III

### PHASE DISTRIBUTION AND TIMING OF EXAMINATION

- 1) It is recommended that 4 weeks of posting in Obst. & Gynae during 5<sup>th</sup> semester should be shifted to 6<sup>th</sup> semester because during the 5<sup>th</sup> semester the students are busy with their 2<sup>nd</sup> professional examination.
- 2) During 8<sup>th</sup> semester, the posting should be increased to 6 weeks rather than 4 weeks.
- 3) Since the number of weeks of teaching in Obst. & Gynae are equal to those in Medicine & Surgery, it is suggested that the marks allocated to the Obst. & Gynae should also be 400 marks, 1/4<sup>th</sup> of theory papers should be reserved for Family Welfare Planning. Since family welfare planning is a National Programme, its importance can be highlighted in the teaching curriculum of medical graduate and the importance of a subject in the minds of the students goes by the allocation of marks only. Hence, it is of utmost importance to highlight this subject during undergraduate training to an extent that it really deserves.

#### Distribution of Marks

Theory : Two papers of 40 marks each	80 marks
Paper I – Obstetrics including social obstetrics	
Paper II-Gynaecology, Family Welfare & Demography	
Shall contain one question on basic sciences and allied subjects)	
Oral (Viva) including record of delivery cases (20+10)	30 marks
Clinical	30 marks
Internal Assessment	60 marks
(Theory- 30, Practical –30)	
Total	200 marks

## CURRICULUM IN PAEDIATRICS

### OBJECTIVES

The objectives of training the undergraduate students in paediatrics is to ensure that at the end of the training he/she will be able to:

Diagnose and appropriately treat common paediatric and neonatal illness.

Identify paediatric and neonatal illness and problems that require secondary and tertiary care and refer them appropriately.

Advise and interpret investigations.

Counsel and guide patient's parents and relatives regarding the illness, the appropriate care, the possible complications and the prognosis.

Provide emergency cardio-pulmonary resuscitation to newborns and children.

Participate in the National Programmes effectively.

Diagnose and effectively treat acute paediatric and neonatal emergencies.

Perform routine investigative and therapeutic procedures.

Motivate parents to consent for a diagnostic autopsy.

### COURSE CONTENTS

#### I. VITAL STATISTICS

1. Introduction to paediatrics with special reference to population explosion problem and age related morbidities.
2. Definition of mortality rates and ratios, perinatal, neonatal, infant, under five children and maternal.
3. National programmes on maternal and child health.

#### II. GROWTH AND DEVELOPMENT

1. Fetal (1<sup>st</sup> - 3<sup>rd</sup> trimester)
2. Neonatal
3. Infancy
4. Early & late childhood
5. Adolescence
6. Deviation in growth and development, with special reference to stunted growth.



### III. NUTRITION AND RELATED DISORDERS

1. Normal nutritional requirements : protein, carbohydrates, fats, vitamins, trace elements.
2. Various aspects of infant feeding : breast feeding, weaning and nutrition in preterm babies.
3. Nutritional disorders :
  - i) Protein Energy Malnutrition.
  - ii) Causes and Management
  - iii) Vitamin deficiency diseases
    - a) Rickets
    - b) Scurvy
    - c) Vitamin A deficiency
4. National nutritional programme.

### IV. IMMUNISATION

1. Principles of immunisation, vaccine preservation and cold chain.
2. National and IAP immunisation schedules
3. Newer vaccines

### V. COMMON INFECTIOUS DISEASES

1. Enteric fever, polio & AFP surveillance, measles, chicken pox, diphtheria and mumps.
2. Childhood tuberculosis – difference between primary and adult tuberculosis, various types of childhood tuberculosis.
3. HIV infection in children.

### VI. DISORDERS OF BLOOD

1. Anaemia :
  - i) Iron deficiency
  - ii) Megaloblastic
  - iii) Aplastic
  - iv) Hemolytic : acute & chronic
  - v) Thalassemia
2. Leukaemia (ALL etc.)
3. Bleeding disorders :
  - i) ITP
  - ii) Hemophilia

## **VII. RESPIRATORY SYSTEM**

1. Acute URI
2. Lower respiratory tract infections : bronchopneumonia, bronchiolitis, asthma.

## **VIII. CARDIOVASCULAR SYSTEM**

1. Classification of congenital heart disease
  - a) Cyanotic (TOF etc)
  - b) Acyanotic (VSD, PDA, ASD etc)
2. Acute Rheumatic fever and rheumatic heart disease
3. Congestive heart failure
4. Hypertension.

## **IX. CENTRAL NERVOUS SYSTEM**

1. Meningitis (Pyogenic & Tuberculous)
2. Encephalitis
3. Seizures (Including neonatal)
4. Mental retardation, cerebral palsy, hydrocephalus.

## **X. GASTROINTESTINAL SYSTEM**

1. Acute & chronic diarrhoea disease with fluid and electrolyte therapy and complications.
2. Hepatic disorders (hepatitis, hepatic coma)
3. Gastro – esophageal reflux
4. Helminthiasis.

## **XI. ENDOCRINE DISORDERS**

1. Hypothyroidism – congenital & acquired, early recognition and treatment.
2. Juvenile diabetes and its management.

## **XII. RENAL DISEASE**

1. Acute glomerulonephritis – diagnosis, investigation and treatment.
2. Nephrotic syndrome.
3. Urinary tract infection – acute recurrent
4. Renal failure – acute & chronic.

### **XIII. GENETIC DISORDERS**

1. General clinical principles in genetics
2. Common genetic disorders like Down's syndrome
3. Genetic counselling.

### **XIV. METABOLIC DISORDERS**

1. Common metabolic disorders like phenylketonuria, albinism, mucopolysaccharidosis.

### **XV. NEONATOLOGY**

1. Foetal physiology of normal pregnancy. Identification of antenatal, intrapartum and immediate postnatal risk factors.
2. Definition, identification and classification of high risk neonate, neonatal resuscitation, gestational age assessment and care of the normal newborn in the hospital and home.
3. Care of the preterm and low birth weight infant, temperature maintenance, feeding, prevention of complications, appropriate method of transfer to tertiary centre.
4. Management of neonatal problems, transient metabolic disorders, infections, minor developmental defects of diabetic mothers, haemorrhagic disease of newborn, respiratory distress, feeding difficulties, birth injuries, anaemia and jaundice.
5. Management of meconium aspiration syndrome.
6. Identification and referral of neonates with congenital malformations like cleft lip, cleft palate, tracheo-esophageal fistula, diaphragmatic hernia, anorectal anomalies.

### **XVI. PAEDIATRIC EMERGENCIES**

1. Management of shock, cardiac failure, hyperpyrexia, drowning, foreign body aspiration.

### **XVII. COMMON POISONING AND ACCIDENTS**

1. Kerosene, organophosphorus, rat poison, acid ingestion, opium, barbiturates, dhatura, alcohol, naphthalene.
2. Insect and snake bites.
3. Road and fire accidents.
4. Food poisoning.
5. Lead poisoning.

### **XVIII. MISCELLANEOUS**

1. Juvenile rheumatoid arthritis.
2. Behavioural disorders.

- 80 -

## SKILLS

The board goal is to acquire appropriate skills for optimally dealing with major health problems of children to ensure their optimal growth and development. At the end of the course, the student shall be able to :

1. Take a detailed paediatric history, conduct an appropriate physical examination of children including neonates, make clinical diagnosis, conduct common bedside investigative procedures and interpret common laboratory investigation results.
2. Take anthropometric measurements, witness resuscitation of newborn infants at birth, preparation of oral rehydration solution, tuberculin testing, vaccine administration, venesection, intravenous line access and nasogastric feeding.
3. Witness diagnostic procedures such as lumbar puncture, liver and kidney biopsy, bone marrow aspiration, pleural tap and ascitic tap.
4. Distinguish between normal newborn babies and those requiring special care and institute early care to all newborn babies including care of preterm and low birth weight babies, providing correct guidance and counselling in breast feeding.
5. Provide ambulatory care to all sick children, identify indications for specialised inpatient care and ensure referral of those who require hospitalization.
6. Demonstrate empathy and humane approach towards patients, relatives and attendants.
7. Develop a proper attitude towards patients, colleagues and other staff and learn communication skills.
8. Maintain an ethical behaviour in all aspects of medical practice.
9. Adopt universal precautions for self protection against HIV and hepatitis and counsel patients.
10. Maintain cold chain for vaccines.

Students must also be familiar with the following :

### INSTRUMENTS

Identification, indications and contraindications and technique of using them :

- Lumbar puncture needle
- Liver biopsy needle
- Bone marrow aspiration needle
- Scalp vein needle
- Ryle's tube
- Infant feeding tube
- Endotracheal tube
- Ambu Bag
- Tongue depressor
- Tuberculin syringe.

**VACCINES**

- DPT
- DT
- Oral polio vaccine
- Measles vaccine
- MMR vaccine
- BCG
- Old tuberculin
- H. Influenza type B vaccine
- Hepatitis B vaccine
- Pneumococcal vaccine

**NUTRITION TRAY**

- Milk
- Feeding bottle
- Rice, raw-parboiled
- Wheat
- Red gram dal
- Black gram dal
- Green gram dal
- Bengal gram – whole and dal
- Groundnut
- Jaggery
- Sugar
- Green leafy vegetables
- Tomato
- Egg, fish, meat
- Banana

**ORAL REHYDRATION SALT PACKET****X-RAYS**

- Rickets
- Scurvy
- Pneumonia
- Hair on end appearance – haemolytic anemia
- Skull X-ray – sutural separation
- Epiphyseal dysgenesis (hypothyroidism)
- Congenital heart disease
  - Pulmonary plethora
  - Pulmonary oligemia
  - Cardiomegaly.

**Distribution of marks**

Theory: One Paper	40 marks
(Shall contain one question on basic sciences and allied subjects)	
Oral (Viva)	10 marks
Clinical	30 marks
Internal Assessment (Theory 10 Practical 10)	20 marks
Total	100 marks