

## Second B.O.Th. Year

### B.O.Th. : 202 PATHOLOGY & MICROBIOLOGY

Total hours: 100(50 Pathology + 50 Microbiology)

Theory Examination: Uni. external exam 70 + internal assessment 30 = 100

**Course Objectives-** At the end of the course, the student will be able to-

- 1)- Acquire the knowledge of concepts of cell injury & changes produced thereby in different tissues & organs-: capacity of the body in healing process
- 2)- Recall the Etio — pathogenesis, the pathological effects & the clinico — pathological correlation of common infections & non-infectious diseases.
- 3)- Acquire the knowledge of concepts of neoplasia with reference to the Etiology, gross & microscopic features, diagnosis, & prognosis in different tissues, & organs of the body.
- 4)- Correlate normal & altered morphology of different organ systems in different diseases needed for understanding disease process & their clinical significance (with special emphasis to neuro-musculo-skeletal & cardio-respiratory systems)
- 5)- Acquire knowledge of common immunological disorders & their resultant effects on the human body.
- 6)- Understand in brief about the Hematological diseases & investigations necessary to diagnose them & determine their prognosis.

### **SYLLABUS**

- 1)-a)- General Pathology- Cell injury-causes, mechanism & toxic injuries with special reference to Physical, Chemical, & ionizing radiation
  - b)- Reversible injury (degeneration)- types-morphology,- swelling, hyaline, fatty changes, -
  - c)- Intra-cellular accumulation-hyaline mucin,
  - d)- Irreversible cell injury-types of necrosis- apoptosis — calcification-dystrophic & metastasis,
  - e)- Extra-cellular accumulation-amyloidosis, calcification-Pathogenesis-morphology
- 2 ) Inflammation & Repair;
  - a)- Acute inflammation — features, causes, vascular & cellular events,
  - b)- Morphologic variations,
  - c)- Inflammatory cells & mediators,
  - d)- Chronic inflammation:- causes, types, non-specific & granulomatous with examples
  - e)- wound healing by primary & secondary union factors promoting & delaying healing process.
  - f)- Healing at various sites including-bones, *nerve* & muscle
  - g)- Regeneration & repair

3)- Immuno — pathology — (basic concepts)-

- a)- Immune system:- organization-ceNs- antibiotics- regulation of immune responses,
- b)- Hyper-sensitivity,
- c)- Secondary immuno-deficiency including HIV,
- d)- Organ transplantation

4)- Circulatory disturbances-

- a)- Edema - pathogenesis - types - translates *I* exudates,
- b)- Chronic venous congestion- lung, lever, spleen,
- c)- Thrombosis — formation — fate — effects,
- d)- Embolism — types- clinical effects,
- e)- Infarction — types — common sites
- f)- Gang renes — types — actiopathogenesis
- g)- Shock — Pathogenesis, types, morphologic changes

5)- Deficiency disorders — Vitamins A,B,C,D,

6)- Growth Disturbance-

- a)- Atrophy-malformation, agenesis, dysplasia,
- b)- Neoplasia classification, histogenesis, biologic behaviors, difference between benign & malignant tumour
- c)- Malignant neoplasms- grades-stages-local & distal spread,
- d)- Carcinogenesis — environmental carcinogens
- e)- Chemical, Occupational, heredity, vira,
- f)- precancerous lesions & ca in situ
- g)-Tumor & host interactions — systemic effects-metastatic or direct spread of tumors affecting bones, spinal cord, leading to paraplegia, etc.

7)- Medical Genetics — (In Brief)

8)- Specific Patholgy:-

A]- CVS

- a)- Atherosclerosis - Ischismic heart diseases — myocardial infarction — Pathogenesis *I* Pathology
- b)- Hypertension
- c)- C.C.F.
- d)- Rh H.D.
- e)- Peripheral vascular diseases

B)-Respiratory —

- a)- COPD,
- b)- Pneumonia (lobar, broncho, vira),
- c)- T. B. Primary, secondary — morphologic types,
- d)- pleuritis, complications,
- e)- Lung collapse - atelectasis

C)- NeuroPathology-

- a)- Reaction of nervous tissue to injury — infection & ischaemia

- b)- Pyogenic meningitis, TBM, Viral,
- c)- Cerebro — vascular diseases — atherosclerosis — Thrombosis, embolism, aneurysm, hypoxia, infarction & hemorrhage
- d)- effects of Hypotension on CNS e)- Coma
- f)- Polio myelitis- Leprosy- Demyelinating diseases — Parkinsonism — Cerebral palsy- metachromatic leucodystrophy — Dementia — Hemiplegia / paraplegia — Pathogenesis & pathology of Wilson's disease
- g)- SOL- (in brief)
- h)- Peripheral nerve injury
- 9)- Muscle diseases — Muscular dystrophy-hypertrophy-Pseudo-hypertrophy-altrophyPolio-myelitis Myositis ossificans, neorosis, regeneration- Myotonia
- 10)-Neuro — muscular junction — Myasthenia gravis — Myasthenic syndrome.
- 11)- Bone & Joints - a)fracture healing — Osteomyelitis — rickets — Osteomalacia — Bone tumors Osteoporosis
  - a)- Spondylosis, P.I.D.- Scoliosis — Haemarthrosis — 'Gout — T.B. -
  - b)- Arthritis — degenerative — inflammatory — RA-Ankylosing spondylitis — Tenosynovitis
- 12)- Urinary — commonly encountered in paralytic bladder, common urinary tract infections (brief)- urinary calculi-
- 13)- G.I. system- (1hr)- Gastric! duodenal ulcer, enteric fever, TB, enteritis, Gastritis (related to consumption of NSAID)
- 14)- Endocrine — Hyperthyroidism — Diabetes
- 15)- Hepatic diseases (1hr)- Cirrhosis — emphasis to systemic effects of portal hypertension
- 16)- Skin-Melanin pigment disorders — Vitiligo — Tinea versicolor- PsoriasisBacterial/fungal infections — cutaneous TB, Soleroderma, SLE, Leprosy Alopecia
- 17)- Clinical pathology — (including Demonstrations)
  - a)- Anemia — (deficiency) — T.C./D.C.! Eosinophilia, E.S.R., C.P.K,
  - b)- Muscle / skin / nerve biopsy c)- Microscopic appearance of muscle necrosis
 — fatty infiltration d)- Lab investigation in liver & renal failure

### **TEXT BOOKS —**

- 1)- Text book of Pathology - by Harsh Mohan
- 2)- Pathologic basis of disease by Cotran, Kumar, Robbins
- 3)- General Pathology— by Bhende

## MICROBIOLOGY

[Didactic — 50 hrs]

[Marks - 50]

**Objectives** — At the end of the course, the candidate will have sound knowledge of the agent responsible for causing human infections, pertaining to C.N.S., CVS musculoskeletal, & Respiratory system.

### **Syllabus** —

- 1] General Microbiology i) Introduction & scope..... 2 hrs
- 2] Classification of Micro-organisms & morphology of Bacteria ..... 2 hrs
- 3] Sterilization & disinfection [basic concepts] .....6 hrs  
hospital acquired infection, universal safety precautions,  
Biomedical waste disposal..... 1 hrs
- 4] Immunology.....5 hrs
  - i) Antigen antibody — reaction & application for diagnosis;
  - ii) Immune response — normal / abnormal
  - iii) Innate immunity & acquired immunity [vaccination]
  - iv) Hyper — sensitivity & auto-immunity
- 5] Bacteriology.....12 hrs
  - i) Infection caused by gram +ve cocci; Gas gangrene — clostridium — Diphtheria
  - ii) Infection caused by gram —ve cocci, Septicemia-cholera — Shock — Typhoid- diarrhoea;
  - iv) syphilis — morphology & pathogenesis [VDRL]
- 6] Viruses.....8 hrs
  - i) Introduction & general properties,
  - ii)HIV
  - iii) Hepatitis
  - iv) Polio, measles, congenital viral infections, Rubella, CMV Herpes
- 7] Mycology.....3 hrs  
Mycetoma — Aspergilosis — candidiasis
- 8] Parasites affecting C.N.S.....5 hrs  
Malaria — Filaria — Toxoplasma Cystisarcosis & echinococcus
- 9]Applied Microbiology..... 6 hrs  
as relevant to diseases involving Bones, Joints — Nerves — Muscles-Skin-brain cardiopulmonary system, & burns.

### **TEXT BOOKS**

Text books of Microbiology — by R. Ananthnarayan & C.K. Jayram Panikar