

ANNEXURE II

Syllabus for NEB Examination (Dental) (For transfer to BDS Year 3)

GENERAL PATHOLOGY

Cell Injury

- Terms necrosis, ischemia, hypoxia, infarction and gangrene.
- Sequence of the ultrastructural and biochemical changes which occur in the cell in response to the following:
 - Ischemia
 - Immunological injury – eg. Asthma / SLE /Anaphylactic reaction
 - Physical agents – eg. Radiation
 - Genetic defects – eg. Thalassemia / hemophilia
 - Nutritional deficiency
 - Infectious agents
 - Viruses – eg. Hepatitis / Aids / HIV infections
 - Fungi – eg. Candida Albicans /Candidiasis
 - Parasites – eg. Malaria
 - Irreversible and reversible injury.
 - Apoptosis and its significance.
 - Necrosis and its types.
 - Exogenous and endogenous pigment deposition
 - Dystrophic and metastatic calcification along with clinical significance.
 - Metabolic disorders of Lipids, Proteins, Carbohydrate

INFLAMMATION AND MEDIATORS OF INFLAMMATION

- Role of inflammation in the defense mechanisms of the body.
- Vascular changes of acute inflammation and relate these to the morphological and tissue effects.
- Process of chemotaxis opsonization and phagocytosis.
- Role of cellular component in inflammatory exudate.
- Differences between exudate and transudate.
- List of important chemical mediators of inflammation.
- Pathway of Arachidonic Acid metabolism.
- Role of products of Arachidonic Acid metabolism in inflammation.
- Mechanism for development of fever, with reference to exogenous and endogenous pyrogens.
- Chronic inflammation including granulomas.

- Granuloma, its type and causes.
- Systemic effects of acute and chronic inflammation and their possible outcomes.
- Signification of ESR.
- Examples of induced hypothermia in medicine.
- Pathogenesis, clinical features and lab Diagnosis of Gout.
- Management of acute and chronic Gout.

WOUND HEALING

- Differences between repair and regeneration.
- Wound healing by first and second intention.
- Factors that influence the inflammatory reparative response.
- Comparison of wound contraction with cicatrization.
- Formation of granulation tissue.
- Complications of wound healing.

DISORDERS OF CIRCULATION

THROMBO-EMBOLIC DISORDERS AND THEIR MODALITIES:

- Pathogenesis of thrombosis.
- Consequences of thrombosis.

DISORDERS OF THE CIRCULATION AND SHOCK

- Definition of Edema, ascites, hydrothorax and anasarca.
- Pathophysiology of edema with special emphasis on CHF.
- Pathogenesis of four major types of shock (Hypovolemic, cardiogenic, vasovagal and septic) and list their causes.
- Compensatory mechanisms involved in shock.

MICROBIOLOGY

- Defense mechanisms of the body.
- Microbial mechanisms of invasion and virulence.
- Differences between sterilization and disinfection.
- Methods of disinfection and sterilization.
- Principles of aseptic techniques.
- Universal precautions for infection control.
- General principles of the following serological tests:
 - ELISA - Hepatitis (A, B, C, D, E, G), Rubella, CMV and HIV
 - Haemagglutination - TPHA
 - Western blot - HIV

- ICT – Malaria
- Interpretation of Culture reports, Serological reports and Microscopic reports of gram stain and AFB stain
- Principles of proper collection and submission of specimens for laboratory investigations with due precautions.
- General characteristics and taxonomy of Bacteria, Viruses and Fungi.
- Definition of communicable endemic, epidemic and pandemic diseases, carriers, pathogens, opportunists, commensals and colonizers.
- List of microorganisms responsible for infection of the body with especial reference to oral cavity.
- Pathogenesis, treatment, epidemiology, prevention and control of the following organisms.
 - Bacteria
 - Viruses
 - Fungus
 - Protozoa
 - Helminths
- Principles of anti-microbial action.

GENETICS

- Agenesis, Dysgenesis, Aplasia, Hypoplasia, Hyperplasia, Metaplasia, Dysplasia, Neoplasia, Anaplasia, Atrophy and Hypertrophy.
- Cell cycle and list cell types (stable, labile, permanent).
- Mechanisms controlling cell growth.
- Classification systems of tumors.
- Characteristics of benign and malignant tumors.
- Grading and staging system of tumors.
- Biology of tumor growth.
- Process of carcinogenesis.
- Host defense against tumors.
- Mechanism of local and distant spread.
- Local and systemic effects of tumors.
- Tumor markers used in the diagnosis and management of cancer.
- Chemical, Physical agents and Viruses related to human cancers.
- Epidemiology of common cancers in Pakistan.

IMMUNOLOGY

- Antigen, antibody, epitope, hapten and adhesion molecules
- Innate and acquired immunity.
- Type-I, type-II, type-III and type-IV hypersensitivity reactions.
- Classification of the immunodeficiency disorders.

- Autoimmunity

THE ORAL CAVITY

- Leukoplakia.
- Predisposing factors (pipe smoking, ill-fitting denture, alcohol abuse, irritant foods) of leukoplakia.
- Risk factors of oral cancer.
- Clinical and morphological features of oral cancer.
- Benign and malignant tumors of salivary glands.
- Clinical and morphological features of pleomorphic adenoma.

PHARMACOLOGY

General Pharmacology:

- Definition of drug and drug nomenclature.
- Branches / Divisions of Pharmacology
- Sources of drugs
- Active principles of drug and Pharmacology
- Active principles of drug and Pharmacology Dosage forms and doses of drugs.
- Drug administration. . .
- Absorption of drugs and processes involved in drug absorption
- Factors modifying absorption of drugs.
- Transport of drugs across cell-membrane.
- Bioavailability, its clinical significance and factors affecting bioavailability
- Drugs reservoirs, distribution and redistribution of drugs, plasma protein binding.
- Pro-drug, Biotransformation of drugs, enzyme induction, enzyme inhibition and entero-hepatic circulation
- Plasma half-life of drugs, steady state concentration, its clinical importance and factors affecting it.
- Excretion of drugs.
- Mechanism of drug action.
- Dose response curves, structure-activity relationship.
- Factors modifying action and doses of drugs.
- Pharmacokinetics, pharmacodynamics and Receptors

Locally Acting Drugs

- Demulcents, Emollients, Irritants, Counter irritants, Astringents, antiseborrheics, locally acting enzymes.
- Antiseptics and Disinfectants
- Ectoparasiticides

Drugs Acting on Gastrointestinal Tract

- Anti Emetics

Cardiovascular Drugs

Skeletal Muscle Relaxants

- Neuromuscular Blocking Agents - D-tubocurarine, Suxamethanin
- Central Muscle Relaxants, Meprobromate, Mephenesim, Diazepam etc.

Central Nervous System

- Sedative-Hypnotics
- Antiepileptics
- General Anaesthetics
- Local Anesthetics
- Drugs for movement Disorder/Muscle Relaxant
- Alcohol
- Drugs for Migraine
 - Stimulants of the Central Nervous System:
 - Caffeine, Theophylline, Theobromine
 - Brain stem stimulants: Picrotoxin, Nikethamide, Ethamivan, Doxapram

Psychopharmacology

- Anti-psychotics
- Anxiolytics
- Anti-Depressant / Anti mania

Drugs acting on Endocrine System

- Drugs-Hypothalamic Drugs
- Adrenocorticoids
- Sex Hormones
- Thyroid / Parathyroid Drugs
- Pancreatic Hormones and Oral hypoglycemic Agents

ANTIBIOTICS

Parameters:

- Provisional Diagnosis, Investigation, Empirical Therapy, prescribing after culture and sensitivity.

VITAMINS

Parameters:

- Drugs-Hypothalamic Drugs
- Groups of vitamins prescribed
- Vitamins prescribed on basis of therapeutic indication or empirical
- Single I multiple vitamins prescribing
- Rational with use of vitamins.

ANALGESICS

Parameters:

- Various groups of analgesics prescribed
- Single / multiple adverse drug prescription.
- Non specific indications of analgesic prescribed

ADVERSE DRUG REACTIONS

- Anti-microbials, cytotoxic drugs, steroids etc.

ORAL BIOLOGY & TOOTH MORPHOLOGY

EMBRYOLOGY

- General human development
- The brachial apparatus
- Development of face/tongue/thyroid gland
- Development of nasomaxillary complex
- Development of palate
- Development of mandible and temporo mandibular joint
- Development of para-nasal sinuses
- Development of salivary glands
- Tooth development and its associated structures
- Development of cartilages and bones of facial skeleton
- Introduction of clinical anomalies related with all the above topics
- Introduction to Post natal facial growth.
- Development of base of skull

Developmental Histology (structure) and Function of:

- Bone/cartilage (specially jaws)
- Alveolar bone
- Periodontal ligament
- Cementum
- Tooth eruption and shedding
- Oral mucous membrane
- Dentine
- Pulp
- Enamel
- Temporo-mandibular joint clinical consideration
- Endogenous implants/changes during tooth movement/wound healing

ORAL PHYSIOLOGY:

- Immunology
- Calcium metabolism and bone
- The healing of bone fractures
- Repair and regeneration of dental tissues
- Histology and function of
- Saliva and salivary glands
- Taste and taste organs
- Pain and pain pathway

TOOTH MORPHOLOGY AND OCCLUSION

- Introduction and nomenclature
- Anatomic and physiologic consideration of form and function of orodento-facial structures
- Brief study of comparative Oral Biology and Tooth Morphology

The Deciduous Dentition:

- Detail description of each primary tooth
- The pulp cavities
- The difference between deciduous and permanent teeth

Occlusion:

- Temporo-mandibular joint
- Muscles of mastication and facial expression
- Mastication and Swallowing
- Occlusion at primary/mixed/adult dentition stages
- Innervation and arterial supply of orofacial structures

COMMUNITY AND PREVENTIVE DENTISTRY

Introduction to Community Dentistry and Dental Public Health:

Concepts of health; disease and illness and factors affecting these states; activities carried out in the field of community dentistry.

Oral Epidemiology:

- Definition
- Uses and principles of epidemiology
- Research designs
- Dental surveys
- Clinical trials
- Screening
- Oral health assessment indices
- Concepts of aetiology, epidemiology of oral diseases and conditions having public health implications;
- Assessment of disease risk and predictive tests

Prevention of oral and dental diseases:

- Levels of prevention
- Health promotion
- Specific protection
- Dental plaque and its role in the etiology of dental diseases
- Diet; nutrition and dental health
- Water fluoridation
- Fluoride supplements
- Professionally and self-applied topical fluorides
- Fissure sealing
- Atraumatic Restorations
- Methods of plaque control
- Principles and strategies of dental health education and promotion
- Cross infection control
- Protection from radiation and mercury hazards in dental practice.

Dental health care delivery system:

- The structure of dental care
- Role of dentists, dental auxiliaries and general health workers in oral health care
- Dental care of people with special needs including the elderly, the handicapped, patients with infectious and communicable diseases
- Principles and elements of primary health care
- Ethical issues in dental care

Behavioral sciences:

- Health behaviour and its determinates
- Attitudes, beliefs and values about health and illness
- Theories of health behaviour
- Dentist – patient communication
- Informed Consent, Breaking Bad News
- Management of stress, fear and anxiety in dentistry, child psychology and behavior management and modification techniques
- Counselling, motivation and compliance.

Introduction to bio - statistics:

- Types of variables
- frequency distribution
- Measures of central tendency and variability in data
- Methods of sampling
- Sampling error
- Probability
- Normal interval
- Tests of statistical significance

Chairside preventive dental procedures

- High fluoride gel application
- Fissure sealing
- Dietary counseling
- Plaque disclosing