

Syllabus for the Preliminary Test for the recruitment of
Assistant Professor, Oral Medicine and Radiology ,
Class-I, (Dental)(Advt. No.-58/2024-25)

Marks-200

Questions-200

Medium-English

1. APPLIED ANATOMY :

Gross anatomy of the face, Neck region, Oral Cavity, Nasal Cavity, Pharynx, Gross salient features of brain and spinal cord with references to attachment of cranial nerves to the brainstem, Detailed study of the cranial nerve nuclei of V, VII, IX, X, XI, XII, Osteology.

2. EMBRYOLOGY :

Development of face, palate, nasal septum and nasal cavity, paranasal air sinuses, Pharyngeal apparatus in detail including the floor of the primitive pharynx, Development of tooth in detail and the age changes, Development of salivary glands, Congenital anomalies of face must be dealt in detail.

3. HISTOLOGY :

Study of epithelium of oral cavity and the respiratory tract, Connective tissue, Muscular tissue, Nervous tissue, Blood vessels, Cartilage, Bone and tooth, Tongue, Salivary glands, Tonsil, thymus, lymph nodes.

4. PHYSIOLOGY :

- **General Physiology** : Cell, Body Fluid Compartments, Classification, Composition, Cellular transport, RMP and action potential.
- **Muscle Nerve Physiology** : Structure of a neuron and properties of nerve fibers, Structure of muscle fibers and properties of muscle fibers, Neuromuscular transmission, Mechanism of muscle contraction.
- **Blood** : RBC and Hb, WBC – Structure and functions, Platelets – functions and applied aspects, Plasma proteins, Blood Coagulation with applied aspects, Blood groups, Lymph and applied aspects.
- **Respiratory System** : Air passages, composition of air, dead space, mechanics of respiration with pressure and volume changes, Lung volumes and capacities and applied aspects, Oxygen and

carbon dioxide transport, Neural regulation of respiration, Chemical regulation of respiration, Hypoxia, effects of increased barometric pressure and decreased barometric pressure.

- **Cardio-Vascular System** : Cardiac Cycle, Regulation of heart rate/ Stroke volume / cardiac output / blood flow, Regulation of blood pressure, Shock, hypertension, cardiac failure.
- **Excretory System** : Renal function tests.
- **Gastro – intestinal tract** : - Composition, functions and regulation of : Saliva, Gastric juice, Pancreatic juice, Bile and intestinal juice, Mastication and deglutition.
- **Endocrine System** : Hormones – classification and mechanism of action, Hypothalamic and pituitary hormones, Thyroid hormones, Parathyroid hormones and calcium homeostasis, Pancreatic hormones, Adrenal hormones.
- **Central Nervous System** : Ascending tract with special references to pain pathway.
- **Special Senses**: Gustation and Olfaction.

5. BIOCHEMISTRY :

- **Carbohydrates** – Disaccharides Specifically Maltose, Lactose, Sucrose : Digestion of starch / absorption of glucose, Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis, Blood sugar regulation, Glycogen storage regulation, Glycogen storage diseases, Galactosemia and fructosemia.
- **Lipids** : Fatty acids- Essential/non essential, Metabolism of fatty acids- oxidation, ketone body formation, utilization ketosis, Outline of cholesterol metabolism- synthesis and products formed from cholesterol.
- **Protein** : Amino acids- essential/non essential, complete/incomplete proteins, Transamination/ Deamination (Definition with examples), Urea cycle, Tyrosine-Hormones synthesized from

tyrosine, In born errors of amino acid metabolism, Methionine and transmethylation.

- **Nucleic Acids** : Purines/Pyrimidines, Purine analogs in medicine, DNA/RNA – Outline of structure, Transcription/translation, Steps of protein synthesis, Inhibitors of protein synthesis, Regulation of gene function.
- **Minerals** : Calcium/Phosphorus metabolism specifically regulation of serum calcium levels, Iron metabolism, Iodine metabolism, Trace elements in nutrition.
- **Energy Metabolism** : Basal metabolic rate, Specific dynamic action (SDA) of foods.
- **Vitamins** : Mainly these vitamins and their metabolic role-specifically vitamin A, Vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine.

6. PATHOLOGY :

- **Inflammation** : Repair and regeneration, necrosis and gangrene, Role of complement system in acute inflammation, Role of arachidonic acid and its metabolites in acute inflammation, Growth factors in acute inflammation, Role of molecular events in cell growth and intercellular signaling cell surface receptors, Role of NSAIDS in inflammation, Cellular changes in radiation injury and its manifestations.
- **Homeostasis** : Role of Endothelium in thrombo genesis, Arterial and venous thrombi, Disseminated Intravascular Coagulation, Shock:Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock, circulatory disturbances, ischemic hyperemia, venous congestion, edema, infarction.
- **Chromosomal Abnormalities** : Marfan's syndrome, Ehler's Danlos Syndrome, Fragile X Syndrome.
- **Hypersensitivity** : Anaphylaxis, Type II Hypersensitivity, Type III Hypersensitivity, Cell mediated Reaction and its clinical importance, Systemic Lupus Erythmatosus, Infection and infective granulomas.

- **Neoplasia** : Classification of Tumors, Carcinogenesis & Carcinogens – Chemical, Viral and Microbial, Grading and Staging of Cancer, tumor Angiogenesis, Paraneoplastic Syndrome, Spread of tumors, Characteristics of benign and malignant tumors.
- **Others** : Sex linked agamaglobulinemia, AIDS, Management of Immune deficiency patients requiring surgical procedures, De George's Syndrome, Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis.

7. PHARMACOLOGY :

Definition of terminologies used, Dosage and mode of administration of drugs, Action and fate of drugs in the body, Drugs acting on CNS, Drug addiction, tolerance and hypersensitive reactions, General and local anesthetics, hypnotics, antiepileptics and tranquilizers, Chemotherapeutics and antibiotics, Analgesics and anti – pyretics, Anti – tubercular and anti – syphilitic drugs, Antiseptics, sialogogues, and anti – sialogogues, Haematinics, Anti – diabetics, Vitamins – A, B Complex, C, D, E & K, Steroids.

8. ORAL AND MAXILLOFACIAL RADIOLOGY :

History of radiology, structure of x – ray tube, production of x – ray, property of x – Rays, Biological effects of radiation, Films and recording media, Processing of image in radiology, Design of x – ray department, dark room and use of automatic processing units, Localization by radiographic techniques, Faults of dental radiographs and concept of ideal radiograph, Quality assurance and audit in dental radiology, Extra – oral-imaging techniques , OPG and other radiologic techniques, Advanced imaging techniques like CBCT, CT Scan, MRI, Ultrasound, Basic Anatomy of sectional imaging with case interpretations of CT / CBCT / MRI, Radio nucleotide techniques, Contrast radiography in salivary gland, TMJ, and other radiolucent pathologies, Radiation protection and ICRP guidelines, Art of radiographic report, writing and descriptors preferred in reports, Radiograph differential diagnosis

of radiolucent, radio opaque and mixed lesions, Digital radiology and its various types of advantages.

9. ORAL MEDICINE, THERAPEUTICS AND LABORATORY INVESTIGATIONS :

Methods of clinical diagnosis of oral and systemic diseases as applicable to oral tissues including modern diagnostic techniques, Laboratory investigations including special investigations of oral and oro – facial diseases, Teeth in local and systemic diseases, congenital, and hereditary disorders, Oral manifestations of systemic diseases, Oro – facial pain, Psychosomatic aspects of oral diseases, Management of medically compromised patients including medical emergencies in the dental chair, Congenital and Hereditary disorders involving tissues of oro facial region, Systemic diseases due to oral foci of infection, Hematological, Dermatological, Metabolic, Nutritional, & Endocrinal conditions with oral manifestations, Neuromuscular diseases affecting oro – facial region, Salivary gland disorders, Tongue in oral and systemic diseases, TMJ dysfunction and diseases, Concept of immunity as related to oro – facial lesions, including AIDS, Cysts, Neoplasms, Odontomes, and fibro – osseous lesions, Oral changes in Osteo – dystrophies and chondro – dystrophies, Pre malignant and malignant lesions of oro facial region, Allergy and other miscellaneous conditions, Therapeutics in oral medicine –clinical pharmacology, Forensic odontology, Computers in oral diagnosis and imaging, Evidence based oral care in treatment planning, Molecular Biology.

10. RESEARCH METHODOLOGY AND BIOSTATISTICS

11. Revised Dentists (Code of Ethics) Regulations, 2014.

12. Current Trends and Recent Advancements in the above fields.