

**Syllabus for the Preliminary Test for the recruitment of**  
**Assistant Professor, Oral Pathology & Microbiology,**  
**Class-I, (Dental)( Advt. No.-45/2024-25)**

Marks-200

Questions-200

Medium-English

**1. APPLIED GROSS ANATOMY OF HEAD AND NECK INCLUDING HISTOLOGY AND GENETICS :**

Temporo-mandibular joint, Trigeminal nerve facial nerve, Muscles of mastication, Tongue, Salivary glands, Nerve supply, blood supply, lymphatic drainage and venous drainage of oro-dental tissues, Development of face, palate, mandible, maxilla, tongue and applied aspects of the same, Development of teeth and dental tissues and developmental defects of oral and maxillofacial region and abnormalities of teeth, Maxillary sinus, Jaw muscles and facial muscles, Introduction to genetics, Modes of inheritance, Chromosomal anomalies of oral tissues & single gene disorders.

**2. PHYSIOLOGY (GENERAL AND ORAL) :**

Saliva, Pain, Mastication, Taste, Deglutition, Wound healing, Vitamins, Calcium metabolism, Theories of mineralization, Tooth eruption and shedding, Blood and its constituents, Hormones.

**3. CELL BIOLOGY :**

Cell-structure and function (ultra structural and molecular aspects), intercellular junctions, cell cycle division, cell cycle regulators, cell – cell and cell – extracellular matrix interactions, Detailed molecular aspects of DNA, RNA, and intracellular organelles, transcription and translation and molecular biology techniques.

**4. GENERAL HISTOLOGY :**

Light and electron microscopy considerations of epithelial tissues and glands, bone, Light and electron microscopy considerations of hematopoietic system, lymphatic system, muscle, neural tissue, endocrinal system (thyroid, pituitary, parathyroid).

**5. BIOCHEMISTRY :**

Chemistry of carbohydrate, lipids and proteins, Methods of identification and purification, Metabolism of carbohydrates, lipids and proteins, Biological oxidation, Various techniques – cell fractionation and ultra filtration, centrifugation, Electrophoresis, Spectrophotometry and radioactive techniques.

**6. GENERAL PATHOLOGY :**

Inflammation and chemical mediators, thrombosis, embolism, necrosis, repair, degeneration, shock, hemorrhage pathogenic mechanisms at molecular level, blood dyscrasias, Carcinogenesis and Neoplasia.

**7. GENERAL MICROBIOLOGY :**

Definitions of various types of infections, Routes of infection and spread, Sterilization, disinfection and antiseptics, Bacterial genetics, Physiology and growth of microorganisms.

**8. BASIC IMMUNOLOGY :**

Basic principles of immunity, antigen and antibody reactions, Cell mediated immunity and Humoral immunity, Immunology of hypersensitivity, Immunological basis of the autoimmune phenomena, Immunodeficiency with relevance to opportunistic infections, Basic principles of transplantation and tumor immunity.

**9. SYSTEMIC MICROBIOLOGY/APPLIED MICROBIOLOGY :**

Morphology, classification, pathogenicity, mode of transmission, methods of prevention, collection and transport of specimen, for laboratory diagnosis, staining methods, common culture media, interpretation of laboratory reports and antibiotic sensitivity tests, Staphylococci, Streptococci, Corynebacterium diphtheria, Mycobacteria, Clostridia, bacteroids and fusobacteria, Actinomycetales, Spirochetes. General structure, broad classification of viruses, pathogenesis, pathology of viral infections, Herpes virus, Hepatitis virus, HIV, General properties

of fungi, Superficial, subcutaneous, deep opportunistic infections, General principles of fungal infections, method of collection of samples, diagnosis and examination of fungi.

**10. ORAL BIOLOGY (ORAL AND DENTAL HISTOLOGY) :**

Study of morphology of permanent and deciduous teeth, Structure and function of oral, dental and perioral tissues including their ultra-structure, molecular and biochemical aspects.

**11. BASIC HISTO- TECHNIQUES AND MICROSCOPY :**

Routine hematological tests and clinical significance of the same, Biopsy procedures for oral lesions, Tissue processing, Microtome and principles of microtomy, Various stains used in histopathology and their applications, Microscope, principles and theories of microscopy, Light microscopy and various other types including electron microscopy, Fixation and fixatives, Ground sections and decalcified sections, Cytological smears, Enzyme histochemistry, Principles, techniques and applications of immunofluorescence. Principles, techniques and applications of immunohistochemistry, Preparation of frozen sections, Museum set up, Quality control, Animal models.

**12. ORAL AND DENTAL PATHOLOGY :**

Developmental disorders of oral and paraoral structures, Potentially malignant disorders, Benign and malignant tumors of the oral cavity, Odontogenic cysts and tumors, Pathology of salivary glands, Regressive alterations of teeth, Bacterial, fungal, viral and protozoal infections of the oral cavity, Dental caries, Diseases of pulp and periapical region, Spread of oral infection, Healing of oral wounds, Physical and chemical injuries of oral cavity, Oral aspects of metabolic diseases, Diseases of bones and joints, Diseases of skin and mucous membrane, Diseases of periodontia, Diseases of blood and blood forming organs, Diseases of nerves and muscles, Oro-facial pain, Immunological diseases of oral cavity including tumor immunology, Molecular pathology, Oral Microbiology.

### **13. RECENT MOLECULAR TECHNIQUES :**

Basic principles, techniques and applications of –PCR, BLOTS, Hybridization, Recombinant DNA technology, Micro array, DNA sequencing, Cell culture and cloning.

**14.** Forensic odontology, Giant cell lesions, Clear cell lesions, Round cell lesions, Spindle cell lesions, Pigmented lesions, Fibro-osseous lesions, Mechanism of formation and expansion of cysts of orofacial region, Mechanism of growth and metastasis of tumors, Lab diagnosis of bacterial infections, Lab diagnosis of viral infections, Lab diagnosis of fungal infections, Hamartomas, Phakomatoses, Vascular tumors of oro-facial region, Genodermatoses, Tumor markers, Histogenesis of salivary gland tumors, Tumor angiogenesis, Concept of premalignancy, Blue cell lesions, Molecular basics of oral squamous cell carcinoma, Matrix remodelling in pathological condition, Etiopathogenesis of developmental defects of teeth, Viral oncogenesis, Lesions associated with impacted and missing teeth, Syndromes affecting oro-facial region, Hereditary oral defects, Techniques to assess the prognosis of neoplastic lesions, Vesiculo-bullous lesions, Lymphoreticular malignancy, Haemopoietic malignancy, Micronutrients, Oral aspects of metabolic disorders, Hormones and oro-maxillofacial lesions, Matrix metalloproteinases, Current concepts in HIV related oral diseases, Current concepts in OSMF, Epithelial –connective tissue interaction, Stem cell research.

### **15. RESEARCH METHODOLOGY AND BIOSTATISTICS :**

**16. Revised Dentists (Code of Ethics) Regulations, 2014.**

**17. Current Trends and Recent Advancements in the above fields.**