SYLLABUS OF PART – I

SUBJECT: PERIODONTICS

Applied Anatomy:

- **Evolution and Development of the Periodontium**

a. Evolution of Tooth and Related Structures

b. Parts of Periodontium

c. Development of Cementum

d. Development of Alveolar Bone

e. Development of Periodontal Ligament

f. Development of Gingiva

g. Molecular Components of Periodontal development

- **Micro and Macro structural anatomy and biology of the periodontal tissues**

a. Gingiva

Macro – parts of gingiva, sulcus, GCF
Micro – epithelium, connective tissue: cells, fibers, ECM

b. Alveolar Bone, Periodontal ligament, cementum

- **Age Changes in the Periodontal Tissues**

a. Effects of Aging on Periodontium

b. Effects of Aging on the Progression of Periodontal disease

c. Effects of Aging on Response to Treatment of Periodontal Tissues

- **Anatomy of the Periodontium**

a. Macroscopic and microscopic anatomy

b. Blood supply of the Periodontium

c. Lymphatic system of the Periodontium

d. Nerves of the Periodontium

- **Temporomandibular Joint, Maxillae and Mandible**

a. Structure of Joint- Articular Surfaces, Ligaments, Articular Disc

b. Relations of Temporomandibular Joint

c. Blood Supply

d. Nerve Supply

e. Movements

- **Nerves of Periodontics**

a. Trigeminal nerve: Origin, Motor and sensory Root, Branches and Type of Nerve

b. Maxillary Nerve: Origin, Branches, Supply

c. Mandibular Nerve: Origin, Branches, Supply

d. Applied Anatomy

- **Tongue:**

a. Structure: parts of tongue, papillae of tongue

b. Muscles of tongue

c. Histology of tongue,

d. Development,

e. Blood and nerve supply

- **Hard and Soft Palate**

a. Clinical Anatomy:

b. Hard Palate - Structure: Margins and Surfaces

i) Vessels and Nerves: Arteries, Veins, Nerves and Lymphatics

c. Soft palate - Structure: Margins and Surfaces

i) Muscles of Soft Palate

ii) Vessels and Nerves: Arteries, Veins, Nerves and Lymphatics

iii) Action of muscles of Soft palate

d. Development of Palate

e. Clinical Significance and Applied Aspects

- **Pharynx, Larynx and Tonsils**

a. Pharynx: Structure and parts of pharynx, Waldeyer's Lymphatic Ring

b. Larynx:

i) Structure: Cartilages and Muscles

ii) Movements

iii) Clinical significance: Mechanism of Speech

c. Tonsils: Structure, Vessels and Nerve Supply, Development

- **Muscles of Mastication**

a. Classification: Main and Accessory Muscles of Mastication

b. Main Muscles of Mastication: Origin, Insertion, Nerve Supply and Blood Supply

c. Action of Muscles of Mastication

d. Clinical Significance and Applied Aspects

- **Salivary Glands**

a. Classification of Salivary Glands

b. Anatomy of Salivary Glands

c. Development of Salivary Gland

d. Saliva

e. Clinical Significance and Applied Aspects

- **Paranasal Air Sinuses:**

a. Classification, Development

b. Maxillary sinus: anatomy, embryology, functional importance, clinical evaluation, applied aspects

- **Nervous System, Cranial Nerves**

- **Mandible:**

a. Anatomy

b. Attachment and relations

c. Foramina and relations to nerves and vessels

d. Ossification

e. Age changes

Maxilla:

a. Anatomy

b. Attachment and relations

c. Normal features

d. Ossification

e. Age changes

- **Facial Muscles**

    a. Classification and types

    b. Nerve supply

    c. Muscles producing common facial expression

    d. Clinical aspects

- **Lymphatic System**

    a. Components of Lymphatic system

    b. Functions of Lymphatic system

    c. Lymphatic drainage of Head and Neck

    d. Clinical Aspects

- **Physiology:**

    1. Blood: composition, cells, functions, disorders

    2. Anemia- types, polycythemia

    3. Respiratory system – Acknowledge of the respiratory disease which are a cause of periodontal diseases (periodontal Medicine)

    4. Cardiovascular system

        a. Cardiac cycle, cardiac output, venous return

        b. Blood pressure

        c. Normal ECG

        d. Shock

    5. Endocrinology – thyroid, pancreas, adrenaline, growth hormones, sex hormones and hormonal influences on Periodontium

    6. Gastrointestinal system

        a. Salivary secretion – composition, function & regulation

    7. Nervous System

        a. Pain pathways

        b. Local anesthesia: Classification, composition, mechanism, complications

c. Tongue – Taste buds, primary taste sensation & pathways for sensation

8. Cell: Structure, function, injury, transport of substances
9. Food and Nutrition
10. Mastication and deglutition
11. Immunity: Types, Cells
12. Allergy and hypersensitivity reactions
13. Haemostasis- mechanism, clotting factors, coagulation, disorders, haemostatic agents
14. Anticoagulant and anti-platelet agents
15. Salivary glands: secretions and mechanism of salivary secretion
16. Calcium and phosphate metabolism, formation of bone and teeth, regulation of vitamin D
17. Liver- physiology and functions
18. Thyroid
    a. Synthesis and secretion of thyroid hormones
    b. Regulation of thyroid hormones
    c. Physiology and functions
19. Tongue
    a. Taste buds
    b. Pathway for taste
    c. Taste sensations and chemical constituents
    d. Taste transduction
    e. Applied physiology: Abnormalities of taste sensation
20. Diabetes Mellitus
    a. Classification
    b. Complication
    c. Pathogenesis
    d. 2 way relation between diabetes mellitus and periodontitis

Biochemistry:

1.Carbohydrates: classification, functions, metabolism

2. Proteins: functions, metabolism
3. Lipids: classification, functions, metabolism

4. Vitamins: classification, functions, dietary sources, deficiency

5. Diet and nutrition and Periodontium

a. Macro and micro-nutrients and its effect on periodontium

6. Biochemical tests and their significance

7.Calcium and Phosphorus

8. Connective Tissue:

a. Collagen-function

b. Structure

c. Biosynthesis and abnormalities

9. Diet and Nutrition

a. Definition of diet and nutrition

b. Balanced diet

c. Components of food and their deficiency diseases

d. Nutrient value of food

e. Food pyramid

10.PCR and its Application

a. Principle

b. Steps

c. Advantages and limitations

11.ELISA and its Application

a. Principle

b.Methods

c.Type

d.Application

12.Basal Metabolic Rate

a. Definition

b. Measurement

c. Normal values of BMR

d. Factors affecting BMR

Pathology:

1.Cell structure and metabolism

2.Inflammation- details of cellular events, chemical mediators: promoters and suppressors

3.Repair, regeneration, necrosis and degeneration

4.Immunity system, organs, cells and their functions

5.Hypersensitivity reactions

6.Circulatory disturbances – edema, haemorrhage, shock, thrombosis, embolism, infarction

and hypertension

7.Disturbances of nutrition, vitamin physiology and deficiencies

8.Diabetes mellitus, classification, etiology, pathogenesis, risk factors, clinical features, complications, diagnosis

9.Cellular growth and differentiation, regulation

10. Lab investigations

11.Neoplasia, Metastasis

a. Nomenclature and classification of tumors

b. Etiology and pathogenesis

c. Pathologic diagnosis of cancer

12.Healing

a. Regeneration

b. Repair

c. Wound healing

d. Healing after periodontal surgeries

13.Blood Disorders

a. Hemorrhagic diathesis due to vascular disorders

b. Hemorrhagic diathesis due to platelet disorders

c. Hemorrhagic diathesis due to fibrolytic defects

d.Disseminated intravascular coagulation (DIC)

e.Coagulation disorders

f. Investigations of haemostatic function

Microbiology:

1.General bacteriology: morphology, staining techniques, bacterial anatomy, growth and multiplication of bacteria, bacterial nutrition

2.Sterilization and disinfection, sterilizing agents, testing of disinfectants

3.Culture media,

a.Types of culture media

b.Culture methods

4. Immunology:

a.Types of immunity

b.Antigens and antibodies

c.Antigen-antibody reactions

d.Complement system

e.Structure

f.Functions of immune system

5.Infection:

a. Classification

b.Sources of infection

c.Methods of transmission

d.Predisposing factors for microbial pathogenicity

e.Types of infectious diseases

6.Systemic bacteriology with special emphasis on oral microbiology – staphylococci, genus actinomyces and periodontal microbiology

7.Virology

a.General properties of viruses

b.Classification and nomenclature

c. Cultivation methods

d.Viral infections, pathogenesis of viral infections, host response to viral infections

e. Herpes, Hepatitis, virus, HIV virus

8.Mycology

a. Candidiasis

9.Applied microbiology

10.Healthcare associated infections

11. Recent advances in Diagnostic microbiology

12. Antibiotic sensitive testing

Bio medical waste management

Pharmacology:

1.General pharmacology

a.Definitions – pharmacokinetics with clinical applications, routes of administration including

local drug delivery in Periodontics

b.Adverse drug reactions and drug interactions

2.Detailed pharmacology of

a.Analgesics – opioid and non -opioid

b.Local anesthetics

c.Haematinics and coagulants, Anticoagulants

d.Vitamin D and Calcium preparations

e.Antidiabetic drugs

f.Steroids

g.Antibiotics

h.Antihypertensive

i.Immunosuppressive drugs and their effects on oral tissues

j. Antiepilectic drugs

3.Brief pharmacology, dental use and adverse effects of

a.General anaesthetics

b.Antipsychotics

c.Antidepressants

d.Anxiolytic drugs

e.Sedatives

f.Antiepileptics

g.Antihypertensives

h.Anti anginal drugs

i.Diuretics

j.Hormones

k.Pre-anesthetic medication

4.Drugs used in Bronchial asthma cough

5.Drug therapy of

a.Emergencies

b.Seizures

c.Anaphylaxis

d.Bleeding

e.Shock

f.Diabetic ketoacidosis

g.Acute addisonian crisis

6.Dental Pharmacology

a.Antiseptics

b.Astringents

c.Sialogogues

d.Disclosing agents

e.Antiplaque agents

f.Anticalculus Agents

g.Dentifrices

7.Fluoride pharmacology

8.Vaccine

Research Methodology and Biostatistics:

1. Introduction, definition and branches of biostatistics
2. Collection of data, sampling, types, bias and errors
3. Compiling data-graphs and charts
4. Measures of central tendency (mean, median and mode), standard deviation and variability
5. Tests of significance (chi square test, 't' test , Z-test, ANOVA)
6. Null hypothesis
7. Presentation of data, measures of dispersion
8. Research methodology - introduction, purpose, categories, scientific methods,

hypothesis formulations, writing protocol

9. Correlation, regression
10. Index- requirement, classification, Gingival and Periodontal Indices
11. Clinical trials
12. Epidemiology- aims and principles, tools of measurement, methods, uses

Survey procedures, types of survey, uses, steps in surveying