

JODHPUR NATIONAL UNIVERSITY
JODHPUR DENTAL COLLEGE GENERAL HOSPITAL
ORAL MEDICINE AND RADIOLOGY

MDS SYLLABUS AND EXAMINATION PATTERN

SYLLABUS (First year MDS)

1) GENERAL ANATOMY

1) APPLIED ANATOMY

- ✓ Muscles of facial expression and muscles of mastication
- ✓ Facial nerve
- ✓ Facial artery
- ✓ Facial vein
- ✓ Parotid gland and its relations

2. NECK REGION

- ✓ Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures
- ✓ Facial spaces
- ✓ Carotid system of arteries, Vertebral artery, and Subclavian arteries
- ✓ Jugular system
- ✓ Lymphatic drainage
- ✓ Cervical plane
- ✓ Muscles derived from pharyngeal arches
- ✓ Infra-temporal fossa in detail and temporomandibular joint

- ✓ Endocrine glands
- ✓ Sympathetic chain
- ✓ Cranial nerves- V. VII. IX. XI. & XII
- ✓ Thyroid& Parathyroid
- ✓ Exocrine glands

3. ORAL CAVITY:

- ✓ Oral cavity-teeth, tongue, palate
- ✓ Nasal Cavity and sinuses
- ✓ Pharynx

OSTEOLOGY

- ✓ Skull, mandible, maxilla and facial bone

EMBRYOLOGY

- ✓ Development of face, teeth, palate, nasal septum and nasal cavity, paranasal air sinuses, maxilla, mandible, salivary glands
- ✓ Pharyngeal arches and their derivatives
- ✓ Congenital anomalies of face

HISTOLOGY

- ✓ Epithelium of oral cavity and respiratory tract, Connective tissue, Muscular tissue, Nervous tissue, Blood vessels, Cartilage, Bone and tooth, Tongue, Salivary glands, Tonsil, thymus, lymph nodes

2) PHYSIOLOGY

GENERAL PHYSIOLOGY

- ✓ Cell, Body fluids, cellular transport, RMP and action potential
- ✓ Neuromuscular physiology, structure of neurons and nerve fibers
- ✓ Structure and properties of muscle fibers
- ✓ Neuromuscular transmission
- ✓ Mechanism of muscle contraction

BLOOD

- ✓ Blood cellular components with function and applied aspects
- ✓ Plasma, plasma proteins, RBC & hemoglobin
- ✓ WBC and applied aspects
- ✓ Functions of platelets and applied aspects
- ✓ 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

CARDIOVASCULAR 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

GASTROINTESTINAL TRACT

- ✓ Composition function 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
- ✓ Adrenal hormones

CENTRAL NERVOUS SYSTEM

- ✓ Ascending tract with special references to pain pathway

SPECIAL SENSES

- ✓ Gustation and olfaction

3) 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

- ✓ Vitamins and their metabolic role, specifically vitamin A, Vitamin C, Vitamin D, Thiamine, Riboflavin, Niacin, Pyridoxine

4) 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 thrombogenesis
- ✓ Arterial and venous thrombi
- ✓ Disseminated Intravascular Coagulation

SHOCK

- ✓ Pathogenesis of hemorrhagic, neurogenic, septic, hemorrhagic shock, circulatory disturbances, ischemic hyperemia, venous congestion, edema, infarction

CHROMOSOMAL ABNORMALITIES

- ✓ Marfan's syndrome, Ehlers danlos Syndrome, Fragile X Syndrome

HYPERSENSITIVITY

- ✓ Anaphylaxis,
- ✓ Type II Hypersensitivity,
- ✓ Type III Hypersensitivity
- ✓ Cell mediated Reaction and its clinical importance
- ✓ Systemic Lupus Erythematosus
- ✓ Infection and infective granulomas

NEOPLASIA

- ✓ Classification of Tumors
- ✓ Carcinogenesis & Carcinogens - Chemical, Viral and Microbial
- ✓ Grading and Staging of Cancer, tumor Angiogenesis, Para-neoplastic 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

5) PHARMACOLOGY

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

SYLLABUS (Second & Third year MDS)

ORAL AND MAXILLOFACIAL RADIOLOGY

- ✓ History of radiology, structure of x - ray tube, production of X - ray, property of x - rays
- ✓ Biological effects of radiation
- ✓ Filtration, collimation, grids and units 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 technique like CT Scan MRI, Ultrasound & thermography
- ✓ Radio nucleotide techniques
- ✓ Contrast radiography in salivary gland, TMJ. and other radiolucent pathologies
- ✓ Radiation protection and ICRP guidelines

- ✓ Art of radiographic report writing and descriptions preferred in reports
- ✓ Radiograph differential diagnosis of radiolucent, radiopaque and mixed lesions
- ✓ Digital radiology and its various types of advantages

ORAL MEDICINE, THERAPEUTICS AND LABORATORY INVESTIGATIONS

- ✓ Methods of clinical diagnosis of oral and systemic diseases as applicable to oral tissue 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 orofacial 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

2.PRECLINICAL WORK

1. Coin test - 2
2. Exposed film processing-2
3. Unexposed film processing -2
4. IOPA's on skull with 10 common faults – 1 set
5. Full mouth IOPA's on skull-Paralleling and bisecting angle technique – 1 set
6. Outline important structures on skull
7. Radiographs –Vary kVp and mAs with grid and without grid- 1 set
8. Tracings of intraoral and extra oral films -1 set
9. Line diagrams of anatomical landmarks-1 set
10. Classification of lesions- complete list with hand diagrams or appearance, differential diagnosis – 1 set
11. Case history- viva
12. Patient education chart -1

3.PROCEDURAL AND OPERATIVE SKILLS

FIRST YEAR

1. Examination of Patient

Case history: Routine cases-100

2. Intra-oral radiographs

Perform and interpretation – 300

SECOND YEAR

1. Case history: Routine cases-100

2. Dental treatment of medically compromised patients – 10 cases

Cases of post radiotherapy complications - 5 cases

2 Intraoral Radiographs

Periapical view – 100

Bitewing view – 50

Occlusal view -25

3. Extra-oral radiographs of different views - 50

4. FNAC & Biopsy each -25 (Observe, Assist and Perform under supervision)

5. Special cases with long term follow up – 15 cases

6. Operative skills

a. Giving intra-muscular and intravenous injections

b. Administration of oxygen and life saving drugs to the patients

c. Performing basic CPR and certification by Red Cross

7. Peripheral postings

THIRD YEAR

1. Case history: Routine cases-100
2. FNAC & Biopsy -25 cases each
3. Special cases with long term follow up – 15 cases
4. Intraoral Radiographs
 - Periapical view – 100
 - Bitewing view – 50
 - Occlusal view -25
5. Extra-oral radiographs of different views - 50
6. Sialography – 3
7. CT &MRI – 5 cases each

4.CONFERENCES AND PUBLICATIONS

- a. To attend 2 national specialty conferences and 1 convention during the course
- b. To present one poster and 2 scientific paper at national level conference
- c. To attend continued dental education pertaining to the specialty
- d. Minimum 2 scientific paper publications in state/national/international journals

5. SUBMISSION

- a. Synopsis Presentation –at the end of 6 month
- b. Preclinical work –at end of six months from the commencement of course.
- c. Library dissertation- at the end of 18 months
- d. Dissertation-six month prior to main examination

6.EXAMINATION PATTERN

A: Theory written exam (Total-300 marks)

Four question papers each of **75 marks** and **Three hours (3Hrs)** duration

PAPER I: Applied Basic Sciences: Applied anatomy, Physiology, Biochemistry, Pathology and Pharmacology

PAPER II: Oral and Maxillofacial radiology

PAPER III: Oral Medicine, therapeutics and laboratory investigations

PAPER IV: Essay

B. Practical/clinical examination-300 Marks

First day (200 Marks)

2 spotters-2x10-20 marks

2 short cases-2x15-30 marks

1 long case 1x50-50 marks

Total -100 Marks

Radiology exercise-(100 Marks)

One Intraoral radiograph-10 marks

One Occlusal radiograph-30 marks

Two Extra-oral radiograph 2x30-60 marks

Including technique and interpretation

Second day-100 Marks

Thesis presentation: 10 marks

Pedagogy: 10 marks

Viva voce: 80 marks

EXAMINATION SCHEDULE

- a. Basic paper – at end of first year
- b. Preclinical viva voce – at the end of first year
- c. Theory examination at the end of final year
- d. Clinical practical examination –at the end of final year