

SYLLABUS: Dental Mechanic in NDMC

I. APPLIED PHYSICS :

a) Theory-

- i) Specific gravity, density, properties of matter, including cohesion, capillarity, surface tension viscosity, elasticity, diffusion and osmosis.
- ii) Heat: Temperature and its measurements, Thermometers and Pyrometers. General account of expansion by heat of solids, liquids and gases, thermostats, Pressure gas and hydraulic. Boyle's and Charles Laws. Unit of heat, Thermal capacity and specific change of state, Latent heat, Melting Point, Properties of vapors, conduction, convection and radiation
- iii) Principle of electro- technology applied to dental work room, small motors, constructional features and characteristics, electric furnaces, heaters, thermostats, pyrometers, spot welder, electroplating, electro-forming and anodizing, Wiring regulating to low voltage supplies.

b) Exercises / Demonstrations :

- i) Balance – weighing correct to a milligram.
- ii) Determination of specific gravity by the principal of Archimedes (Solids and Liquids)
- iii) Determination of surface tension of a liquid by capillary rise.
- iv) Determination of Linear expansion of solids (level method)
- v) Determination of the specific heats of solids and liquids by the methods mixtures.
- vi) Small motors – constructional features and characteristics (Demonstration only)
- vii) Determination of the electro-chemical equivalent of copper.

II. APPLIED MECHANICS:

a) Theory :

- i) Forces, parallelogram and triangle of forces, Moments, couples, central gravity, principals of lever and cantilever work, energy, power, friction, inclined plane, screw stress, strain, Shearing strain, Torsion, Bending movements, Strength and stiffness of materials.

b) Exercise / Demonstrations:

- i) Verification of the parallelogram and triangle laws of forces.
- ii) Verification plane Determination of mechanical advantage.
- iii) Determination of Young's Modulus by bending of bars.

III) APPLIED CHEMISTRY :

a) Theory-

- i) Distinction between physical and chemical change, elements, mixtures and compounds composition of the atmosphere, oxygen oxides, burning and rusting water solvent property and crystallization action of water metals composition of water hydrogen; law of chemical combination; meaning of chemical symbol valency; simple chemical equations acids, bases and salts.
- ii) Electrolysis, the ionic theory of solution, the electro potential series, electroplating, general characteristics of the metals including an elementary study of the common metals and their alloys with special reference to those used in the dental work room.
- iii) Alcohol, ethers, aldehydes and ketones, fatty acids their more important derivatives amines. Simple treatment of carbohydrates, fats and proteins, Benzenes and its homologues, General characteristics of aromatic substances. Synthetic resins and plastics used in Dentistry

b) Exercises / Demonstrations -

- i) Tests for acids and alkalis radicals
- ii) Acid base titration – Neutralization of acids with alkalis. Titration of N/10, NaOH with, N/10, H₂SO₄ .Phenolphthalein or Methyl red as indicator 24
- iii) Total Nitrogen determination in organic nitrogenous materials, digestion and distillation.
- iv) Total Nitrogen determination in inorganic (ammonial) solutions (or salts) by direct distillation with Mg.
- v) Determination of Potassium in aqueous solution by perchlorate method.
- vi) Electrolytic deposition (electrolysis and electroplating of metals)
- vii) Deposition of Copper by electrolysis of copper Sulphate solution
- viii) Calculation of ECE (Electro-chemical Equivalent)

IV) APPLIED ORAL ANATOMY:

a) Theory-

- i) Elementary anatomy and structure of denture/bearing area.
- ii) Human dentition and occlusion. Functions of teeth and morphology of Crown of teeth.
- iii) Muscles of mastication facial expression.
- iv) Mastication deglutition and phonation.
- v) Movements of Temporo-mandibular joint

b) Exercise / Demonstrations-

- i) Tooth Carving in wax and plaster (Crown and root, scale and enlarged models)

V) DENTAL MECHANICS (Primary)

- i) Infection control measures for impressions and models
- ii) Impression Preservation and Boxing-in
- iii) Cast: Preparation, Trimming including Orthodontics casts.
- iv) Cast duplication-various methods
- v) Construction of special trays – spacers.
- vi) Bite blocks- base plates wax rims
- vii) Articulators: Classification daily uses and care of articulators.
- viii) Adjustments – Mounting of casts.
- ix) Articulation, Occlusal plane, protrusive balance, working bite, balancing bite
- x) Curve of Spee, compensating curve, lateral curve.
- xi) Principles of selection of teeth
- xii) Setting of teeth and wax finishing.
- xiii) Flasking, Dewaxing, Packing, Curing and Deflasking
- xiv) Finishing and polishing of dentures.
- xv) Additions repairs, relining and rebasing of dentures.
- xvi) Immediate denture construction.
- xvii) Making of acrylic teeth.
- xviii) Kennedy's classification of partial dentures.
- xix) Principles of partial dentures, design, clasp, surveying, path of insertion and removal. Establishment of clasp seat, Clasp's classification, function and reciprocation.
- xx) Principles of wire bending, preparation of wrought clasps, occlusal rests and lingual bars.

I) DENTAL MECHANICS (FINAL)

a) Theory -

- i) Casting machines: Centrifugal and pressure casting machines, furnaces.
- ii) Principal of casting .
- iii) Casting techniques are partial dentures (skeletal) clasps, bars, occlusion rest, setting of teeth and completion of denture on metal skeletons. Mechanical principals of orthodontics appliance, anchorage, force, tissue changes and retention, stainless steel wire, Preparation of clasps, springs and arch, wires for orthodontics appliance. Use of various types of expansion screws.

b) Designing :

- i) Implant supported prosthesis (If facilities available for dental implants.)
- ii) Ceramic, laminates and veneers.

c) Fabrication :

- i) Maxillofacial prosthesis such as eye, nose ear cheek, obturator and splint.
- ii) Indirect resin restoration preparation techniques.

d) Orthodontic Appliances :

- i) Preparation for removable orthodontic appliances, Activators, retention appliances and oral screen.
- ii) Construction of fixed orthodontics appliances, bands, tubes and arches.
- iii) Soldering and spot welding –soldering of clasps, tags, Strengtheners and lingual bars.
- iv) Inlays and Crown-classification and construction facing & backings.

e) Casting Procedures and Porcelain firing techniques :

- i) Principles of bridge work-types of abutment- abutments and pontics construction of bridges using porcelain and acrylic pontics.

II) DENTAL MATERIALS AND METALLURGY

a) DENTAL MATERIALS:

- i) Composition, properties, Uses, Advantages & disadvantages of the following materials:-
- ii) Plaster of Paris: Dental Stone, Die Stone
- iii) Investment materials.
- iv) All impression Materials,
- v) Tray Material,
- vi) Denture Base Materials, Both for cold curing and heat curing, Tooth Material Waxes, Base Plates.
- vii) Zinc Oxide
- viii) Dental Luting Cements
- ix) Dental Ceramics and indirect resin restoration materials

b) DENTAL METALLURGY:

- i) Metallurgical Terms
- ii) General study of
 - Metal used in Dentistry particularly Gold, Silver, Copper, Zinc, Tin, Lead and Aluminum.
 - Alloys used in Dentistry particularly, casting Gold Wrought, Gold Silver Alloys, Stainless Steel, Chrome Cobalt Alloys.
- iii) Heat treatment—annealing and tempering
- iv) Solder, Fluxes, Anti Fluxes.
- v) Tarnish and Corrosion
- vi) Electric Deposition
- vii) Dental implant materials

III) BASIC KNOWLEDGE OF COMPUTERS :

- i) General office routine economics, record-keeping services, Professional referrals and computing skill.
- ii) Record keeping of material indented and audit of use.
- iii) Receipt and dispatch of work from clinicians