

Syllabus for the post of Trade Instructor Gr.II (Electroplating) in Technical Education Department

(Cat.No 092/2023)

Module 1. Fundamentals of Electricity (10 marks)

Types of electric supply, Electrical terms and definitions, Effects of electric current, DC and AC, Sources of direct current, Conductor, Semi conductor, Insulator, Resistance and conductance, Series and parallel circuit, Ohm's law.

Module 2. Fundamentals of Chemistry (10 marks)

Matter, Structure of atom, Proton, Neutron, Electron, molecules, ion, valency, elements, properties of elements, Atomic number, weight, melting point etc. metals and alloys, soft water and hard water, Acids and alkalis, pH value, methods of measuring pH value, Solutions.

Module 3. Electrolysis (10 marks)

Electrolyte, Anode and cathode, Electrochemical Equivalent, Electrolysis, Applications of electrolysis, Faradays laws of electrolysis and its applications, Cells and batteries, Grouping of cells.

Module 4. Protection against corrosion (10 marks)

Corrosion, Types of corrosion, Methods of protection against corrosion, Metallic coating, Methods of metallic coating, Applications of electroplating, Process of electroplating, Safety measures for chemical poisoning, Treatment of effluents.

Module 5. Equipment's for electroplating (10 marks)

Electroplating Tanks, Heaters, Filters, Chroffles, Dryers, Jigs, Cleaning and Plating barrels, Safety equipments, Rectifiers, Bus bars, Degreaser, Buffing machines, PH meter, Water demineralizer etc.

Module 6. Preparation of surfaces prior to electroplating (10 marks)

Types of mechanical cleaning, Buffing and polishing equipment's and materials, Blast cleaning, Types of chemical cleaning, Pickling, solvent cleaning, dipping, rinsing, vapour degreasing, electrolytic cleaning, barrel cleaning, ultrasonic cleaning, masking, drying etc.

Module 7. Electroplating (10 marks)

Types of electroplating, Electroplating process of Copper, Nickel, Chromium, hard

chromium, Zinc, Tin, Cadmium, Silver, Gold and Brass. Methods of removal of metal coating from its basis metals.

Module 8. Maintenance of electroplating (10 marks)

Common defects generally found in various electroplated metals and their possible causes and methods of corrections. Maintenance of electroplating solutions.

Module 9. Anodizing (10 marks)

Properties of Aluminium, Aluminium anodizing process, Surface preparation of aluminium, Types of anodizing process, Colouring of anodized surface, Removal of defective anodized film.

Module 10. Testing of electrodeposits (10 marks)

Methods of testing electrodeposits, Corrosion, thickness, porosity, adhesion etc.

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper
