DETAILEDSYLLABUS FOR THE POST OF TRADESMAN - POLYMER TECHNOLOGY (TECHNICAL EDUCATION)

(Cat.No. : 760/2021)

(Total Marks- 100)

Module I 6 Marks

Introduction to Polymer Technology

Definition of Polymer - Different Classifications – Importance of Polymers in Day – to Day Life – Monomers – Polymers – Polymerisation – Names and its important Uses of Different Plastics, Fibers and Rubbers.

Module II 10 Marks

Natural Rubber

Sources - Tapping – Different Marketable Forms of Dry Rubber – Its Production - Grading Process of Sheets - Different Grades of RSS - NR Latex Preservation - Purpose – Preservatives – Advantages of Ammonia as a Preservative - Different Forms of Ammonia - It's Concentration for latex Preservation - Application Modes - Concentration Methods of Latex - Major Product from NR Latex and Dry Rubber.

Module III 8 Marks

Plastics and Fibers

Advantages of Plastics Over other Engineering Materials - Difference Between Thermoplastics and Thermosetting Plastics _ Important Properties of PE, PVC, PP, PS – Preliminary Identification methods of above plastics – sodium fusion Extract Preparation.

Module IV 8 Marks

Synthetic Rubbers

Full form of PBD, IIR , NBR – Name of Monomers of Each - Sources of Monomers – Elementary Compounding Principles and Ingredients - Important Blends – its Properties - Uses – Processing - Differences of Each Synthetic Rubber.

Module - V **10 Marks**

Dry Rubber Testing

Different Grades of Sheets Rubber - methods of sheet rubber Grading - Testing of Dirt Content , Volatile Matter , Ash, Nitrogen, Po, PRI, Different grades of ISNR- Different grades of Creep rubber – Physical testing – Principle and procedures of Valcanisied Specimens - Harness , Abrasion , Tensile - Compression Set - Tensile Set

Module - VI **10 Marks**

Latex Testing

Different Latex Quality Testing - Principle and Procedures of TSC – DRC – Total Alkalinity - Density - Coagulum Content - Magnesium Content - VFA – Sludge Content - Viscosity - Preparation of Dispersions, Emulsions, Creaming Agents

Module - VII **12 Marks**

Chemical Used in Polymer Technology Laboratories and its Handling

Name and uses of Important Chemicals Used in Polymer technology Laboratories Precautions to be Taken While Handling of Laboratory Reagents and Chemicals - Shelf Life - Different Acids , Bases – Preparation of Acids and Bases in Different Concentration, Its Handling – Dilution Methods-Diluting Principles and Procedures - Handling of Different Reagents – its Storage – Containers , Symbols on Containers and its Meaning – Storage and Labeling of Reagents. General characteristics of and classification of adhesives.

Module - VIII **12 Marks**

Laboratory Equipment

Name and Uses of Different Laboratory Equipment used in Polymer Technology Labs Name and uses of different Glass wares used in Polymer Technology Laboratories – Handling and operations of different Laboratory Equipment and Glass Wares and Utensils. Precautions to be Taken While Handling Different Lab Equipment, Glass Wears and Utensils. Handling of Chemicals Balance, Analytical Balance , Digital Balance.

Module IX 12 Marks

Polymer Processing and Machineries

Name and Uses of Different Machineries Used for Polymer Processing - Major Parts and Purposes of Lab Size Mixing Mill, Hydraulic Press, Screw Press, Calendar, Extruder, Blow Molding Machines, Injection Molding Machines - Operation Sequences of Above Machines. Maintenance of Above Machines – Safety Precautions of Above Machines. Processing Principles and Steps of the following Dry Rubber Mixing , Molding , Extrusion, Calendering - Dry Rubber products mold Maintenance - Machine Maintenance.

FRP Hand Lay Up Processing Princioples , Materials, and Procedures.

Working principle, various parts and accessories , safety devices and important uses of Open Two Roll Mixing Mill.

Working Principle, various parts and accessories of Banbury and Intermix.

Open Two Roll Mill and Internal Mixers.

Temperature and pressure control systems of mixing equipments.

Module X 12 Marks

Polymer compounding and compounding ingredients.

Different Rubber Compounding Ingredients and its purposes. Effect of Each Ingredients Variation in Properties of a Compound - Difference Between Compounder, Compounding and compound. Precautions of Handling Toxic and Dangerous Compounding Ingradients. Order of Addition off Different Compounding Ingredients in Rubber Mixing.

FRP Compounding Ingredients and its Compounding – Precautions to be Taken while Handling of FRP Compounding Ingredients.

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