

ANNEXURE - I

CERAMIC TECHNOLOGY

- 1. CERAMIC RAW MATERIALS:** Definition of Geology, Petrology and Mineralogy, Minerals used in ceramics, Ceramic Clays and their classification, Physical properties of Clays, Grog and its properties, Types of Silica Minerals, Types of Alumina Minerals, Feldspar group Minerals, Carbonate minerals, Magnesium silicate minerals, Rare earth minerals, Gypsum-Plaster of Paris.
- 2. WHITE WARE & HEAVY CLAY WARE:** Machinery and equipment used in ceramic industry, Body preparation, Fabrication methods, Drying of Clay products, Setting and Firing of Clay products, Classification of Earthenware, Porcelain ware, Special Porcelain ware, Bone china, Sanitary ware, Heavy Clay ware, Floor and Wall Tiles, Glazed vitrified tiles, Double charged tiles, Nano coated tiles, Glazes, Frits, Colors and decoration, Testing and Quality control.
- 3. REFRACTORIES:** Classification, properties and Fabrication techniques of Refractories. Insulating Refractories, Kiln furniture, Refractory Cements and mortars, Alumino-silicate Refractories, Silica Refractories, Dolomite Refractories, Magnesite Refractories, Chrome-Magnesite Refractories, Mag-Chrome Refractories, Carbon Refractories, Chromite Refractories. Special Refractories properties and uses, Testing and quality control.
- 4. GLASS TECHNOLOGY:** Raw materials, Classification of glass making raw materials, Batch preparation, weighing, mixing, Conveying and Charging, Glass melting process, Types of furnaces, Types of fabrication techniques for Containers, Sheet glass, Float glass, optical glasses, safety glass, Tubes, Annealing, Tempering, Decoration, Testing and Quality Control of glass, Special glasses Like Heat resistant glasses, Fiber glass, Optical Glasses, Glass ceramics, Enamels-Preparation of Enamels.
- 5. CEMENT TECHNOLOGY:** Raw materials, Batch preparation, Types of manufacturing process, Rotary kiln, Constituents in Cement, Natural Cements, Portland Cements, Special Cements, and Testing of Cements.
- 6. FUELS, FURNACES & PYROMETRY:** Types of fuels, Advantages and disadvantages of different physical state of Fuels, Combustion, Classification of fuels, NCES & RES, Hydrogen gas, Construction and working of Industrial Pyrometers, furnaces used in glass industry, enamel industry, Kilns used in Ceramic industry.
- 7. ADVANCED CERAMICS:** Advanced powder preparation techniques, shaping and firing techniques, Oxide and Non Oxide Ceramics, Structural Ceramics, Electrical Behavior of Ceramics, Dielectric Ceramics, Magnetic and Optical Ceramics, Ceramic Composites.
- 8. CERAMIC SCIENCE:** Chemical bonding, Ceramic Crystal structures, Crystal Imperfections, Phase rule, Phase diagrams of $\text{Al}_2\text{O}_3\text{-SiO}_2$ and $\text{SiO}_2\text{-Na}_2\text{O}$, Diffusion in solids, Phase transformations.

ANNEXURE - II

Number of Questions to be set Unit wise (Total 100)

CERAMIC TECHNOLOGY

UNIT NO	TOPICS	Questions
I	Ceramic Raw Materials	15
II	White ware & Heavy clay ware	20
III	Refractories	20
IV	Glass Technology	20
V	Cement Technology	05
VI	Fuels, Furnaces & Pyrometry	05
VII	Advanced Ceramics	10
VIII	Ceramic Science	05
Total		100

ANNEXURE III

MODEL QUESTIONS FOR CERAMIC TECHNOLOGY

1. The Number Of Atoms Present in Body Centered Cubic (BCC) Unit Cell.
 - 1) 1
 - 2) 2
 - 3) 6
 - 4) 4
2. Feldspar is added in White Ware Body as
 - 1) Opacifier
 - 2) Coloring Agent
 - 3) Flux
 - 4) Floating Agent