

22233

24225

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.

Marks

1. Attempt the following (Solve any FIVE) :

10

- (a) Define biomaterial.
- (b) Draw NaCl crystal structure.
- (c) Define polymerisation reaction.
- (d) Describe dielectric strength of material.
- (e) Give any two engineering application of ceramics.
- (f) Define thermal conductivity of material.
- (g) Give any two properties and uses of white cast iron.

2. Attempt the following (Solve any THREE) :

12

- (a) Differentiate Nano-structure and Micro-structure.
- (b) Explain in brief the chemical reactivity of mild steel with moist air.
- (c) Describe thermal stability and thermal expansion of material.
- (d) Define fatigue and creep.
- (e) List corrosion prevention methods (any four).



- 3. Attempt the following (Solve any THREE) : 12**
- (a) Distinguish between thermoplastic and thermosetting polymers (four points).
 - (b) Explain the condensation polymerization for phenyl formaldehyde.
 - (c) List the factors determining the choice of material to avoid corrosion.
 - (d) Give composition of SS-314 and its uses.
- 4. Attempt the following (Solve any THREE) : 12**
- (a) Describe the procedure to estimate density of any liquid.
 - (b) Describe the crystal structure of glass using Bragg's law.
 - (c) Calculate the heat in Joules, required to raise the temperature of 50 gm of water from 0 °C to 100 °C.
Data : Specific heat of water 4.18 J/g °C.
 - (d) Give the classification of ceramic with example.
- 5. Attempt the following (Solve any TWO) : 12**
- (a) Differentiate between addition and condensation polymerisation process with suitable example.
 - (b) Write down industrial importance of following ceramics :
 - (i) Silica carbide
 - (ii) Aluminium oxide
 - (c) Write down any two purpose of alloy steel. Explain any one method of preparation of alloy.
- 6. Attempt the following (Solve any TWO) : 12**
- (a) Explain in brief oxygen absorption type mechanism of wet corrosion.
 - (b) Explain composition of stainless steel.
 - (c) Explain the cladding mechanism for preparation of alloy steel.
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