22233

21718

3 Hours / 70 Marks Seat No. | | | | | | | | |

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 **any five** of the following : **(2×5=10)**

a) Give the types of thermal insulation with one example each.

b) What are biomaterials ?

c) Define thermal conductivity of Engineering material.

d) Name two thermal properties of engineering materials.

e) Give any two engineering applications of ceramics.

f) Give one example of thermosetting polymer with its structure.

g) Name the types of steels.

2. Attempt **any three** of the following : **(4×3=12)**

a) Differentiate between Nano structure and Microstructure.

b) Define the following :

i) Melting point

ii) Specific heat

iii) Heat capacity

iv) Dielectric constant.

c) Define Impact strength and Compressive strength.

d) Define corrosion. List the factors affecting rate of corrosion.

e) Define ductility, plasticity, hardness strength.

P.T.O.

Marks

3. Attempt **any three** of the following : **(4×3=12)**

a) Differentiate between Thermoplastic and Thermosetting polymers.

b) Classify metals and non-metals. Write any two uses of it.

c) Explain the mechanism of corrosion in alkaline medium.

d) Give the composition of SS-304. Write its three properties.

4. Attempt **any three** of the following : **(4×3=12)**

a) Describe the crystal structure of glass using Bragg's law.

b) Explain chemical reactivity of iron with air.

c) Calculate the heat in Joules, required to raise the temperature of 50 grams of water from 0°C to 100°C.

Data : Specific heat of water 4.18 J/g °C.

d) Give classification of ceramic with examples.

5. Attempt **any two** of the following : **(6×2=12)**

a) Differentiate between addition and condensation polymerisation process with suitable examples.

b) Write down industrial importance of following ceramics.

i) Silicon carbide

ii) Aluminium oxide.

c) Give classification of alloy steel on the basis of its Constitution.

6. Attempt **any two** of the following : **(6×2=12)**

a) Explain the methods of prevention and control of corrosion.

b) Explain the effects of following chemical elements on iron.

i) Copper

ii) Phosphorus

iii) Manganese

c) How alloy steel is prepared by cladding mechanism ?
