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BTECH
(SEM III) THEORY EXAMINATION 2023-24
MATERIAL SCIENCE

TIME: 3HRS

M.MARKS: 70

Note: 1. Attempt all Sections. If require any missing data; then choose suitably..

SECTION A

1. Attempt all questions in brief.

2 x 7 = 14

a.	What is Space lattice?
b.	Define ASTM.
c.	State the objective of tempering.
d.	Define yield strength.
e.	Draw true stress strain diagram with salient points.
f.	State the stages involved in heat treatment.
g.	Define polymerization.

SECTION B

2. Attempt any three of the following:

7 x 3 = 21

a.	Discuss Ficks law of diffusion and Write factors affecting diffusion.
b.	What do you understand by NDT? Explain with its types.
c.	Explain point imperfections with neat diagram.
d.	What do you understand by Eutectoid phase diagram? Explain in detail with all the reactions.
e.	What is plastic? Write its mechanical behavior and its application.

SECTION C

3. Attempt any one part of the following:

7 x 1 = 7

(a)	Draw the planes for the given miller indices in FCC structure- (020) (133) (202) (110) (111)
(b)	Write short notes on the following- (i) Ductile-brittle transition (ii) Modes of fracture

4. Attempt any one part of the following:

7 x 1 = 7

(a)	What do you understand by surface hardening? Explain in detail.
(b)	What is offset yield strength? How is it calculated?

5. Attempt any one part of the following:

7 x 1 = 7

(a)	Calculate the amount of each phase present in 1kg of a 50% Pb & 50% Sn alloy at 1000C and 2000C.
(b)	Draw a neat Iron carbon equilibrium diagram. Explain the microstructure of pearlite and Eutectoid Steels.

6. Attempt any one part of the following:

7 x 1 = 7

(a)	What is Annealing? Explain different types of Annealing.
(b)	Describe Temperature, transition and transformation diagram.

7. Attempt any one part of the following:

7 x 1 = 7

(a)	Define composite material and its classification based on matrix and reinforcement.
(b)	Explain two modes of plastic deformation.