Reg. No. : | | | | | | | | | | | | |

# Question Paper Code: 4023220

M.E. / M.Tech. DEGREE EXAMINATIONS, NOV/ DEC 2024
Third Semester
CAD/CAM
P20CC324 – APPLIED MATERIAL ENGINEERING
(Regulation 2020)

Time: Three Hours Maximum: 100 Marks

Answer ALL questions

PART – A (10 x 2 = 20 Marks)

1. Compare elasticity in metals with polymers.

2. Define super plasticity.

3. State Griffith theory.

4. Outline the effects of surface and metallurgical parameters on fatigue.

5. List any two wear resistance materials.

6. Define Creep.

7. Classify modern metallic materials.

8. Compare Quasi with nano crystal material.

9. How polymer structure is produced?

10. Outline the benefits of adhesives and coatings.

PART – B (5 x 16 = 80 Marks)

11. (a) List and explain any two strengthening mechanisms with diagram. (16)

(OR)

(b) Explain the effect of temperature, strain and strain rate on plastic behaviors with example. (16)

12. (a) Identify the toughening mechanisms in ductile and brittle with diagram. (16)

(OR)

(b) Construct and explain the crack initiation and propagation mechanisms using fatigue test. (16)

13. (a) Examine the mechanical properties of material selection with example. (16)

(OR)

(b) Explain material selection in the automobile sector as a case study. (16)

14. (a) Summarize the concept in Transformation Induced Plasticity (TRIP) with example. (16)

(OR)

(b) (i) Compare shape memory alloys with other smart materials. (8)
(ii) Explain the potential future advancements in the composition of shape memory alloys to improve their performance. (8)

15. (a) Explain the fundamental properties of advanced structural ceramics that make them suitable for high-performance applications. (16)

(OR)

(b) Examine the potential challenges and opportunities in replacing traditional materials with engineering polymers in aerospace or automotive industries. (16)

----------xxxx----------