Register Number: ……..

M.E DEGREE EXAMINATIONS: JUNE/JULY 2013

Second Semester

CAD/CAM

CCM506: Applied Materials Engineering

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

1. List the types of point defects that are encountered in the crystals.
2. What are the requirements to experience the super plasticity in metals?
3. Differentiate between brittle fracture and ductile fracture.
4. Define the term creep.
5. What is the effect of cost of alloying on materials cost? Give some examples.
6. Specify under which circumstances you will consider surface durability in the selection of materials.
7. What do you understand by quasi crystalline materials? List some of its applications.
8. List any four applications of metallic glass.
9. List any two differences between commodity and engineering polymers.
10. What are the applications of silicon carbide?

PART B (5 x 16 = 80 Marks)

11. a) Explain in detail about the various strengthening mechanisms.

(OR)

b) (i) Discuss in detail about the influence temperature and strain rate on yield stress. (10)

(ii) Explain the principle mechanism behind super plasticity. (6)

12. a) (i) Explain in detail about the various regions of creep curve (10)

(ii) List the differences between creep test and stress rupture test. (6)

(OR)

b) (i) Describe the influence of surface and metallurgical features on fatigue life (8)

(ii) List and discuss the various steps involved in the failure analysis (8)

13. a) Explain the factors influencing the selection of materials based on strength and cost

(OR)

b) (i) Discuss the relationship between materials selection and processing (8)

(ii) List the factors considered while selecting the materials for surface durability (8)

14. a) (i) List the properties and applications of high strength low alloy (HSLA) steels (6)

(ii) Explain the various stages involved in the shape memory effect. (10)

(OR)

b) (i) List the properties and applications of intermetallic materials (8)

(ii) What are the properties and applications of dual phase steel (8)

15. a) Discuss the structure, properties and applications of any four engineering polymers

(OR)

b) Write a short notes about the properties and applications of TiC, WC, CBN and Si_3N_4

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