

**B.E DEGREE EXAMINATIONS: MAY/JUNE 2013**

Fourth Semester

**MECHANICAL ENGINEERING**

MEC108: Engineering Materials and Metallurgy

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. Eutectic Reaction
  - a) Liquid = Solid1 + Solid2
  - b) Solid1 = Liquid + Solid 2
  - c) Solid1 = Liquid1 +Solid2
  - d) Solid = Solid1 +Solid 2
2. Carbon content in hypereutectoid Steel is
  - a) 0.00 - 2 %
  - b) 0.008 – 1.2%
  - c) 0.008 -2.14 %
  - d) 0.00 -.008%
3. The purpose of full Annealing is
  - a) To increase the hardness
  - b) To increase the grain structure
  - c) To relieve the internal stress
  - d) To increase the brittleness
4. What is Hardenabilty
  - a) The degree of Hardness present
  - b) The ability to fracture
  - c) Ability to increase the hardness
  - d) Ability to reduce hardness
5. What is alloy steel
  - a) Steel with low carbon content
  - b) Steel with other element
  - c) Both a and b
  - d) Steel with high carbon content
6. Major Alloying Elements in Monel Metal
  - a) Ni & Cu
  - b) Ni & Pb
  - c) Cu & Mn
  - d) Mo & Ni
7. Elastomers are polymers having \_\_\_\_\_property
  - a) High plasticity
  - b) High elasticity
  - c) Both a and b
  - d) Low elasticity
8. Cermets are combination of
  - a) Cement and metal
  - b) Ceramics and metal
  - c) Ceramics and cements
  - d) Cement and ceramic
9. Erosion Wear is due to
  - a) Force of fluid
  - b) Impact of hard particles



23. a) (i) Discuss the effects of any three alloying elements on Steel (7)  
(ii) Write a Short note on HSLA steels (7)  
(OR)
- b) (i) Explain the precipitation strengthening process for Al -Cu (7)  
(ii) Explain the various bearing materials used in production of bearings. (7)
24. a) (i) Compare addition and condensation polymerization in terms of process principle (8)  
(ii) What are the properties and applications of polycarbonates? (6)  
(OR)
- b) (i) What are the properties and application of Phenol formaldehyde? (6)  
(ii) Compare the properties and application of SiC with Al<sub>2</sub>O<sub>3</sub> abrasives (8)
25. a) (i) Describe the mechanism of wear and its prevention (7)  
(ii) Explain with neat sketch the working of a plasma spraying process (7)  
(OR)
- b) (i) Compare the Electroplating with Electrolessplating in terms of process principles and its applications. (7)  
(ii) Describe the PVD process with neat sketch and mention its merits and demerits (7)

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