

Printed Pages : 3



EME063

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 140859

Roll No.

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B. Tech.

(SEM. VIII) THEORY EXAMINATION, 2014-15
ADVANCED MATERIALS TECHNOLOGY

Time : 3 Hours]

[Total Marks : 100

Note : Attempt all the questions. Assume missing data suitably.Attempt any four of the following questions : **(5x4= 20)**

- 1 (a) Differentiate between Plain carbon steel and Tool steel.
- (b) Discuss any Six alloying elements and its effect on the plain carbon steel.
- (c) What do you mean by High temperature resisting steels? Explain its advantages over other steels.
- (d) Differentiate between Gray cast iron and modular malleable cast iron.
- (e) Discuss some recognized pattern of distribution of graphite flakes in gray cast iron.
- (f) Describe in brief about properties and application of plain carbon steel.

Attempt any two of the following questions : **10x2=20**

- 2 (a) Explain in brief TTT diagrams write its advantages and application.
- (b) Write short note on :
- (i) Hardening of steel.
 - (ii) Martempering of steel
 - (iii) Normalizing, of steel.
- (c) Discuss in brief about microscopic determination of case depth and depth of hardening.

Attempt any four of the following questions : **5x4=20**

- 3 (a) What are the advantages of nonferrous materials? Write the name of some nonferrous material and its application.
- (b) Write short note on:
- (i) Laminated and fiber reinforced composites.
 - (ii) Solutonizing
 - (iii) Precipitation Hardening.
- (c) Discuss in brief about thin film shape memory alloys.
- (d) Write the name of some refractory materials used in aero space application and its advantages.
- (e) Differentiate between ceramic-polymer and metal-ceramic composites.
- (f) Write short note on smart materials and its application.

Attempt any two of the following questions : **10x2=20**

- 4
- (a) Explain the stress strain behavior of bone. Also write application of biomaterials in medicine and dentistry.
 - (b) Define mechanical properties of skin like elasticity, hardness, viscoelasticity and fatigue.
 - (c) Discuss in brief the effects of degradation and corrosion ?

Attempt any two of the following questions : **10x2=20**

- 5
- (a) Write the name of some control and construction materials of nuclear reactor and also write its advantages over other.
 - (b) Discuss and differentiate between the fissile and fertile materials.
 - (c) Explain in brief about safety and radioactive waste disposal.
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