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**BACHELOR OF TECHNOLOGY IN
MECHANICAL ENGINEERING
(COMPUTER INTEGRATED
MANUFACTURING)
B.Tech. (Aerospace Engineering)**

Term-End Examination

June, 2011

BME-018 : ENGINEERING MATERIALS

Time : 3 hours

Maximum Marks : 70

*Note : Answer any five questions. Each question carries
14 marks. Assume suitable data if required.*

1. (a) Define hardness. List various methods for the measurement of Hardness. Discuss Rockwell Hardness testing method. And compare this method with Brinell Hardness testing method. 7
- (b) Discuss the behaviour of stress - strain diagram for Ductile and Brittle materials. Also explain phenomenon of Necking and yielding for both materials. 7
2. (a) Draw Time -Temperature - Transformation diagram with all details. Explain cooling curves for various cooling media in the context of T - T - T diagram. 7
- (b) Explain in brief Carburising and Nitriding processes. 7

3. (a) What is meant by stainless steel ? Explain different types of stainless steels commonly used. 7
- (b) Classify and discuss the properties of various Cast Irons. 7
4. (a) Briefly discuss about the effect of various cooling mediums on the micro structural transformation of eutectoid steel. 7
- (b) Discuss the purposes of adding alloying elements in steel ? Also discuss about the effects of alloying elements on the performance of steel. 7
5. (a) List purposes of coating. Discuss the process of metallic coating. 7
- (b) Discuss fatigue crack propagation phenomenon. 7
6. (a) Explain fracture mechanics under uniaxial loading condition. Also discuss factors affecting fracture. 7
- (b) Explain Griffith's criterion of fracture. Also discuss about the modified Griffith's theory. 7
7. Write short notes on the following (*Any four*)
- (a) Tool Steels 3.5x4=14
- (b) Copper Alloys
- (c) Fiber Reinforced and Glass Reinforced Plastics
- (d) Refractory Materials
- (e) Factors influencing wear
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