

IV

Prod/CBGS/M.T. | 10.06.16



Material Technology

QP Code : 30805

(3 Hours)

[Total Marks: 80]

N.B. (1) Question no.1 is compulsory

(2) Answer any 3 questions out of the remaining questions.

(3) Assume suitable data if necessary.

- Q.1. Write Short notes on the following: -- 20
- (a) Austenitic Stainless Steels.
 - (b) Point Defects.
 - (c) Carburizing.
 - (d) Toughening Mechanisms in Ceramics.
- Q.2. (a) Explain the phase diagram for two metals which are completely soluble in liquid state but only partially soluble in solid state. 10
- (b) Explain with a neat sketch the concept of critical resolved shear stress and the mechanism of deformation responsible for its occurrence. 10
- Q.3. (a) Differentiate between hardness and hardenability and explain the Jominy end quench test for detection of hardenability. 10
- (b) Explain in detail the process of manufacturing oil impregnated bearings via powder metallurgy method. 10
- Q.4. (a) Compare in the form of a table, the properties of engineering ceramics with the properties of metallic alloys, giving relevant examples of applications. 10
- (b) Define fatigue and explain how fatigue test is conducted and which factors influence fatigue performance. 10
- Q.5. (a) Write about the unique features of Nano-structured materials. 05
- (b) Explain the processes of Austempering and Martempering. 10
- (c) Distinguish between induction and flame hardening. 05
- Q.6. Write short notes on :- 20
- (a) Influence of alloying elements on steels.
 - (b) Tool Steels.
 - (c) Alloys of Copper.
 - (d) Bainite.