Enrolment No._____

HASMUKH GOSWAMI COLLEGE OF ENGINEERING, VAHELAL
MID SEMESTER EXAMINATION, SEPTEMBER-2016

Subject Code: 2131904 **Date: 27/09/2016**
Subject Name: Material Science & Metallurgy **Sem: 3RD**
(MECH/AUTO)
Time: 10:00 TO 10:50 **Total Marks: 20**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

QUE.1 **(A)** 1) Strong and ductile materials are (___). **3**
(a) Polymers (b) Ceramics (c) Metals (d) Semiconductors

2) A dislocation in metal represents _____. .
(a) Weakness of metal (b) Point defect in metal
(c) Line defect in metal (d) Volume defect in metal

3) ALPHA IRON exists at ____ degree Celsius.
(a) 910 (b) 723 (c) 1123 (d) 560

(B) Explain any three: **3**
Creep, Toughness, Stiffness, Fatigue, Ductility.

QUE.2 **(A)** Explain imperfections in crystal with neat sketches. **3**

(B) With Neat Sketch Draw Iron-Carbon (Fe-C) Equilibrium Diagram. **4**

OR

(B) Explain homogenous and heterogeneous nucleation with neat sketches. **4**

QUE.3 **(A)** Describe Gibb's phase rule. How this rule is applied to pure metal and binary alloys. **3**

(B) What do you mean by allotropy of metal? Discuss allotropy of Iron. **4**

OR

(A) Explain with neat sketch TTT diagram for heat treatment of steel. **3**

(B) State Surface Hardening processes and explain any one. **4**

********** ALL THE BEST **********