

GUJARAT TECHNOLOGICAL UNIVERSITY**Diploma Semester -III Remedial Examination May - 2011****Subject code: 335502****Subject Name: Materials & Metallurgy****Date: 25 /05 /2011****Time: 02.30 pm – 05.00 pm****Total Marks: 70****Instructions:**

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

- Q.1** (a) Classify engineering material in chart form **07**
 (b) List different properties of engineering materials & Explain Mechanical properties **07**
- Q.2** (a) What do you mean by stainless steel ? Explain different types of stainless steel ? **07**
 (b) Explain properties & application of plastic. Compare thermo set & thermoplastics **07**
- OR**
- (b) Explain chemical composition, properties & application of copper & its alloy. **07**
- Q.3** (a) Draw neat sketch of IC diagram & show different micro constituents observed in it. Explain three reaction observed in it. **07**
 (b) Explain following terms with neat sketch **07**
- a) Crystal
 - b) Space lattice
 - c) Unit cell
 - d) Atom
 - e) Interstitial solid solution
 - f) Substitution solid solution
 - g) Phase diagram
- OR**
- Q.3** (a) Explain T.T.T. diagram with neat sketch **07**
 (b) Explain metallurgical microscope with neat sketch **07**
- Q.4** (a) Explain SC, BCC, FCC, HCP crystal structure with neat sketch. **07**
 (b) Draw heat treatment diagram **07**
- OR**
- Q.4** (a) Draw any SEVEN commercial forms of metal and write its IS number and Application **07**
 (b) Define annealing process. Explain purpose of annealing process. **07**

Q.5

- (a) What is quenching medium? List different types of medium. Explain hardening by quenching process **07**
- (b) Explain following terms briefly **07**
- a. Fatigue
 - b. Fatigue Limit
 - c. Creep
 - d. Fracture
 - e. Age hardening
 - f. Strain aging
 - g. Strain hardening

OR

- Q.5** (a) Define the term creep and explain creep curve **07**
- (b) Write chemical composition, product type, mechanical properties & application of following material **07**
- (1) SA 515 GR 60 (2) SA 240 TP 304 (3) SA 240 TP 316 L
(4) EN – 8 (5) SA 105 (6) SA 240 TP 321
(7) SA 182 TP 304 L
