

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEM-III Examination May 2012

Subject code: 132101

Subject Name: Material Science and Metallurgy

Date: 15/05/2012

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) What are the criteria for the selection of materials for engineering application? **07**
- (b) Give classification of engineering materials with important characteristics and engineering use. **07**
- Q.2** (a) What is corrosion? List out type of corrosion and explain any one method of corrosion preventions. **07**
- (b) I) Explain production of copper briefly **05**
II) Define : elasticity and malleability **02**
- OR
- (b) I) Short note on crystal imperfections **05**
II) Define: specific heat and toughness. **02**
- Q.3** (a) What is polymer? What is polymerization? List different polymerization mechanisms. Explain one mechanism in detail. **07**
- (b) Short note on semiconductors. **07**
- OR
- Q.3** (a) Short note on effect of grain size and heat treatment on properties of material. **07**
- (b) Short note on protective coatings. **07**
- Q.4** (a) Write short note on composite materials. **07**
- (b) Explain principle of soldering and brazing. **07**
- OR
- Q. 4** (a) What is ceramic material? Give classification of ceramic material and list out properties of ceramic materials. **07**
- (b) What is casting? Explain various steps, advantages and applications of foundry. **07**
- Q.5** (a) Describe principle, procedure and use of X-ray radiography. **07**
- (b) What is power metallurgy? Write advantages and disadvantages of powder metallurgy. **07**
- OR
- Q.5** (a) Describe different metal forming process. Write about rolling and various rolling mills. **07**
- (b) Describe principle, advantages, limitations and applications of ultrasonic inspection. **07**
