

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER • 2014****Subject Code: 2130506****Date: 26-12-2014****Subject Name: Chemical Engineering Materials****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) Discuss different types of bonds and their energies in brief. **07**
(b) Explain crystal structures and arrangement of packing. **07**
- Q.2** (a) Write a note on different mechanical properties of materials **07**
(b) Enlist various crystal defects and explain point imperfections in detail. **07**
- OR**
- (b) Discuss methods of determining crystal structures and explain X-ray diffraction in detail. **07**
- Q.3** (a) State different electrical properties of solids and explain electrical conductivity in detail. **07**
(b) Define magnetization and classify magnetic materials. **07**
- OR**
- Q.3** (a) State different methods of heat treatment, its principle and applications. **07**
(b) What do you mean by powder metallurgy? State its applications, merits and demerits. **07**
- Q.4** (a) State different types of ceramic materials and discuss applications of ceramics. **07**
(b) Define Refractories, classify and state their properties. **07**
- OR**
- Q.4** (a) Explain mechanism of electrochemical corrosion in detail. **07**
(b) Classify in detail different non metallic materials. **07**
- Q.5** (a) State methods to control and prevent corrosion and explain inhibitors in detail. **07**
(b) What are polymers? Explain thermosetting plastic with their applications. **07**
- OR**
- Q.5** (a) What are composite materials? State characteristics of composites. **07**
(b) Write a short note on paints and varnishes. **07**
