

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER • 2014****Subject Code: 2133603****Date: 18-12-2014****Subject Name: Introduction to Glass and Ceramic Technology - I****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) Describe the Bayer's Method of synthesis of Alumina in detail. **07**
 (b) Discuss the difference among alpha Alumina, beta Alumina and gamma alumina. **07**
- Q.2** (a) Discuss the polymorphic transformation of silica. Differentiate between Conversion and Inversion reactions. **04+03**
 (b) What are the various polymorphs of silica? What is Flint? Explain the formation of silica network. **02+02+03**
- OR**
- (b) Describe the Island structure, Group structure, Ring structure, Sheet structure found in silicate materials. **07**
- Q.3** (a) What are aluminosilicates? Describe the structure and properties of various aluminosilicates in detail. **02+05**
 (b) Describe the structure, properties and application of steatite bodies. **07**
- OR**
- Q.3** (a) Describe the structure of Chrome ore in detail. **07**
 (b) Describe the chemical properties of Chrome ore in detail. **07**
- Q.4** (a) What is natural magnesite? Why does it have low hydration resistance? How can the hydration resistance of magnesite be improved? **01+03+03**
 (b) What is Sea Water Magnesia? How is it synthesized? **02+05**
- OR**
- Q.4** (a) Explain the formation of kaolinite structure. Why does montmorillonite group of materials feel soapy? **05+02**
 (b) Describe the formation and structure of Muscovite mica and Biotite mica. **07**
- Q.5** (a) Define a flux material. Describe the framework network of feldspar. **07**
 (b) Write short notes on Wollastonite, Lepidolite, Nephelene Syenite. **07**
- OR**
- Q.5** (a) Write short notes on Silica gel and Vitreous Silica. **07**
 (b) What is Plaster of Paris? Give its setting methodology. **07**
