

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE SEMESTER 1<sup>st</sup> / 2<sup>nd</sup> (NEW) EXAMINATION WINTER 2016**

**Subject Code: 2110001****Date: 21/01/2017****Subject Name: CHEMISTRY****Time: 10:30 AM TO 1:00 PM****Total Marks: 70****Instructions:**

1. Question No. 1 is compulsory. Attempt any four out of remaining Six questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

**Q.1 Objective Question (MCQ)****(a)****07**

1. Regeneration of Zeolite requires:  
(a) dil HCl (b) dil NaOH (c) 10% Brine Solution (d) All of these
2. Rate of corrosion is faster in \_\_\_\_\_ medium:  
(a) Acidic (b) Basic (c) Neutral (d) None of these
3. Choose the correct option for decreasing order of calorific value:  
(a) Bituminous > Anthracite > Lignite > Peat  
(b) Anthracite > Bituminous > Lignite > Peat  
(c) Lignite > Bituminous > Anthracite > Peat  
(d) Peat > Lignite > Bituminous > Anthracite
4. On heating pure gypsum at about 120-160°C produces:  
(a) Hydraulic Lime (b) Plaster of Paris (c) Portland Cement (d) Lime Stone
5. Choose thermoplastic polymer from the following:  
(a) Bakelite (b) Polystyrene (c) Araldite (d) Melamine
6. Substances which are volatile and insoluble in water are purified by:  
(a) Steam distillation (b) Fractional Distillation  
(c) Crystallization (d) None of these
7. The correct component sequence of UV-Visible Spectrometer is:  
(a) recorder → sample & reference unit → source → monochromator  
(b) monochromator → recorder → sample & reference unit → source  
(c) sample & reference unit → monochromator → recorder → source  
(d) source → monochromator → sample & reference unit → recorder

**(b)****07**

1. Who invented chromatography?  
(a) M.S. Tswett (b) G. N. Lewis (c) Sorenson (d) Wallace Carothers
2. HPLC is \_\_\_\_\_.  
(a) High plastic liquid chromatography  
(b) Highly poor liquid chromatography  
(c) High pressure latex chromatography  
(d) High pressure liquid chromatography
3. What is working range of UV-visible spectroscopy?  
(a) 100-400 nm (b) 400-800 nm (c) 200-800 nm (d) 200-400 nm

4. Choose odd one out from the following:  
(a)Cation exchange resin (b)Zeolite (c)Anion exchange resin (d)dil HCl
5. The Calorific Value of solids and non-volatile liquid fuel is determined by:  
(a)pH-Meter(b)Bomb-Calorimeter(c)Conductivitymeter (d)Turbiditymeter
6. \_\_\_\_\_ bond is formed by the sharing of valance electrons.  
(a)Co-ordinate (b)Ionic (c)covalent (d)metallic
7. Chemical formula of Rust is\_\_\_\_\_.  
(a) Fe<sub>2</sub>O<sub>3</sub> (b) FeO (c) Fe<sub>2</sub>O<sub>3</sub>.nH<sub>2</sub>O (d) Fe<sub>2</sub>O<sub>3</sub>
- Q.2** (a) What are Enzymes? State the characteristics of Enzyme. **03**  
(b) What do you mean by softening of water? State different softening methods. Write in detail about Hot Lime-soda process with neat and labelled diagram. **04**  
(c) What is heat treatment of steel? What are the purposes behind it? Explain various processes of heat treatment of steel in detail. **07**
- Q.3** (a) Discuss about the setting and hardening of cement. **03**  
(b) What is Galvanic Corrosion? Explain the mechanism of galvanic corrosion. **04**  
(c) What is Brackish water? Discuss electro dialysis and reverse osmosis method to desalinate the brackish water. **07**
- Q.4** (a) What are alloys? Give classification of alloys with suitable examples. **03**  
(b) (i)Define the terms: Functionality, Degree of Polymerization, Step polymerization and monomers. **04**  
(ii)State the monomers and repeating units of : Nylon 66, Polyethene.  
(c) What are the raw materials required for manufacturing of Cement? With a neat diagram of rotary kiln describe how Portland cement is manufactured by wet process. **07**
- Q.5** (a) What is Fuel? Give classification of the fuel and what are the characteristics of a good fuel. **03**  
(b) What are abrasives? How are they classified? Describe a process of manufacture of carborundum. **04**  
(c) What is meant by fermentation? Discuss the manufacture of ethyl alcohol from molasses by fermentation process. **07**
- Q.6** (a) Discuss about Breakpoint Chlorination. **03**  
(b) What is proximate analysis and ultimate analysis of coal. Discuss its significance **04**  
(c) What is a refractory? Give classification of refractories and state properties of good refractory material. **07**
- Q.7** (a) Describe the process of melt spinning of fibers. **03**  
(b) Discuss about different boiler problems . **04**  
(c) Why does natural rubber need vulcanization? Discuss the process of vulcanization. **07**

\*\*\*\*\*