

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEMESTER 1st / 2nd (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 n reference unit → source → monochromator
(b) monochromator → recorder → sample n reference unit → source
(c) sample n reference unit → monochromator → recorder → source
(d) source → monochromator → sample n 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 <http://www.gujaratstudy.com>

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) Fe₂O₃ (b) FeO (c) Fe₂O₃.nH₂O (d) Fe₂O₃

- 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**
