GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER- II • EXAMINATION – SUMMER 2014

Subject Code: 2110001
Subject Name: Chemistry
Date: 21-06-2014
Time: 02:30 pm to 05:00 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 Answer the following question.

1. The nucleus of an atom consists of
   A. electrons and neutrons   B. electrons and protons   C. protons and neutrons   D. All of the above

2. The number of moles of solute present in 1 kg of a solvent is called its
   A. molality  B. molarity  C. normality  D. formality

3. The most commonly used bleaching agent is
   A. alcohol  B. carbon dioxide  C. chlorine  D. sodium chloride

4. Give IUPAC nomenclature for following compounds.
   BrCH₂–CH₂–CH₂–CH₂–COOH
   A. 1- bromo 5- pentanoic acid  B. 4- bromo 1- carboxylic acid butane
   C. 5- bromo pentanoic acid  D. none of above.

5. 10 ppm. = ________ ppm
   A. 5  B. 10  C. 1  D. 0.7

6. What happens when hard water was used in Boiler?
   A. Boiler corrosion  B. Scale and sludge  C. Priming and forming  D. All of above.

7. Write chemical formula for Potassium chromate
   A. KMnO₄  B. K₂CrO₄  C. K₂Cr₂O₇  D. None of above.

8. The material which can be deformed permanently by heat and pressure is called
   a
   A. Thermoplastic  B. Thermoset  C. Chemical compound  D. Polymer

9. The method that cannot be used for removing permanent hardness of water is
   A. Adding sodium carbonate  B. Distillation  C. Adding caustic soda  D. Boiling

10. Which acid is present in lemon?
    A. Marlac acid  B. Citric acid  C. lactic acid  D. tartaric acid

11. Which metal is heaviest?
    A. Osmium  B. Mercury  C. Iron  D. Nickle

12. Nail polish remover contains?
    A. Benzene  B. Acetic acid  C. Acetone  D. Petroleum ether
13  pH of blood is ?  
A. 10.4  B. 9  
C. 7.4  D. 4

14  Biogas majorly contains?  
A. Ethane  B. Methane  
C. Hydrogen  D. CO

Q.2 (a)  Write short note on  
1. Purposes of Alloy making.  
2. Give any one method for Desalination of Brackish water.

(b)  A Sample of water on analysis was found to contain the following impurities:  
Ca(HCO₃)₂ = 32.4 mg/L, Mg(HCO₃)₂ = 14.6 mg/L, CaSO₄ = 6.8 mg/L, 
MgSO₄ = 6.0 mg/L. Calculate temporary, permanent and total hardness in ppm, 
^°Cl and ^°Fr. [Molecular Mass: Ca(HCO₃)₂ = 162 g/mole, Mg(HCO₃)₂ = 146 g/mole, CaSO₄ = 136 g/mole, MgSO₄ = 120.]

Q.3 (a)  Describe the mechanism of Electrochemical corrosion by hydrogen evolution and oxygen absorption.

(b)  Give monomers of Nylon 6, 6 and Bakelite. Differentiate between Thermoplastic and Thermosetting polymers.

Q.4 (a)  What is Corrosion? Differentiate between Dry and Wet corrosion.

(b)  What is CNG? Give advantages and disadvantages of Gaseous Fuel.

Q.5 (a)  Explain Setting and Hardening process of Portland cement.

(b)  Enlist disadvantages of Natural Rubber. Explain Vulcanization process of Rubber.

Q.6 (a)  What is the composition of Portland Cement? Discuss the manufacturing process of Portland cement.

(b)  What are the significances of Biogas? Give manufacturing process of Biogas.

Q.7 (a)  Describe Manufacturing process of Acetic acid by fermentation.

(b)  Write a short note on.  
1. Natural & Artificial Abrasive.  
2. pH & its measurement

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