Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. - SEMESTER – I-II (NEW) • EXAMINATION – WINTER • 2014

Subject code: 2110001 **Date: 02-01-2015**

Subject Name: Chemistry

Time: 10:30 am - 01:00 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 (a) Choose correct option from the following multiple choice questions. **07**

1. Chromatography is used for the separation of
(a)Small samples of mixture (b)Dye stuff (c)Plant pigment (d)All

2. Aniline is purified by
(a)Extraction of solvent (b)Steam distillation (c)Vacuum distillation (d)Sublimation

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. Who Discover Chromatography technique?
(a)Duma's (b)Hoffmann (c)Victore (d)Tswett

5. Duma's method used for the estimation of
(a)Carbon (b)Nitrogen (c)Sulphur (d)Halogen

6. Beilstein test used for detection of……..
(a)N (b)Cl (c)S (d)C and H

7. Which of the following is purified by sublimation if impurities are nonvolatile?
(a)Cane sugar (b)Naphthalene (c)Urea (d)Acetic acid

Q.1 (b) Choose correct option from the following multiple choice questions. **07**

1. How will you separate a mixture of o-nitro phenol and p- nitro phenol?
(a)Extraction of solvent (b)Steam distillation (c)Vacuum distillation (d)Sublimation

2. What is the S.I unit of molarity?
(a)mol^{-1} (b)mol (c) $mol.dm^{-3}$ (d) $mol.dm^{-2}$

3. Molarity of 1N HCl solution…..
(a)1M (b)2M (c)1M (d) 0.5M

4. Normality of 1M H_2SO_4 solution ……
(a) 2N (b) 1N (c) 1.5N (d) 0.5N

5. Sooty flame suggested……..
(a) Aromatic compound (b) $CHCl_3$ (c) CCl_4 (d)All

.

6. Melting point of Benzoic acid…….^{0}C
(a)75 (b) 187 (c) 121 (d) 44

7. C and H are estimated by
(a) Liebig method (b)Carius method (c) Hofmann method (d) Duma's method

OR

Q:1 (a) Choose the correct answer in following questions: **07**

1. Which one among the following salts causes hardness to the water?
(a) Calcium carbonate
(b) Calcium bicarbonate
(c) Sodium sulphate
(d) Potassium chloride

2. Standard Operating Procedures state that juice prepared for human consumption should be slightly acidic. Which of the following pH levels would be suitable?
(a) 4 (b) 1 (c) 7.9 (d) 6.8

3. Lab fire extinguishers release …… to extinguish fire
(a) O_2 (b) H_2 (C)N_2O (d) CO_2

4. Which of the following compound can be purified by sublimation?
(a) Alcohol (b) silica (c) naphthalene (d) glucose

5. What would be the normality of a solution formed by dissolving 80 gm NaOH in 2 liter of water?
(a) I N (b) 2N (C) 0.5 N (d) 1.6 N

6. Milk of magnesia will show pH……in pH meter:
(a)7 (b) greater than 7 (c) lesser than 7 (d) can't say

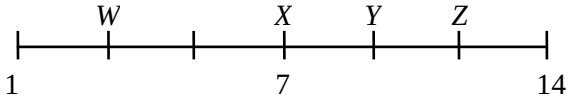
7. In partition chromatography, stationary phase is
(a) Liquid (b) gas (c) solid (d) any of these

Q:1 (b) Choose the correct answer in following questions: **07**

1.  Such symbol is shown at the bottle of acetic acid. This denotes that acetic acid:
(a) radioactive
(a) Flammable
(b) corrosive
(c) caustic

2. The number of coordinate bonds formed by EDTA with metal cation:
(a) 7 (b) 4 (c) 6 (d) 5

3. The pH meter reading of four aqueous solutions (*W*, *X*, *Y* and *Z* of equal concentration) is represented as pH scale as shown



What could the aqueous solutions be pH of 0.1 M NaOH is

	W	X	Y	Z

(a)	CH_3COOH	NaCl	NH_3	NaOH
(b)	NaCl	CH_3COOH	NaOH	NH_3
(c)	NaOH	NH_3	CH_3COOH	NaCl
(d)	NH_3	NaOH	NaCl	CH_3COOH

4. Which of the following can't be used as primary standared?
(a)Na_2CO_3 (b) NaCl (c) NaOH (d) Succinic acid

5. Novalak is……:
(a)Phenol formaldehyde resin (b) polyurethane resin (c) Urea formaldehyde resin (d)

6. In an electrochemical cell oxidation always occurs at.....
(a) anode (b) cathode (c) salt bridge (d) electrolyte

7. Brass is an alloy of……
(a) Cu & Sn (b) Cu & Zn (C) Ag & Pb (d) Cr & Al

Q.2 **(a)** What is green chemistry? Explain it. **03**

(b) Explain problems which arise due to untreated hard water. **04**

(c) Explain soda lime process for water treatment. **07**

Q.3 **(a)** Describe cathodic protection. **03**

(b) Explain physical properties of metal. **04**

(c) Discuss dry and wet corrosion. **07**

Q.4 **(a)** Explain vulcanization of rubber. **03**

(b) Discuss the application of polystyrene, PVC and polyethylene. **04**

(c) What is Portland cement? Describe manufacturing of Portland cement. **07**

Q.5 **(a)** Define bio-technology and explain it. **03**

(b) What are insulators? How they classified? **04**

(c) What is fermentation? Explain enzymes and it' s application in industries. **07**

Q.6 **(a)** Write the principle and use of IR spectroscopy. **03**

(b) Find the minimum amount of air required for the complete combustion of 1 kg coal having the following composition by weight. **04**
C=81%, H=8%, O=5%, N=2% and remaining is ash.

(c) Give the classification, properties and applications of abrasives. **07**

Q.7 **(a)** Give the application of UV visible spectroscopy. **03**

(b) Describe the process of melt spinning of fibers. **04**

(c) What is fuel? Classify it, and write a short note on the refining of petroleum. **07**

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