Chemistry II

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(SINDHUDURG)
F.Y.B.Sc. SEMESTER I EXAMINATION NOVEMBER 2023
COURSE: General Chemistry -II **COURSE CODE – USCH 102**
TIME : 8.30 am 11:30 am **MAX. MARKS: 100**
SET 1 **DURATION: 3 HOURS**

N.B. 1.All the questions are compulsory
2. Figures to the right indicates full marks
3. The use of log table/Programmable calculators are allowed.
4. Answers for the same question should be written together.

Q. 1 A) Select the correct option and complete the following statement. **12**

1. The rate of a reaction is expressed as the rate= k $[A]^x$ $[B]^y$ $[C]^z$ The order of the reaction is :

a) xyz. b) x+y+z. c) x+y/ z.

2.. Surface tension is measured by ..... drop method.

a) liquid. b) gas. c) solid.

3. For a first order reaction ,the unit of rste constant k is :

a) s^{-1}. b) mol s^{-1}. c) mol dm^{-3}

4. For a second order reaction ,the time for 50% reaction is.....

proportional to the initial concentration of the reactants.

a) directly. b) inversely. c) no change.

5. Chemical formula of quick lime is .....

a) $Ca(OH)_2$. b) CaO. c) $CaCO_3$

6. Metallic character ..... Down the group.

a) increase b) decreases c)remain same.

7. The heating up of the earth due to trapping of infrared radiation by CO_2 layer in the atmosphere is called .....

a) Photochemical effect. b) Green house effect. c) Acid rain

8. The outer electronic configuration of group 15 is .....

a) ns^2np^4. b) ns^2np^1. c) ns^2np^3

9.The arrangement of atoms obtained by the rotation of C – C bond is known as

a)Configuration b) Conformation c) Assymmetric carbon

10.....is the more stable conformation of ethane.

a)Staggered b) Skew c) Eclipsed

11.Molecule with one asymmetric carbon has .....optical isomers.

a)three b) four c) two

12. .A mixture of both enantiomers of an optically active compound in equimolar quantities is called as .....

a) Racemic mixure b) Active mixure c) Cis-trans mixture

B) State whether the following statements are true or false . **03**

i) Viscosity is measured with the help of Ostwald's viscometer.

ii) Sodium exhibit anamoulous behaviour in group 1.

iii) Meso isomer is optically active.

C) Match the following columns . **05**

Column A	Column B
Enantiomers	Alkaline earth metals
Noble gas	Optically active
Liquid crystal	Optically inactive
Group 2.	Neon
Poise	Nematic phase
	Unit of viscosity

Q.2.Answer any **four** of the following. **20**

A) Distinguish between : Order and Molecularity 05

B) i. Derive an expression for half time of first order reaction. 03

ii. Calculate the time required for completion of 25% of first order reaction, whose rate constant $k = 2 \times 10^{-3}\ s^{-1}$

C) Explain the concept of energy of activation in kinetic studies.How is the energy of activation of a reaction experimentally determined. 05

D) Describe how viscosity is measured with the help of viscometer and draw its neat label diagram. 05

E) Discuss the application of liquid crystal. 05

F) At 293K water formed 30 drops while flowing through the capillary of stalagmometer and an organic liquid formed 49 drops . Calculate the surface tension of organic liquid if densities of water and organic liquid are 0.998×10^3 and 0.851×10^3 kg m^{-3} respectively at 293 K and surface tension of water at the same temperature is $7.28 \times 10^{-2} Nm^{-1}$. 05

Q.3.Answer any **four** of the following. **20**

A) i Describe the Metallic character of group 13 and 15 elements. 03

ii Write a note on Oxidation state of group 14 elements. 02

B) What is meant by diagonal relationship? Explain the diagonal relationship between Li and Mg 05

C) Give the method of preparation , properties and uses of calcium carbonate. 05

D) Explain the paramagnetic character in peroxides of group 1and 2 elements. 05

E) Explain green house effect and state the preventive measures. 05

F) Describe any two sources and control measure of Nitrogen oxides. 05

Q.4.Answer any **four** of the following. **20**

A) Explain the Stereoisomerism in -2-bromo-3-Chlorobutane. 05

B) Discuss conformation of n-Butane 05

C) Explain the following terms with sutiable examples 05

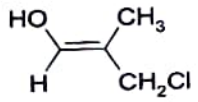
a) Threo isomer b) Erythro isomer

D) Write note on Geometrical Isomerism in alkenes with sutaible examples. 05

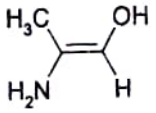
E) Distinguish between Enantiomers & Diastereomers 05

F) i) Assign the Z-E Nomenclature to following compounds,Explain the answer , 03

a)

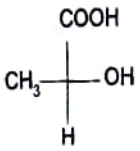


b)

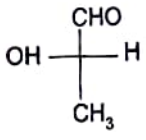


ii) Assign R-S nomenclature system to the following compounds 02

a)



b)



Q.5.Answer any **four** of the following. **20**

P.T.O.

A) Derive an expression for the rate constant of second order reaction with equal initial concentrations of the two reactants. 05

B) i.Define the following terms : a)rate of a reaction. b) pseudo first order reaction. 03

ii. Explain : Acidic hydrolysis of methyl acetate is a pseudo first order reaction. 02

C) Write a note on proxy acetyl nitrate (PAN). 05

D) Explain the Anamoulous behaviour of Carbon. 05

E) Draw the Fisher & Newmann projection formulae of 2,3-Dichloro butane . 05

F) Explain the following, i) Chiral Centre ii) Optical activity 05

1/11/2023