Anjuman Islam Janjira Degree College of Science Murud-Janjira, Raigad-402401 Affiliated to University of Mumbai	
Class: -F.Y.B.Sc G.S	**Subject: - Chemistry**
Semester:- I	**Course code: - M3-1**
Exam Event:- Winter 2024 (SH)	**Marks: - 30**
Date: -14/11/2024	**Duration: - 01:00 Hours**

N.B:

1. **All** questions are compulsory.
2. **Figures** to the right indicate full marks.
3. Use of log-table/non programmable calculator is allowed.
4. Answer for the same question as far as possible should be written together.

Q1. A) Select the correct option and complete the following sentences. (any four) **04**

1. With the increasing molecular mass of a liquid, the viscosity
   (a) decreases (b) increases (c) no effect
2. Which of the following statements are correct
   I: The water drop in vacuum is perfectly spherical.
   II: The shape of water drop is distorted, due to action of gravity.
   III: Soaps and detergents drastically decrease the surface tension of water.
   IV: As temperature increases, surface tension also increases and becomes maximum at critical temperature.
   (a) I, II, III, IV (b) II, III, IV (c) I, II, I
3. What is the molarity of a solution that contains 1.25 mol of HCl in, 2.5L of solution?
   (a) 1.25M (b) 0.62M (c) 0.5M
4. Pollutant concentration in well water is accurately defined by stating concentration in
   (a) % w/v (b) mol/L (c) ppm
5. The rate of a chemical reaction
   a) increases with time b) decreases with time c) remains constant with time
6. The sum of the powers of the concentration of reactants in the rate law equation called as
   a) order of reaction b) molecularity of reaction c) atomicity of reaction

B) Attempt any two of the following. **06**

1. Explain the term viscosity and factors affecting on viscosity of liquids.
2. Define the following terms
   i) molarity ii) normality iii) molality
3. Derive integrated rate equation for second order reaction.

Q2. A) Select the correct option and complete the following sentences. (any four) **04**

1. Alpha particles are -------- in charge.
   a) positive b) negative c) neutral
2. The shell with n = 2 is commonly referred to as ---------- shell.
   a) K b) L c) M
3. The shell with n = 1 consists of --------- subshells.

a) 1 b) 2 c) 3

4. Which method is used for the calculation of electronegativity

a) Pauling b) Mulliken c) Both Pauling & Mulliken

5. s and p block elements are also called as

a) Maing group elements b) Transition elements c) inner transition elements

6. In the long form of periodic table the elements are divided into -------- blocks.

a) 2 b) 3 c) 4

B) Attempt any two of the following. **06**

1. Give the differences between orbit and orbital.
2. Write a note on
   a) Heisenberg's Uncertainty Principle 01
   b) Shells, subshells and orbitals 02
3. Explain the following terms and their trend in periodic table

i) electron gain enthalpy ii) electronegativity

Q3. A) Select the correct option and complete the following sentences. (any four) **04**

1. The naming of alkane is done by using a root name and suffix

a) -ane b) -ene c) -yne

2. What is the functional group of ketones

a) R-O-R' b) R-CO-R R-COOH

3. Alkenes are hydrocarbons that contain carbon-carbon -------- bonds.

a) double b) triple c) single

4. Isomerism refers to existence of

a) same molecules with same molecular formula

b) different molecules with same molecular formula

c) different molecules with different molecular formula

5. The maximum number of isomers for a molecule containing n chiral centres will be

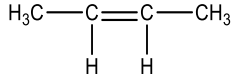
a) 2^n b) 3^n c) 2^{n+2}

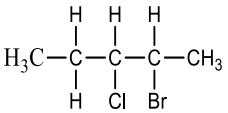
6. In R/S configuration priority to the groups is given on the basis of their

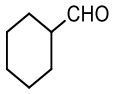
a) atomic masses b) atomic numbers c) spectral properties

B) Attempt any two of the following. **06**

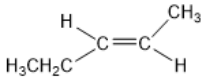
1. Assign the IUPAC nomenclature for the following molecules.

i) 

ii) 

iii) 

2. Discuss the term optical activity and its measurement in detail.
3. a) Define Alcohol with suitable example. 01
   b) Assign E/Z nomenclature to the following compounds 02

i) 

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