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- II**
Semester:- I	**Course code: -USCH102**
Exam Event:- Additional Exam Summer 2024 (FH)	**Marks: - 75**
Date: - 22/03/2024	**Duration: - 2:30. 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.

Q.1 Attempt any Four of the following **20**

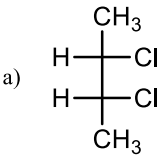
A. Derive integrated rate equation for 2nd order reaction.
B. What are the different methods for determination of an order? Explain any one in detail.
C. Define the following term i) Order ii) Molecularity iii) Half Life Time.
D. Explain the viscosity of liquid. How it is determined using a Ostwald's Viscometer.
E. What are liquid crystals? Discuss the classification of liquid crystals.
F. Calculate the number of drops formed by an organic liquid having density 0.854×10^3 kg m^{-3} and surface tension 0.054 Nm^{-1} if water forms 22 drops with the same stalagmometer.
Given: Density of water 0.998 x 10^3 $kg.m^{-3}$ and its surface tension 0.072 Nm^{-1}.

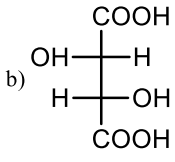
Q.2 Attempt any Four of the following **20**

A. Write a note on acid rain and its causes
B. Define metallic and non- metallic character of main group element using appropriate properties.
C. Write a note on photochemical smog
D. Justify Anomalous behavior of Lithium.
E. What is diagonal relationship? Explain diagonal relationship between Lithium and Magnesium.
F. What are carbides? Explain the characteristics of any two carbides.

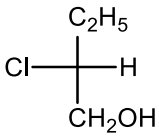
Q.3 Attempt any Four of the following. **20**

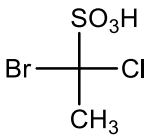
A. Explain the term geometrical isomerism. Discuss geometrical isomerism in cycloalkanes. Give suitable example.
B. Describe the term geometrical isomerism and optical isomer with example.
C. Discuss the Conformational analysis of ethane
D. Convert the following fisher projection formulae to Newman projection formulae

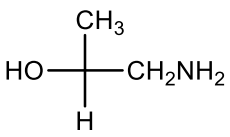
a) 

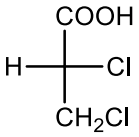
b) 

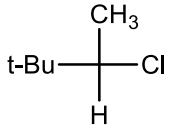
E. Assign R or S descriptor to the following molecules.

a) 

b) 

c) 

d) 

e) 

F. What is meant by meso compound? Explain with an example

Q.4 A) Select correct and complete the following sentence. (Any Eight) **8**

1) _____ is a correct statement.

a) Surface tension of a liquid increases with temperature

b) Stalagmometer is used for measuring viscosity of the liquid

c) Addition of chemicals reduces the surface tension of a liquid

2) The rate of reaction $2x + y \longrightarrow$ Products. Rate = $k[x]^2[y]$. If x is present in large excess, the order of the reaction is. a) 3 b) 2 c) 1

3) Half-life of first order reaction.

a) increases with increase in initial concentration b) decreases with increase in initial concentration

c)independent of initial concentration

4) If the order of reaction is zero. It means that.

a) rate of reaction is independent of temperature.

b) rate of reaction is independent of the concentration of the reacting species.

c) the rate of formation of activated complex is zero.

5) Chemical formula of washing soda is _____

a) Na_2CO_3 b) $NaHCO_3$ c) NaOH

6) Downward force due to gravity, when liquid having density 'd' is in a column of radius 'r' set-up at height 'h' is balanced by upward thrust due to surface tension.Therefore .

a) 2r y = mhdg b) 2ry = πhdg c) 2πry = mg

7) Among Ihe following _____ have valence electron in the third cell.

a) Oxygen b) Phosphorous c) Nitrogen

8) In graphite carbon atoms have under gone _____ hybridization.

a) sp b) sp^2 c) sp^3

9) Meso form is optically _____

a) Inactive b) active c) partially active

10) Butenedioic acid has _____ geometrical isomers.

a) 2 b) 4 c) 6

11) Anomalies in the behavior of second period elements arise because of _____

a) high polarizing power of anion b) low polarizing power of cation

c) non availability of the d-orbitals

12) The _____ isomer has a plane of symmetry.

a) meso b) racemic c) dextro

Q.4 B State whether the following statement true or false (Any three). **3**

A. Group 13 and group 18 element are known as a s block element

B. Horizontal lines in Fischer projection formula represent bonds that project above the plane of paper

C. Group 13 and group 18 element are known as a s-block element.

D. Ostwald's meter use to measure viscosity of liquid.

E. Horizontal lines in Fischer projection formula represent bonds that project above the plane of paper.

Q.4 C Match the pairs (any four) **4**

Column A		Column B	
I	Unit of rate constant of first order reaction	a	Two asymmetric carbons
II	Coefficient of viscocity	b	Al_2O_3
III	Amphoteric	c	Plane of symmetrical
IV	Tartaric acid	d	s^{-1}
V	Caustic soda	e	Sodium hydroxide
VI	Meso form	g	mol L^{-1} s^{-1}
		h	Ca $(OH)_2$