

# EQUILIBRIUM CLASSES

## CHEMISTRY BY ANUJ SIR

Class – XII

Chemistry -2019

Time: 3 Hrs

Max Marks: 70

### General Instructions:

All questions are compulsory.

- Questions 1 to 5 are very short answer type carrying 1 mark each.
- Questions 6 to 12 are short answer type carrying 2 marks each.
- Questions 13 to 24 are also short answer type carrying 3 marks each.
- Questions 25 to 27 are long answer type carrying 5 marks each.
- Calculators are not permitted. Use log tables if necessary.

1. What causes Brownian movement in a colloidal solution?

Or

What is vant Hoff's factor ?

- Write the IUPAC name of the following organic compound.  $\text{CH}_3\text{-O-CH}_2\text{-CH(OH)-CH}_2\text{-CH}_3$
- Arrange the following compounds in an increasing order of acidic strengths:  $\text{CH}_3\text{CH}_2\text{CH(Br)COOH}$ ,  $\text{CH}_3\text{CH(Br)CH}_2\text{COOH}$ ,  $(\text{CH}_3)_2\text{CHCOOH}$ ,  $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$ .
- Write chemical equation when  $\text{PtF}_6$  and xenon are mixed together.

Or

What is monomer of Bakelite

- What is the use of  $\text{SO}_2$  formed during the roasting of sulphide ores?
- Mention a large scale use of the phenomenon called reverse osmosis?
- Write an example of a neutral molecule which is isoelectronic with  $\text{ClO}^-$ .
- Write structural formula of 2,3-dichloropentane. State whether it is optically active or not.
- State Raoult's law for solutions of two volatile liquids. Taking suitable examples explain the meaning of positive and negative deviation from Raoult's law.

or

Carry out following conversions.(any five).

- Propan -1-01 to propan -2-01.
- Ethyl magnesium bromide to 2-methyl butan -2-01.

10. Calculate the amount of KCl which must be added to 100g of water so that water freezes at  $-2.0^{\circ}\text{C}$ . Assume that KCl undergoes complete dissociation.
11. Distinguish between order and molecularity of a reaction. When could order and molecularity of a reaction be the same?
12. Outline the principles of the following:
  - (i) Zone refining
  - (ii) Paper chromatography.
13. State the difference between Schottky and Frenkel defects. Which of the two changes the density of the solid?
14. Analysis shows that nickel oxide has formula  $\text{Ni}_{0.96}\text{O}_{1.00}$ . What fractions of nickel exist as  $\text{Ni}^{2+}$  and  $\text{Ni}^{3+}$  ions?

Or

Answer the following questions

- (i) What are the main constituents of Dettol?
- (ii) What is chemotherapy. Explain with the example of broad spectrum antibiotics.
15. What happens when D-Glucose is treated with the following reagents?
  - (i) HI
  - (ii) Bromine water.
16. Answer the following:
  - (i) What type of linkage is responsible for the primary structure of proteins?
  - (ii) What are any two good sources of vitamin 'A'?
17. Distinguish between:
  - (a) Ethylamine and Aniline
  - (b) Methylamine and dimethylamine.
18. Account for the following:
  - (i) Aniline does not undergo Friedel-Crafts reaction.
  - (ii) Methylamine in water reacts with ferric chloride to precipitate hydrated ferric oxide.
19. Explain the following with an example.
  - (a) Coupling reaction.
  - (b) Reimer-Tiemann reaction.
  - (c) Williamson synthesis.
20. (a) Why are aryl halides extremely less reactive towards nucleophilic substitution reaction?  
(b) In the following pairs of halogen compounds, which compound undergoes faster  $\text{S}_{\text{N}}1$  reaction?
21. The following data were obtained during the first order thermal decomposition of  $\text{SO}_2\text{Cl}_2$  at constant volume.



Experiment	Time/s	Total pressure/atm
1	0	0.5
2	100	0.6

Calculate the rate of the reaction when total pressure is 0.65 atm.

22. Write short notes on the following:

- Froth Floatation process.
- Cataphoresis.
- Zeta potential.

23. Complete the following chemical equations:

- $\text{XeF}_2 + \text{PF}_5 \rightarrow$
- $\text{HgCl}_2 + \text{PH}_3 \rightarrow$
- $\text{P}_4 + \text{NaOH} + \text{H}_2\text{O} \rightarrow$

24. Account for the following:

- $\text{NH}_3$  is stronger base than  $\text{PH}_3$ .
- The electron gain enthalpy with negative sign for oxygen is less than that of sulphur.
- $\text{H}_3\text{PO}_2$  and  $\text{H}_3\text{PO}_3$  act as good reducing agent while  $\text{H}_3\text{PO}_4$  does not.

25. Indicate the type of isomerism exhibited by the following complexes and draw the structures for these isomers:

- $[\text{Co}(\text{en})_2\text{Cl}_2]$
- $[\text{Co}(\text{NH}_3)_3(\text{NO}_2)_3]$
- $[\text{Co}(\text{en})_3]\text{Cl}_3$ .

OR

(a) State two advantages of  $\text{H}_2$ - $\text{O}_2$  fuel cell over ordinary cell.

(b) A copper-silver cell is set up. The copper ion concentration in it is 0.10M. The concentration of silver ion is not known. The cell potential measured is 0.422V. Determine the concentration of silver ion the cell.

(Given:  $E^\circ_{\text{Cu}^{2+}/\text{Cu}} = +0.34\text{V}$  and  $E^\circ_{\text{Ag}^+/\text{Ag}} = +0.80\text{V}$ )

26. (a) Differentiate between the thermoplastic and thermosetting polymers.

(b) What are biodegradable polymers? Give two examples.

OR

(a) Write the steps involved in the preparation of:

- $\text{K}_2\text{Cr}_2\text{O}_7$  from  $\text{Na}_2\text{CrO}_4$ .
- $\text{KMnO}_4$  from  $\text{K}_2\text{MnO}_4$ .

(b) What is meant lanthanoid contraction? What effect does it have on the chemistry of the elements which follow lanthanoids?

27. (a) How will you bring about the following conversions in more than two steps?

(i) Propanone to Propene (ii) Benzoic acid to Benzaldehyde.

(b) An organic compound 'A' contains 69.77% carbon, 11.63% hydrogen and the rest is oxygen. The molecular mass of 'A' is 86. It does not reduce Tollen's reagent but forms an addition compound with sodium hydrogen sulphite. 'A' gives a positive iodoform test. On vigorous oxidation 'A' gives ethanoic and propanoic acids. Deduce the possible structure of molecule of 'A'.

OR

State the function along with one example each of:

(i) Antihistamines

(ii) Antioxidants

(iii) Tranquilizers.

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