



ROLL NO.	
NAME	
CLASS & SECTION	

APEEJAY COMMON ANNUAL EXAMINATION, 2019-20

08

CLASS-XII
CHEMISTRY

Time allowed : 3 hrs.

Maximum Marks : 70

General Instructions :

- All questions are compulsory.
- Marks for each question are indicated against it.
- Section A : Q. No. 1 to 20 are very short answer questions (objective type), each of one mark.
- Section B : Q. No. 21 to 27 are short answer questions of two marks each.
- Section C : Q. No. 28 to 34 are short answer questions of three marks each.
- Section : Q. No. 35 to 37 are long answer questions of five marks each.
- Use log tables if necessary. Calculators are not permitted.
- There is no overall choice but internal choice is being provided. Attempt any one of the choices in such questions.

SECTION-A

Read the given passage and answer the questions 1 to 5 that follow :

Vapour pressure of a liquid is the pressure exerted by the vapours of a liquid in equilibrium with the liquid at a given temperature. When 18 gram of glucose is added to a litre of water, the vapour pressure of the solution is reduced. French chemist Raoult (1886) carried out a series of experiments and studied the vapour pressure of a number of binary solutions. He found that the vapour pressure of a solution containing non-volatile solute is less than that of the pure solvent.

1. What is the mole fraction of glucose in this solution? (1)
2. Will two glucose solutions of same molarity prepared in different solvents have same freezing point depression? Why? (1)
3. If in place of glucose, 10 gram of urea is added to make the aqueous solution, which solution will show a higher boiling point? (1)

P.T.O.

20. Assertion : Paraffinic monomers undergo addition polymerisation. (1)

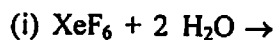
Reason : Polymerisation of vinyl chloride is initiated by peroxides.

SECTION-B

21. Write the IUPAC names of the following : (2)



22. Complete the following reactions : (2)



(cold and dilute)

23. (a) What is the effect of denaturation on the structure of proteins ? (2)

(b) Write the chemical name of Vitamin B 1 and also name the disease caused by its deficiency.

24. A first order reaction is 50% completed in 40 minutes at 300K and in 20 minutes at 320K. Calculate the activation energy of the reaction. $R = 8.314 \text{ J/K/mol}$. (2)

OR

The rate constant for the first order reaction is 60 s^{-1} . How much time will it take to reduce the initial concentration of the reaction to its $1/16^{\text{th}}$ value?

25. (a) Give chemical tests to distinguish between the following pairs of compounds: (2)

(i) phenol and propanol.

(ii) ethanol and dimethylether.

(b) Out of ethanoic acid and phenol, which is more acidic and why?

26. Write the name of monomers of the following polymers : (2)

(a) Nylon-66

(b) Bakelite

OR

Write the equation for the formation of biodegradable polyester. Also name the monomers.

27. Discuss the following processes : (2)

(a) Zone refining

(b) Mond's process

SECTION-C

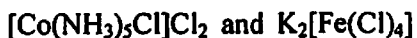
28. What is meant by didentate, hexadentate and ambidentate ligands? Give an example of each.

(3)

OR

(i) NH_3 is strong ligand and NH_4^+ is not, why?

(ii) Find the co-ordination number of the central metal ion in each of the following :



29. Calculate the boiling point of a solution containing 0.456 g of camphor (Molar mass 152) dissolved in 31.4 g of acetone (bp = 56.30 degC) if molal elevation constant per 100 g of acetone is 17.2 degC.

(3)

30. The rate of a particular reaction quadruples when the temperature changes from 293K to 313K. Calculate the energy of activation of the reaction.

(3)

OR

The rate constant for the decomposition of hydrocarbon is $2.418 \times 10^{-5} \text{ s}^{-1}$ at 546 K. If the energy of activation is 179.9 kJ/mole, what will be the value of pre-exponential factor.

31. Account for the following facts :

(3)

(a) Ferric Hydroxide sol is positively charged.

(b) The extent of physical adsorption decreases with rise in temperature.

(c) A delta is formed at the point where a river enters the sea.

32. Carry out the following name reactions :

(3)

(a) Hofmann's Bromamide reaction

(b) Carbylamine reaction

(c) Gabriel phthalimide synthesis.

33. What are narcotics? Explain

(a) Sedatives

(b) Tranquilisers

OR

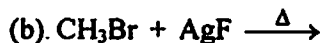
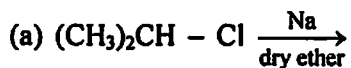
What is the difference between :

(a) Antiseptic and disinfectant

(b) Analgesic and anti-histamine

Give an example of disinfectant and anti-histamine drug.

34. Write the formula of main products formed in the following chemical reactions : (3)



OR

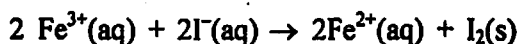
Carry out the following Name Reactions :

(a) Swart's Reaction

(b) Williamson's synthesis

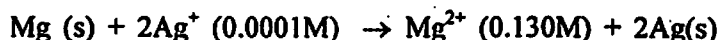
SECTION-D

35. (i) The cell in which the following reaction occurs : (5)



has $E^{\circ}_{\text{cell}} 0.236\text{V}$ at 298K. Calculate the standard Gibb's energy and the equilibrium constant of the reaction.

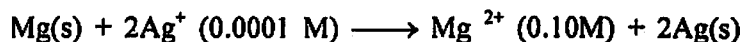
(ii) Represent the cell in which the following reaction takes place.



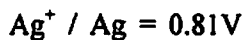
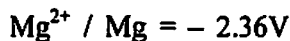
Calculate its E if E° is 3.17 V

OR

The following chemical reaction is occurring in an electrochemical cell



E° electrode values are



For this cell calculate/write :

(a) (i) E° value for $2\text{Ag}^{+} / 2\text{Ag}$

(ii) Standard cell potential E°_{cell}

(b) Cell potential E_{cell}

(c) (i) Symbolic cell representation of the above cell

(ii) Will the above cell reaction be spontaneous?

36. (A) Arrange the following in the property indicated against each set : (5)

(i) HF, HCl, HBr, HI – increasing bond dissociation enthalpy

- (ii) H_2O , H_2S , H_2Se , H_2Te —increasing acidic character
- (B) X_2 is a greenish yellow gas with pungent smell and used in purification of water. On dissolving water it gives a solution which turns blue litmus red. When it is passed through NaBr solution Br_2 is obtained.
- (i) Identify the gas.
- (ii) What are the products obtained when X_2 reacts with ammonia? Give chemical equations.

OR

Concentrated sulphuric acid is added to the following by heating each of them in the test-tube.

Cane sugar, sodium bromide, copper turnings, sulphur powder and potassium chloride.

Identify in which of the above test tube the following change will be observed. Support your answer with the help of a chemical equation.

- (a) formation of black substance
- (b) evolution of brown gas
- (c) evolution of colourless gas
- (d) formation of brown substance which on dilution becomes blue
- (e) disappearance of yellow powder along with evolution of colourless gas.

37. Explain the following : (5)

- (a) Acetaldehyde, CH_3CHO , does not undergo Cannizzaro's reaction but trichloroacetaldehyde, Cl_3CHO does.
- (b) Benzaldehyde gives a positive test with Tollen's reagent but not with Fehling's or Benedict solution.
- (c) Aldehydes undergo oxidation more readily than ketones.

OR

A compound (X) of molecular $\text{C}_4\text{H}_8\text{Cl}_2$ yields a compound (Y) on hydrolysis. (Y) gives red precipitate with Fehling's solution. Oxidation of (Y) gives (Z) which when reacts with LiAlH_4 forms 2-methylpropan-1-ol. What are (X), (Y) and (Z). Write the relevant equations.

BEST OF LUCK!