CLASS XII
GUESS PAPER
CHEMISTRY

TIME : 3 HRS **MM 70**

INSTRUCTIONS :

1. Question paper comprises four sections - A , B , C and D

2. There are 37 questions in the question paper.All questions are compulsory.

3. Section –A : Q.No 1 to 20 are very short answer type questions carrying 1 mark each.

Anser these questions in one word or in one sentence.

4. Section –B : Q.No 21 to 27 are short answer type questions carrying 2 marks each.

5. Section –C : Q.No. 28 to 34 are long answer type-I questions carrying 3 marks each.

6. Section –D : Q.No. 35 to 37 are long answer type-II questions carrying 5 marks each.

7.There is no overall choice. However, internal choices are given.

SECTION A

Passage based questions :

There is a growing view that some recent mutations in the corona virus might be helping it

not only spread faster but also reinfect people who have had Covid-19.Frequent changes of protein spikes cause a concern in UK , Brazil etc. Once the virus interacts with the host cell,excessive structural rearrangement of the S protein occurs.The spikes are coated with polysaccharides molecules to camouflage them,evading surveillance of the host immune system.

1. What are called polysaccharides ? Name one of it. [1]

2.How proteins are formed ? [1]

3. What are the main basic units of protein? Name them. [1]

4. Distinguish between fibrous and globular protein. [1]

5. How many types of forces are present in different structures of protein? Name them.[1]

Questions 6 to 10 are one word or very short answer :

6. Write the electronic configuration of Platinum (atomic number 78). [1]

7. Which of the following species has the highest stability ? [1]

Cr^{+3} , Fe^{+3} , Mn^{+3}

8. Which element in the first transition series highest melting point ? [1]

9. What is the reason for the similar atomic radii of 4d and 5d elements? [1]

10. Which element in the first transition series has only +3 oxidation sate? [1]

Questions 11 to 15 are multiple choice type :

11. Which of the following is not a favourable condition for physical adsorption? [1]

a) High pressure , b) negative ΔH , c) Higher critical temperature of adsorbate,

d) High temperature.

12. Which of the following electrolytes will have maximum coagulating value for AgI/Ag^+ sol? a) Na_2S , b) Na_3PO_4 , c) Na_2SO_4 , d) NaCl [1]

13. Method by which lyophobic sol can be protected. [1]

a) By addition of oppositely charged sol.

b) By addition of electrolyte ,

c) By addition of lyophilic sol,

d) By boiling.

14.Which of the following is a network solid ? [1]

a) Solid SO_2 ,

b) Iodine ,

c) Diamond ,

d) Ice(Water).

15.Which of the following ions show higher spin only magnetic moment value? [1]

a) Ti^{+3} , b) Mn^{2+} , c) Fe^{+2} , d) Co^{+3}

Questions 16 to 20 :

a) Both Assertion and Reason are correct statements, and Reason is the correct explanation of the Assertion.

b) Both Assertion and Reason are correct statement, but Reason is not the correct explanation of the Assertion.

c) Assertion is correct but Reason is not correct statement.

d) Assertion is incorrect statement but Reason is correct statement.

16.Assertion : The α-hydrogen atom in carbonyl compounds are less acidic. [1]

Reason : The anion formed after the loss of α-hydrogen atom is resonance stabilized.

17.Assertion : The thermal stability of hydrides of oxygen family decreases with molecular weight. [1]

Reason: The decomposition of M—H bond requires lesser energy in O—H than S---H.

18.Assertion : Aliphatic amines are basic in aquesous medium. [1]

Reason : Inductive effect, hydrogen bonding and solvation and steric factor are primarily responsible for basicity.

19. Assertion : In monohaloarenes , further electrophilic substitution occurs at ortho and para positions. [1]

Reason : Halogen is a ring deactivator.

20. Assertion : Ozone is thermodynamically less stable than Oxygen [1]

Reason : Formation of Ozone is an endothermic process.

SECTION B

21.a) What happens when some raisins are kept in concentrated solution of sodium chloride?

b) The dissolution of ammonium chloride in water is endothermic process.What do you conclude about the deviation from ideal solution? [2]

22. Balance the chemical equations : [2]

a) $XeF_4 + H_2O \longrightarrow$

b) $XeF_4 + Pt \longrightarrow$

23 a) Crystal field stabilization energy of tetrahedral field is nearly fifty percent of the energy of octahedral field. Justify this statement. [[2]

b) In the spectrochemical series oxalate ions are treated as weak-field ligands though it can form chelate rings. Draw a conclusion from this statement.

24. a) What is meant by anomeric carbon with an example. [2]

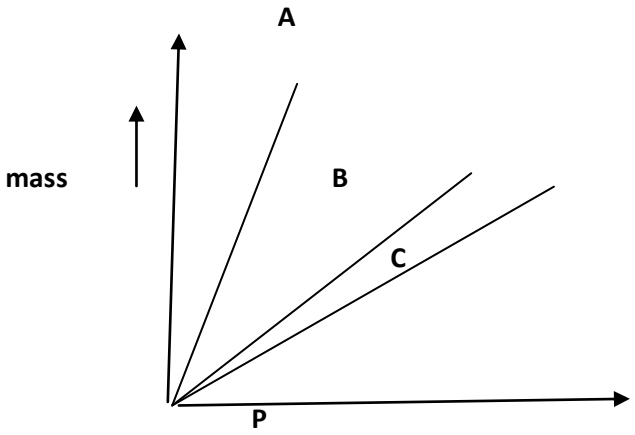
b) Name the disaccharide which is not a reducing sugar.

OR

i) What is menat by D sugar ? Is there any relation to d (dextro) or l (leavo) sugar?[2]

ii) How many types of RNA are found ? Name them.

25. Three gases A , B and C are dissolved in solvent at different pressures. Identify the gases with increasing order of solubility from the following graph. [2]



26. a) Calculate the pH of the half cell: [2]

Pt , H_2 (1 atm)| H_2SO_4 , given E = -- 0.3 V

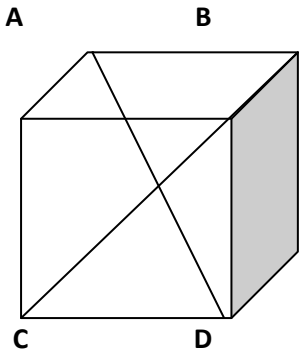
b) What are meant by $E_{cell} = 0$ and $E^{O}_{cell} == 0$?

27. Write the mechanism of the following reaction : [2]

$$CH_3CH_2OH \xrightarrow{\text{Conc } H_2SO_4 ;\ 140^0C} CH_3CH_2—O\text{ --- }CH_2CH_3$$

SECTION C

28. a) How many tetrahedral voids are found in the following diagram given only ? [3]



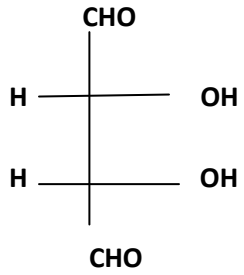
b) CsCl has bcc arrangement and its unit cell edge length is 400 pm. Calculate the inter ionic distance in CsCl.

29. a) What is meant by limiting molar conductivity ? [3]

b) The conductivity of a saturated solution of AgCl at 288 k is found to be 1.382 x 10^{-6}S/cm. Find its solubility . Given that the ionic conductances of Ag^{+} and Cl^{---} at infinite dilution are 61.9 S cm^2 mol^{-1} and 76.3 S cm^2 mol^{-1} respectively.

30 .a) Write any two characteristics of enantiomers . [3]

b) Narrate the following compound is optically active or not .

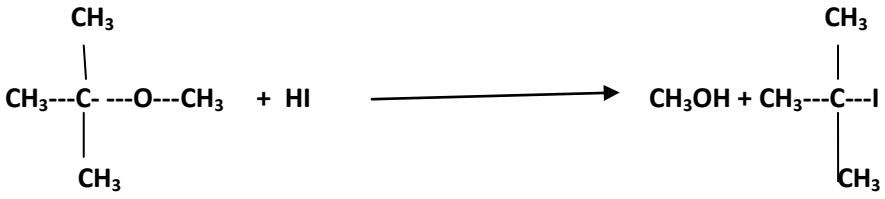


c) Write a short note on Finkelstein reaction.

31. a) Compare the boiling points of 1^0 ,2^0 and 3^0 alcohols of same number of carbon atoms. [3]

b) Only ethyl alcohol, among 1^0 alcohols responds to Iodoform test. Explain.

c) Consider the following reaction :



But, the following products are not formed .Suggest a reason.

CH_3I and $(CH_3)_3$ COH.

32.a) Write the structures of different isomeric amines corresponding to the molecular formula , $C_4H_{11}N$. [3]

b) Write short notes on i) Ammonolysis of alkyl halides, ii) Hoffman bromamide reduction.

OR

Explain the following : [3]

i) Aromatic amines cannot be prepared by Gabriel Pthalimide Synthesis.

ii) Acids are more reactive than amides.

iii) In the reaction with secondary amine with benzenesulphonamide, the product formed is not soluble in alkali.

33. The $E^0_{M+2/M}$ for the first transition series is given below : [3]

	V	Cr	Mn	Fe	Co	Ni	Cu
$E^0_{M+2/M\ (V)}$	--1.18	--0.91	--1.18	--0.44	--0.28	--0.25	+ 0.34

Account for the following :

i) E^0 value for Mn is highly negative.

ii) E^0 value for Ni is less negative.

iii) E^0 value for Cu is positive.

34. For the reaction $2\ NO + Cl_2 \longrightarrow 2\ NOCl$, it is found that doubling the concentration of both reactants increase the rate by a factor 8, but doubling the Cl_2 concentration alone, only doubles the rate. What is the order of reaction with respect to NO and Cl_2. [3]

SECTION D

35. a) Write short notes on : [5]

i) Stephen's reaction.

ii) HVZ reaction.

b) How can aldehydes be separated from impurities ?

c) Convert : i) Propanone to propanol ,

ii) Methanal to ethanoic acid.

OR

i) An organic compound (A) contains 40% C, 6.7% H and rest Oxygen.It's Vapour density is 15. On reacting with a concentrated solution of KOH it gives two compounds, (B) and (C) . When (B) is oxidized ,the original compound (A) is obtained. When (C) is treated with concentrated HCl ,it gives a compound ,(D) Which reduces Fehling's and Tollen's reagent as well.It also gives effervescences with $NaHCO_3$. Write the structures of (A), (B) , (C) and (D). [5]

36. a) What are meant by positive and negative deviations from Rault's law?Give example of each type. [5]

b) A solution of urea in water has a boiling point of 100.18^0C. Calculate the freezing point of the same solution.Molal constants for water K_f and K_b are 1.86 and 0.512 respectively.

OR

i) What is the difference between osmotic pressure and reverse osmosis ? [5]

ii) Which one is dependent on temperature molality and molarity ? and why?

iii) A bottle of commercial sulphuric acid (density 1.787 gm/ml) is labeled as 86% by weight.What is the molarity of the acid ? What volume of the acid has to be used to make 1 litre of 0.2(M) H_2SO_4 ?

37.i) Name the oxide of nitrogen which is blue solid. [5]

ii) Complete the following reactions :

a) $HNO_3 + P_4O_{10}$ ⟶

b) $U + ClF_3$ ⟶

iii) Write the shapes and hybridization of the following compounds :

a) BrF_5 , b) $H_2S_2O_7$

OR

a) Account for the following : [5]

i) Se_2Cl_2 undergoes disproportionation reaction.

ii) Both H_3PO_3 and H_3PO_4 contains three hydrogen atoms, but H_3PO_3 is dibasic whereas H_3PO_4 is a tribasic acid.

b) How would you prepare chlorine on a large scale ?

c) I_2O_5 is used in the estimation of carbon monoxide.Explain.

d) Write the boiling point of hydrides of group 15 elements in the decreasing order.