New Style MODEL TEST PAPER—4

CLASS—XII (H.P.)

CHEMISTRY

Time Allowed : 3 Hours **Maximum Marks : 60**

Special Instructions : Same as in Model Test Paper—1.

1. For a galvanic cell ΔG is :

(*a*) – ve (*b*) + ve

(*c*) zero (*d*) None of these.

2. In a first order reaction, the rate constant is 0.693 hr^{-1}. The half-life of the reaction is :

(*a*) 0.693 hr (*b*) 1 hr

(*c*) 6.93 hr (*d*) 69.3 hr.

3. Molecular mass of a colloidal particle is determined by using.

(*a*) Elevation in boiling point

(*b*) Depression is freezing point

(*c*) Osmotic pressure

(*d*) None.

4. The half cell reaction of the cells used in hearing aids are : $Zn \longrightarrow Zn^{2+} + 2e$ ($E° = -0.76$ V)

$Ag_2O + H_2O + 2e \longrightarrow 2\,Ag + OH^-$ ($E° = 0.34$ V) E^0 of cell will be :

(*a*) 0.42 V (*b*) 1.1 V

(*c*) 0.84 V (*d*) 2.2 V.

5. If the first order reaction involves gaseous reactants and gaseous products, the units of its rate are :

(*a*) atm (*b*) atm sec

(*c*) atm sec^{-1} (*d*) atm^2 sec^2.

6. Haematite is an ore of

(*a*) Fe (*b*) Cu

(*c*) Al (*d*) Zn.

7. What are ferromagnetic substances ?

8. Define specific conductance and molar conductance.

9. Define F-centres.

10. What is co-ordination polyhedron ?

11. Describe primary and secondary structures of proteins.

12. How do you explain that the transition metals form complexes and coloured compounds ?

13. Why do transition metals form complexes ? What type of bonds are present in these complexes ? Give one oxidising reaction of $KMnO_4$ in acidic medium.

14. Calculate the maximum electrical work that can be obtained from the following Cell at 25°C $Zn \mid Zn^{2+}$ (1M) $\| Cu^{+2}$ (1 M) $\mid$ Cu. Given, $E°\ Zn^{+2} / Zn = -0.76$ V, $E°\ Cu^{+2} / Cu = 0.34$ V, F = 96500 coulombs.

15. How will you distinguish between ethyl chloride and chlorobenzene.

16. Distinguish between calcination and roasting.

17. Write the cis and trans isomers of $[Co(en)_2Cl_2]SO_4$.

18. What are emulsions ? What are their types ? How will you identify them ?

19. In an Arrhenius equation for certain reaction, the value of A and E_a are 4×10^{-3} sec^{-1} and 98.6 kJ mol^{-1} respectively. If the reaction is of the first order, at what temperature will its half life period be 10 minutes ?

20. (*a*) With the help of suitable diagram illustrate two types of non-ideal solutions.
(*b*) Prove that osmotic pressure is a colligative property.

21. KF has a rock salt geometry. The edge length of the unit cell is 536 pm. Calculate its density.

22. Assuming complete dissociation, calculate the expected freezing point of a solution prepared by dissolving 6.0 g of Glauber's salt ($Na_2SO_4 . 10H_2O$) in 0.1 kg of water.

23. (*a*) Explain how the colour of $K_2Cr_2O_7$ depends upon pH of the solution.
(*b*) What is the cause of lanthanide contraction ? Give one important consequence of it.

24. (*a*) Why do noble gases take part in bond formation ?
(*b*) PCl_5 is known but NCl_5 is not known. Explain.
(*c*) Out of HClO and $HClO_2$, which is stronger acid and why ?

25. Arrange the following in decreasing order of the property indicated :
(*i*) HF, HCl, HBr, HI (acidic nature)
(*ii*) H_2O, H_2S, H_2Se, H_2 Te (Boiling point)
(*iii*) NH_3, PH_3, AsH_3, SbH_3 (Basic strength).

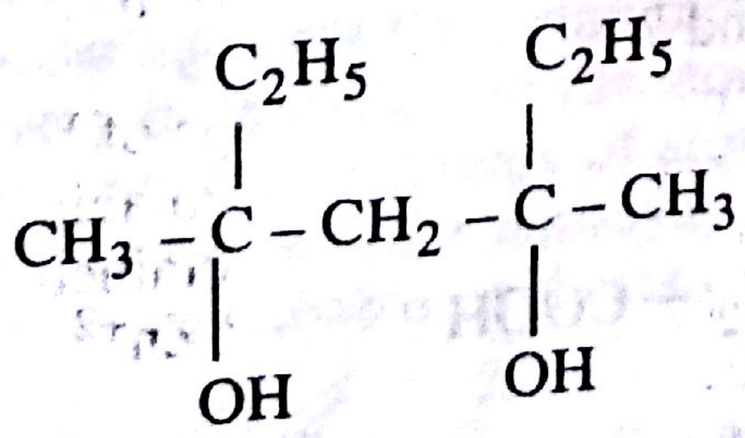
26. (*a*) Convert benzene to *m*-nitroaniline.
(*b*) What happens when :
(*i*) Methamine is treated with ethanol chloride ?
(*ii*) Acetaldoxime is treated with phosphorus pentoxide ?
(*c*) How is Gabriel's phthalimide reaction used to prepare primary amines ?

Or

(*a*) Electrophilic substitution in case of aromatic amines takes place more readily than in case of benzene. Explain.
(*b*) How is methamine prepared from methyl isocyanide ?
(*c*) Out of aniline and ethyl amine, which is more basic and why ?

27. (*a*) Why do we get abnormal molecular masses from colligative properties ? What is Van't Hoff factor ? How is it related to degree of dissociation ?
(*b*) The solubility of Ba $(OH)_2 . 8H_2O$ in water at 298 K is 5.6 per 100 g of water. What is the molarity of the hydroxide ions in saturated solution of barium hydroxide at 288 K ? (Atomic mass of Ba = 137, O = 16, H = 1)

28. (*a*) (*i*) Aldehydes are more reactive than ketones towards nucleophilic addition reaction, why ?
(*ii*) How will you distinguish between ethyl alcohol and methyl alcohol by colour test ?
(*b*) Give IUPAC names of :

(*i*)


(*ii*)