TARGET PLUS DIAGNOSTIC MOCK

Class XII (CBSE)

CHEMISTRY

(Three hours)

Paper Code
Z 402

[Time allowed: 3 hours] [Maximum Marks: 70]

General Instruction:

i) All questions are compulsory.
ii) Question **1** to **5** are *very short answer* questions and carry **1** mark each.
iii) Question **6** to **10** are *short answer* questions and carry **3** marks each.
iv) Question **11** to **22** are also *short answer* questions and carry **3** marks each.
v) Question **23** is a *value based question* and carry **4** marks.
vi) Question **24** to **26** are *long answer* questions and carry **5** marks each.
vii) Use log tables if necessary.

1. Write IUPAC name of the compound $CH_2 = CH - CH_2 - Br$.

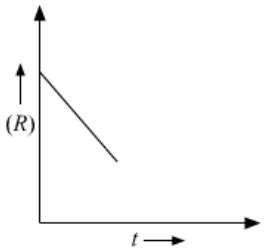
2. Define Peptization.

3. Name the method used for refining of copper metal.

4. What are thermoplastic polymers?

5. If the concentration is expressed in $mol\,L^{-1}$ and time in seconds. What are the units of the rate constants for the zero order and the second order reaction respectively?

6. For a chemical reaction $R \rightarrow P$, the variation in the concentration (R) vs time (t) plot is given as:



What is the order of the reaction?

7. **(i)** What is the ratio of number of moles of solute of a substance to the total number of moles of solute and solvent known as?

(ii) Give a term for the solutions in which the intermolecular interactions between two components is of same magnitude to that of its pure component.

8. **(i)** What is the final product of the given reaction?

$C_6H_5N_2Cl + H_3PO_2 + H_2O \rightarrow$

(ii) What is the final product of the given reaction?

$C_6H_5NH_2 + Br_2(aq.) \rightarrow$

9. What are the monomers of Bakelite?

10. **(i)** Define ambident ligand.

(ii) Define denticity of a ligand.

11. **(i)** What is the relationship between cell constant, resistance and conductivity?

(ii) The molar conductivity of 1.5 M solution of an electrolyte is found to be 138.9 S cm^2 mol^{-1}. What will be the conductivity of this solution?

12. **(i)** What is the rate determining step in acid catalyzed hydration of 2-methyl propene-1?

A. $CH_2=C(CH_3)_2+H_2O \rightarrow (CH_3)_3\text{-}C^+ + H_2O$

B. $(CH_3)_3\text{-}C^+ + H_2O \rightarrow (CH_3)_3\text{-}H_3O^+$

C. $(CH_3)_3\text{-}H_3O^+ + H_2O \rightarrow (CH_3)_3\text{-}OH + H_3O^+$

D. $CH_2=C(CH_3)_2 + H_3O^+ \rightarrow CH_2=C(CH_3)CH_2^+ + H_2O$

(ii) Alcohols are more soluble in water than the hydrocarbons of comparable molecular mass. Give reason.

(iii) Ortho-nitrophenol is more acidic than ortho-methoxyphenol. Why?

13. **(i)** Give the IUPAC name for complex $\left[Cr(NH_3)_4Cl_2\right]Cl$.

(ii) What type of isomerism is exhibited by the complex $\left[Co(en)_3\right]^{3+}$?

(iii) Why $\left[NiCl_4\right]^{2-}$ is paramagnetic but $\left[Ni(CO)_4\right]$ is diamagnetic?

14. **(i)** What are the products formed when Ethylamine reacts with chloroform in the presence of potassium hydroxide?

(ii) What is the product of hydrolysis of benzene diazonium chloride?

(iii) Which of the following products is formed when Aniline reacts with hydrochloric acid?

$C_6H_5NH_3^+Cl^-$, C_6H_5N, C_6H_5Cl, $C_6H_5N_2^+Cl^-$

15. **(i)** What is the correct IUPAC name of $[NiCl_4]^{2-}$?

(ii) Name the type of hybridization in $[NiCl_4]^{2-}$.

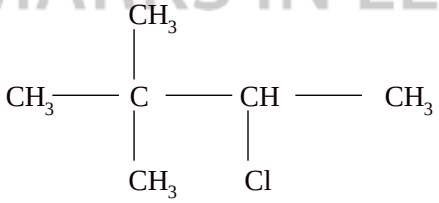
(iii) What is the shape of $[NiCl_4]^{2-}$?

16. **(i)** Give the correct expression for Raoult's law.

(ii) Explain an azeotropic mixture.

(iii) Define osmotic pressure.

17. **(i)** What is the correct IUPAC name of the given compound?



(ii) Ethyl iodide undergoes $S_N 2$ reaction faster than ethyl bromide. Why?

(iii) The $C-Cl$ bond length in chlorobenzene is shorter than the $C-Cl$ bond length in CH_3Cl. Why?

18. **(i)** What is the equation of Reimer-Tiemann Reaction?

(ii) Give the equation involved in Williamson synthesis.

(iii) Which among the following is the correct mechanism of the following reaction?

$$CH_3CH_2OH \xrightarrow[H_2SO_4]{443k} CH_2 = CH_2 + H_2O$$

19. **(i)** How will you define a peptide bond?

(ii) What is the primary structure of proteins?

(iii) What is denaturation of proteins?

20. **(i)** Name an ore of zinc metal.

(ii) What is the basis of principle of electrolytic refining of metals?

(iii) What is the difference between mineral and ore?

21. **(i)** What is Dialysis?

(ii) Define electrophoresis.

(iii) Which type of solution shows Tyndall effect?

22. **(i)** What is the basicity of H_3PO_4?

(ii) Explain the structure of PCl_5.

(iii) What is the structure of I_2O_5?

23. **Neeraj went to the departmental store to purchase groceries. On one of the shelves he noticed sugar free tablets. He decided to buy them for his grandfather who was a diabetic. There were three types of sugar free tablets. He decided to buy sucrolose which was good for his grandfather's health.**

(i) Which of the following is an another sugar free tablet which he did not purchase?

Aspirin, Aspartame, Paracetamol, Shellcal

(ii) Was it right to purchase such medicine without doctor's prescription?

(iii) Which among the following qualities of Neeraj are reflected from the above example?

A. Ignorance and lack of awareness
B. Carelessness and irresponsibility
C. Social awareness and concern
D. Good conduct and patriotism

(iv) Which of the following is a food preservative?

Alfalfa, Ascorbic acid, Sodium benzoate, Aluminum ammonium sulphate

24 **(i)** Copper crystallizes with face-centered cubic unit cell. If the radius of copper atom is 127.8 pm, what is the density of copper metal?

(given that the mass of copper is 63.55, $N_A = 6.022 \times 10^{23}$)

(ii) Schottky defect lowers the density of a solid. Give reason.

(iii) Conductivity of silicon increases on doping with phosphorus. Why?

25. **(i)** The first member of lanthanide series-Ce is mostly found in $+3$ oxidation state and in solutions as $+2$ or $+4$ oxidation states. Why?

(ii) $E^{\circ}_{M^{2+}/M} = 0.34$ only for copper is positive in the first transition series. Why?

(iii) The metallic radii of the third series of transition metals are nearly the same as those of corresponding second series. Give reason.

(iv) Complete the given chemical equation.

$$MnO_4^- + S_2O_3 + H_2O \rightarrow$$

(v) Complete the given chemical equation.

$$Cr_2O_7^{-2} + Fe^{2+} + H^+ \rightarrow$$

26. **(i)** Name the reagent needed for converting ethanal into ethane.

(ii) Write the reagent used for converting ethanal into $3-$Hydroxybutanal.

(iii) Name the reagent used for converting ethanal into ethanol.

(iv) What is the IUPAC name of $CH_3CH_2CH{=}CH\text{-}CHO$?

(v) What is the structure of $4-$chloro$-$pentane-2one?