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CHEMISTRY XII (2017-18)

1. In terms of band theory, what is the difference
(i) between a conductor and an insulator
(ii) between a conductor
2. Conductivity of silicon increases on doping it with phosphorus. Why?
3. Express the relationship between atomic radius (r) and the edge length (a) in the fcc unit cell.
4. List the four factors on which the colligative properties of a solution depend.
5. Non-ideal solutions exhibit either positive or negative deviation from Raoult's law. What are these deviations and how are they caused?
6. Write the reaction when glucose is heated with excess of HI
7. Give one structural difference between amylose and amylopectin.
8. Complete and balance the following reactions.
(i) $\text{Cr}_2\text{O}_7^{2-} + \text{Fe}^{2+} + \text{H}^+ \rightarrow$
(ii) $\text{MnO}_4^- + \text{Sn}^{2+} + \text{H}^+ \rightarrow$
9. What is meant by homogeneous and heterogeneous catalysis? Give one reaction for each type of catalysis.
10. Alkyl halides have lower boiling points than

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11. Give chemical tests to distinguish between:-
(i) Methanol and ethanol
(ii) Phenol and benzyl alcohol.
12. Define the following by giving an example of each.
(i) Antiseptics (ii) Infertility drugs.
13. Define the term 'copolymerisation' giving an example.
14. Give a compound of Xe which is isostructural with I_3^- .
15. What are primary cells? Illustrate with the help of example.
16. How will you convert ethanol into the following compounds? Give the chemical equation involved:
(i) CH_3-CH_3 (ii) $CH_3-\overset{OH}{CH}-CH_2-\overset{O}{\parallel}C-H$.
17. Identify the monomers in the following polymer
 $-(CH_2=CH=CH-CH_2-\underset{\text{C}_6\text{H}_5}{CH}-CH_2)_n-$
18. Write the zwitter ion of glycine
19. Where does water present in egg go after boiling?
20. The activation energy of a reaction is zero. Will the rate constant depend upon temperature? Explain

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21. How can the following conversions be carried out?

(i) Propene to propan-1-ol

(ii) Ethanol to propanenitrile.

22. Cr^{2+} is reducing in nature while with the same d-orbital configuration (d^4) Mn^{3+} is an oxidising agent.

23. Actinoids exhibit greater range of oxidation states than lanthanoids. State reason.

24. Write one similarity and one difference between the chemistry of both lanthanoids and that of actinoids.

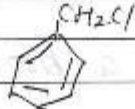
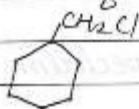
25. Why E° values for Mn, Ni and Zn are more negative than expected?

26. Why first ionisation enthalpy of Cr is lower than that of Zn?

27. Draw all the isomers (geometrical and optical) of :- (i) $[\text{CoCl}_2(\text{en})_2]^+$ (ii) $[\text{Co}(\text{NH}_3)\text{Cl}(\text{en})_2]^{2+}$

28. Haloarenes are less reactive than haloalkenes. Explain.

29. Which of the following compounds would undergo $\text{S}_{\text{N}}1$ reaction faster and why.



31. Predict the major product of acid catalysed dehydration of (i) 1-methylcyclohexanol
(ii) butan-1-ol.
32. Write the equations involved in the following reactions.
(i) Reimer-Tiemann reaction
(ii) Kolbe's reaction
33. Write the role of the following:
(i) Co in the purification of nickel.
(ii) Graphite rod in the electro metallurgy of aluminium.
34. Which method is used for refining Zr & Ti? Explain with equation.
35. Describe the role of the following:
(i) NaCN in froth floatation process.
36. Why halogens are coloured?
37. Draw the structure of following molecule
 NF_3 , $H_2S_2O_8$, H_3PO_3 .
38. Draw figure to show the splitting of d-orbitals in octahedral crystal.
39. Define the following terms.
(a) Invert sugar. (b) Vitamins (c) Nucleoside
40. What is meant by a broad spectrum antibiotic?

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42. What is an adsorption isotherm? Describe Freundlich adsorption isotherm.
43. Why can't the molecularity of any reaction be equal to zero?
44. Can you store copper sulphate solutions in a zinc pot?
45. Explain why. ~~Fluorine~~ fluorine forms only one oxoacid. HOF.
46. How is SO_2 an air pollutant?
47. Noble gases have very low boiling points why?
48. PCl_5 is more covalent than PCl_3 why?
49. Complete the following
 $\text{XeF}_2 + \text{PF}_5$
50. Nitrogen does not form pentahalide why?