Test Series : [Chemistry –XII]   CH-:   Revision chemistry   {set—A}

General Instructions :

1. All questions are compulsory.
2. Question No. 1-8 are very short answer questions and carry 1 mark each.
3. Question No. 9-18 are short answer questions and carry 2 marks each.
4. Question No. 19-27 are also short answer questions and carry 3 marks each.
5. Question No. 28-30 are long answer questions and carry 5 marks each.
6. Use log tables if necessary, use of calculators is not allowed.

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1. Give the IUPAC name of the following compound $(CH_3)_3C\ CH_2\ COOH$
2. What is no. of atoms per unit cell in a body centred cubic structure?
3. What happens when D Glucose is treated with HNO_3
4. A hydroxide ion is a weaker base than an alkoxide ion. Justify.
5. Define denaturation of proteins .
6. Write the formula for the coordination compound Tetra ammine diaqua cobalt (III) chloride.
7. What may be added to soap to improve its antiseptic properties.
8. Write the reaction involved in the extraction of silver after the silver ore has been leached with NaCN.
9. A reaction is second order with respect to a reactant. How is the rate of the reaction affected if the concentration of the reactant is   i) doubled   ii) reduced to ½
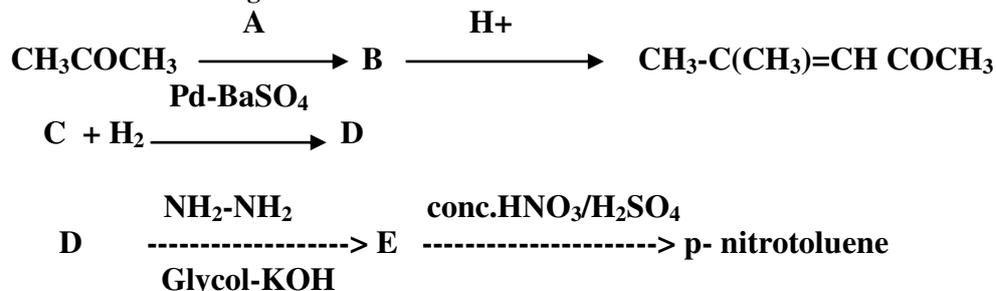   OR,
   A first order reaction is 15% complete in 20 minutes. How long it take to be 60% complete.
10. Describe the method of refining of Zirconium.
11. Arrange the fallowing set of compounds in order of increasing boiling points:2
    (a) pentan-1-ol, butane-1-ol, butane-2-ol, ethanol, propan-1-ol.
    (b) pentan1-ol, butane, pentanal, ethoxyethane
12. Do the following conversions.
    (i) Benzyl alcohol to 2- phenyl ethanoic Acid   (ii) Ethyl Chloride to propanoic Acid
13. Calculate the packing efficiency in bcc structure.
14. Determine the type of cubic lattice to which a given crystal belongs if it has edge length of 290 pm and density is 7.80 g cm^{-3}
    (molecular mass= 56 g mol-1).
15. How will you distinguish between the following pairs of compounds
    (i) C_2H_5Br and C_2H_5Cl (ii) Phenol and chlorobenzene
16. Write the following name reaction.
    (i) Sandmayer reaction
    (ii) Gabriel's Phthalimide synthesis.
17. (a) - (-NH-CHR-CO -)$_n$, a homopolymer or a copolymer?
    (b) defined the thermoplastics and thermosetting polymers.
18. Give reasons for the following :-
    (i) Ethylamine is soluble in water whereas. Aniline is insoluble in water.
    (ii) Primary amines have higher boiling points than tertiary amines.
19. Give the reason for the following?
    (i) Sulpha drugs work like antibiotic but they are not antibiotics.
    (ii) Aspirin help in the prevention of heart attack.
    (iii) Soaps are biodegradable where as detergent are non biodegradable.
                            Or
    Explain the role of each of the following in the extraction of metals from their ores :

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   (i) CO in the extraction of nickel
   (ii) Zinc in the extraction of silver
   (iii) Silica in the extraction of copper.

20. Identify A to E in the following reactions.

$$CH_3COCH_3 \xrightarrow{A} B \xrightarrow{H+} CH_3\text{-}C(CH_3)=CH\ COCH_3$$

$$C + H_2 \xrightarrow{Pd\text{-}BaSO_4} D$$

$$D \xrightarrow[\text{Glycol-KOH}]{NH_2\text{-}NH_2} E \xrightarrow{conc.HNO_3/H_2SO_4} p\text{- nitrotoluene}$$

21. (a) Copper can be extracted by hydro metallurgy but not zinc. Explain.
    (b) What is the role of cryolite in the metallurgy of aluminum?
                        OR
    (a) What is the role of depressant in froth floatation process.
    (b) Describe a method or refining of nickel.
22. i) Give mechanism for addition of HCN on carbonyl group.
    ii) Draw the structure of semicarbazone of heaxan-3-one.
    iii) What happens when sodium benzoate is heated with soda lime
23. (a) Name one substance which can act as both
        (i) Analgesis and antipyretic (ii) Antiseptic and disinfectant
    (b) Write the composition of Dettol.
24. Write the mechanism for preparation of diethyl ether from ethanol.
25. Explain the terms with suitable examples
     i) Cationic detergent   ii) Biodegradable detergent   iii) Analgesic
26. (i)   Differentiate between Keratin and insulin.
    (ii) Give one example each for essential and non essential amino acids.
    (iii) Give one reaction of D Glucose which can not be explained by its open chain structure.
27. (a) Write the structures of the monomers of Dacron.
    (b) Give one example of a synthetic rubber.
     (c) Arrange the following polymers in the increasing order of tensile strength :- Nylon 6, Buna – S, Polythene.
28. Account for the following.
    (a) Silver is a transition metal but zinc is not.
    (b) the transition metals form a large number of complex compounds.
    (c) MnO is basic white Mn_2O_7 is acidic in nature.
    (d) Actinides show more number of oxidation states than lanthanides.
    (e) Transition metals have high enthalpies of atomization.
                    OR
    (I) Write chemical equations for the following reactions.
       (a) Disproportionation of manganese (VI) in acidic solution.
       (b) Acidification of potassium chromate solutions.

       (c) Oxidation of nitrite ion by MnO_4^- in acidic medium.
    (II) (i) Which is stronger reducing agent Cr^{2+} or Fe^{2+} and why.
        (ii) Explain why Cu+ ion is not stable in aqueous solution.
29. (a) State Henry's law and mention its two applications.
    (b) Which of the following has higher boiling point and why.
        0.1M NaCl or 0.1 M Glucose
    (c) On dissolving 19.5 g of CH_2FCOOH in 500 g of water a depression of 10^oC in freezing point of water is observed.
       Calculate the Vant Hoff factor. Given Kf = 1.86 K Kg mol-1.
                        OR

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(a) State Raoult's law for the solutions containing nonvolatile solute. Give its mathematical expression also.

(b) A solution containing 0.5 g of KCl dissolved in 100 gm of water freezes at -0.240C. Calculate the degree of dissociation of the salt (K for water = 1.860C).

30. (a) Describe the following reactions.

(i) Canni zaro's reaction.   (ii) Cross aldol condensation.

(b) How will you convert

(i) Methyl cyanide to acetamide   (ii) Acetaldehyde to but 2 enal.   (iii) Ethyl benzene to benzoic acid .

OR

(a) A compound a on oxidation given B ($C_2H_4O_2$). A reacts with Dil NaOH and on subsequent heating forms C. C on catalytic hydrogenation gives D. Identify A, B, C and D and write down the reaction involved.

(b) Write short notes on .

(i) Clemmenson reaction.

(ii) Hell – Volhard – Zelinsky reaction.

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