

+2 BLUE PRINT WISE QUESTIN PAPER 10 MARK -CHEMISTRY

64 (a) *Periodic classifications*

1. Explain Pauling method to determine ionic radii
2. Explain the variation of I. E along the group and period
3. Explain the various factors that affect electron affinity
4. Describe about the factors governing ionization energy
5. Write about the Pauling's scale of determination of electro negativity
6. Write the application of electro negativity
7. Mention the uses of silicones

(b) *P-block elements*

8. How to extracted lead from it is chief ore.
9. How fluorine is isolated from their fluorides (or) Explain Denny's method
10. Describe in how noble gases are isolated from air (or) explain Ramsay – Raleigh's method.
11. Describe in how noble gases are isolated from air by Dewar's process
12. Explain anomalous nature of fluorine
13. Prove that H_3PO_3 is di protic and H_3PO_4 is tri protic

65. (a) *Co - Ordination compound And Bio-Co-Ordination compoll*

1. Explain isomerism with suitable example.
2. Explain the postulates of Werner's theory
3. Explain postulates of valence bond theory
4. Mention the function of Hemoglobin in natural process.
5. How is chlorophyll important in environ mental chemistry? Mention it's functions
6. In what way $[FeF_6]^{4-}$ differ from $[Fe(CN)_6]^{4-}$?
7. For the complexes is given below mention
 - i) Name
 - (ii) Central metal ion
 - iii) ligand
 - iv) Co - ordination number
 - v) Geometry
- a) $K_4 [Fe(CN)_6]$ b) $[Fe(CN)_6]$ c) $[Fe F_6]$
d) $[Ni(CN)_4]^{2-}$ e) $[NiCl_4]^{2-}$
8. $[Ni(CN)_4]^{2-}$ Dia magnetic whereas $[Ni Cl_4]^{2-}$ paramagnetic why?
9. Mention the tupe of hybridization any magnetic property of following complexes using VB theory
 - a) $[Fe F_6]^{4-}$
 - b) $[Fe(CN)_6]^{4-}$
10. Write a note on
 - i) Neutral ligand
 - ii) Chelates
 - iii) Co - Ordination sphere

(b) *Nuclear Chemistry*

1. Distinguish between nuclear fission and fusion
2. Distinguish between chemical reaction nuclear reaction
3. Write a note on radio carbon dating
4. Explain about the nuclear fusion reaction takes place in sun and star
5. Explain hydrogen bomb
6. Explain the uses of radio isotopes in medicinal

66. (a) *Solid State*

1. Write Bragg's equation and significance
2. Explain Schottky and Frankel defect
3. What are super conductor and mention its uses.
4. Explain Bragg's spectro meter
5. Explain the nature of glass
6. Explain AB and AB₂ type crystal
7. Write the characteristic of ionic crystal

(b) *Surface Chemistry*

1. Distinguish between physical adsorption and chemical adsorption
2. Discuss the factors affecting of adsorption
3. Write briefly intermediate compound theory
4. Write briefly about adsorption theory
5. Write the general character of catalytic reaction
6. Write briefly about the preparation of colloids by dispersion method
7. Write briefly about the preparation of colloids by condensation method (or) Chemical method
8. Explain about electrophoresis
9. Write application of colloids
10. Write a note on emulsion
11. Write a note on
 - i) Dialysis
 - ii) Electro dialysis
 - iii) Ultra filtration
12. Write a note on
 - i) Tyndall effect
 - ii) Brownian movement
 - iii) Helmholtz double layer

67 (a) *Electro Chemistry - I*

1. Write an account of the Arrhenius theory of electrolytic dissociation
2. Write about the evidence of Arrhenius theory of electrolytic dissociation
3. Explain Ostwald's dilution law.
4. Explain buffer action with an example
5. Derive Henderson's equation
6. Write a note a quinoid theory of indicator

(b) *Electro chemistry - II*

1. Explain the reaction taking place in Daniel cell with diagram
2. Write a note on IUPAC convention of representation of a cell
3. Write an account on cell Terminology
4. How emf of a cell is determined
5. Derive Nernst equation
6. Explain SHE constructed?
7. How is emf of a half cell determined

COMPULSORY PROBLEM QUESTIONS BANK **70(A) HYDROXY DERIVATIVES**

PTA BOOK EXERCISE PROBLEMS

1. An Organic compound 'A' has the formula C_2H_6O . It liberates hydrogen with metallic sodium. 'A' on oxidation with acidified dichromate gives 'B' (C_2H_4O). 'B' undergoes iodoform test 'B' on further oxidation gives 'C' ($C_2H_4O_2$). 'C' gives effervescence with sodium bicarbonate solution. Identify A, B and C explain the reactions.
1. An Organic compound (A) (C_7H_8O) on oxidation with $Pb(NO_3)_2$ gives 'B' (C_7H_6O) 'B' has a bitter almond smell. 'A' when reduced with H_2/P gives the hydrocarbon 'C' what are A, B and C? Explain the reactions.
2. An Organic compound (A) (C_7H_8O) on oxidation with $Pb(NO_3)_2$ gives 'B' (C_7H_6O) 'B' has a bitter almond smell. 'A' when reduced with H_2/P gives the hydrocarbon 'C' what are A, B and C? Explain the reactions.
3. An Organic compound 'A' (C_6H_6O) gives violet colour with neutral $FeCl_3$ solution. When distilled with Zinc dust it gives the hydrocarbon 'B', 'A' with phthalic anhydride in the presence of $con.H_2SO_4$ gives 'C' ($C_{20}H_{14}O_4$) an indicator. What are A, B and C? Explain the reactions.
4. An aromatic hydrocarbon 'A' (C_9H_{12}) is obtained from benzene and propylene in the presence of anhydrous $AlCl_3$ 'A' on air oxidation gives 'B' ($C_9H_{12}O_2$) 'B' on acidification gives 'C' (C_6H_6O) and 'D' (C_3H_6O) and 'C' gives violet color with neutral $FeCl_3$ solution 'D' undergoes iodoform test. Identify A, B, C and D explain the reactions.
5. An organic compound 'A' (C_6H_6O) is a weak acid with NH_3 in the presence of anhydrous $ZnCl_2$ 'A' gives 'B' (C_6H_7N) 'A' with dimethyl sulphate gives 'C' (C_7H_8O). What are A, B and C? Explain the reaction?
6. An organic compounds 'A' ($C_2H_6O_2$) with PI_3 gives an alkene 'B'. 'A' with cone phosphoric acid gives a linear molecule 'C'. 'A' with $cons H_2SO_4$ gives a cyclic compound 'D'. What are A, B and C? Explain the reaction?
7. An organic compound 'A' $C_4H_{10}O$ liberates hydrogen with sodium. When heated with copper at 573K it gives 'B' (C_4H_8). 'A' with PCl_5 gives 'C'. What are A, B and C? Explain the reaction? An organic compound (A) of molecular formula C_3H_8O gives turbidity within 5-10 min on reaction with anhydrous $ZnCl_2/HCl$. Compound
8. on treatment with sodium hypochlorite gives a carbonyl compound (B) which on further chlorination gives compound (C) of molecular formula $C_3H_3OCl_3$. Identify (A), (B) and (c)

- 9..An organic compound (A) of molecular formula C_2H_6O on treatment with PCl_5 gives compound (B). Compound (B) reacts with KCN to give a compound (C) of molecular formula C_3H_5N which undergoes acid hydrolysis to give compound (D) which on treatment with soda lime gives a hydrocarbon. Identify (A), (B), (C) and (D) and explain the reactions. **[J-06]**
9. An organic compound A of molecular formula C_6H_6O gives violet colouration with neutral $FeCl_3$. Compound A on treatment with metallic Na gives compound B. compound B on treatment with CO_2 at 400K under pressure gives C. This product on acidification gives compound D ($C_7H_6O_3$) which is used in medicine. Identify A, B, C and D and explain the reactions. **[Oct-06]**
11. An organic compound A of molecular formula C_3H_6O on reduction with $LiAlH_4$ gives B. Compound B gives blue colour in Victor Meyer's test and also forms a chloride C with $SOCl_2$. The chloride on treatment with alcoholic KOH gives D. Identify A, B, C and D and explain the reactions.
10. An organic compound (A) C_3H_8O answers Lucas test-within 5-10 minutes and on oxidation forms B(C_3H_6O). This on further oxidation forms C($C_2H_4O_2$) which gives effervescence with $Na_2CO_3 / NaHCO_3$. B also undergoes Iodoform reaction. Identify A, B and C. Explain the conversion of A to B and C. **[J-07, J-09]**
11. An organic compound (A) of molecular formula C_6H_6O gives violet colour with neutral $FeCl_3$. (A) gives maximum of two isomers (B) and (C). when an alkaline solution of (A) is refluxed with CCl_4 . (A) also reacts with $C_6H_5N_2Cl$ to give the compound (D) which is red orange dye. Identify (A), (B), (C) and (D). Explain with suitable chemical reactions. **[S-07]**
12. Compound A with molecular formula C_3H_6 is obtained from petroleum. When A is treated with chlorine at 773K compound B of molecular formula C_3H_5Cl is obtained. When B is treated with Na_2CO_3 solution at 773K/12 atm. it gives the compound C with molecular formula C_3H_6O , C on treatment with $HOCl$ followed by hydrolysis $NaOH$ gives D having molecular formula $C_3H_8O_3$. find A, B, C and D. Explain the reaction. **[M-08]**
13. Compound A of molecular formula C_7H_8 is treated with chlorine and then with $NaOH$ to get compound B of molecular formula C_7H_8O . B on oxidation by acidified $K_2Cr_2O_7$ gives compound C of molecular formula C_7H_6O . compound C on treatment with 50% caustic soda gives the compound B and also D. Find A, B, C and D. Explain the reaction. **[J-08]**

14. An organic compound (A) C_7H_8O liberates hydrogen with metal sodium. (A) on treatment with acidic potassium dichromate gives (B) (C_7H_6O). Compound (B) when treated with conc. N_2H_4 & NaOH/KOH gives (A). (B) with acetic anhydride in the presence of sodium acetate gives (C) of molecular formula ($C_9H_8O_2$). Identify (A), (B) and (C). Explain the reactions involved. **[S-08]**
15. Two isomers (A) and (B) have the same molecular formula $C_4H_{10}O$. (A) when heated with copper at 573K gives an alkene (C) of molecular formula C_4H_8 . (B) on heating with copper at 573K gives (D) of molecular formula C_4H_8O which does not reduce Tollen's reagent but answers iodoform test. Identify (A), (B), (C) and (D) and explain the reactions. **[M-09]**
16. Compound (A) of molecular formula C_3H_8O liberates hydrogen with sodium metal. With p/I_2 gives (B). Compound (B) on treatment with silver nitrite gives (C) which gives blue colour with nitrous acid. Identify (A), (B), (C) and explain the reaction. **[S-09]**
17. An organic compound X (C_6H_6O) gives maximum of two isomers Y and Z when an alkaline solution of X is refluxed with chloroform at 333K. Identify the compounds X, Y and Z and explain with proper chemical reactions. **[M.Q.Paper-I]**
18. An aromatic compound 'A' with molecular formula C_7H_8O gives hydrogen with metallic Na. 'A' on oxidation gives B C_7H_6O which does not reduce fehling's solution. When heat with concentrated NaOH 'B' gives two compounds 'A' and 'C' with molecular formula $C_7H_6O_2$. Identify A, B and C. Explain the reactions. **[M.Q.Paper-II]**
19. A simplest alkene 'A' with Bayer's reagent gives 'B'. With PI_3 B gives Back 'A' B with Con. Phosphoric acid gives a linear molecule 'C'. Where as with Con. H_2SO_4 gives a cyclic molecule 'D'. What are A, B, C and D. Explain the reactions. **[M.Q.Paper-III]** Two organic compound A and B have the same molecular formula C_2H_6O . A react with metallic sodium to give hydrogen where 'B' does not. A on strong oxidation gives C. 'C' gives effervescence with $NaHCO_3$. Identify A, B and C. explain the reactions. **[M.Q.Paper-IV]**
20. An aromatic compound 'A' has the molecular formula C_2H_6O . 'A' when heated with Al_2O_3 at 623K gives 'B' C_2H_4 . 'B' when treated with alkaline $Kmno_4$ gives 'C' ($C_2H_6O_2$). What are alkaline gives 'C' ($C_2H_6O_2$). What are A, B and C. Explain the reactions. **[M.Q.Paper-V, Mar-2011].**

70. (B) d - BLOCK ELEMENTS

PTA EXERCISE PROBLEM

1. Compound (A) also known as Blue vitriol can be prepared dissolving cupric oxide in dil H_2SO_4 . 'A' on heating to 230°C gives compound 'B' which is white in color. 'A' reacts with excess of NH_4OH and gives C which is complex salt. 'B' also reacts with H_2S and gives compound 'D' which is black in color. Find out A, B, C and D. Explain the reaction.
2. Compound 'A' is a powerful oxidizing agent and also it is a red orange crystal which melts at 396°C . 'A' reacts with chloride salt and conc H_2SO_4 to give 'B' which is reddish brown in colour. 'A' also reacts with an alkali to give 'C' which is yellow in colour. Find out 'A', 'B' and 'C'. Explain the reaction.
3. An Element 'A' is obtained from the telluride Ore and is unaffected by dry (or) moist air. 'A' reacts with aqua regia to give 'B' and 'C'. 'A' also reacts with Cl_2 to give compound 'B'. Find A, B and C. Explain the reaction. Give any one of the uses of 'A'.
4. An Element 'A' occupies group number II and Period number 4. This metal is extracted from its mixed sulphide ore B. 'A' reacts with dil. H_2SO_4 in presence of air to form 'C' which is blue in colour. Identify A, B, and 'C'. **(March -2007)**.
5. An Element 'A' is obtained from argentite ore. 'A' reacts with conc. H_2SO_4 to give compound 'B'. 'A' also reacts with Cl_2 to give compound 'C'. Find out A, B and C. Explain the reactions involved. Write any two uses of the element 'A'.
6. An Element 'A' in group number 12, period number 4 is extracted from its sulphide ore. 'A' reacts with O_2 at 773K to give philosopher's wool. 'A' reacts with hot NaOH to give compound 'C'. 'A' also reacts with dil. HNO_3 and forms compound 'D' with a liberation of N_2O . Find out A, B, C and 'D'. Explain the reactions.
7. An Element 'A' belongs to group number II and period number 4 is extracted from the ore copper pyrite. 'A' reacts with oxygen at two different temperatures forming compounds B and C. 'A' also reacts with conc. HNO_3 to give compound 'D' with the evolution of NO_2 . Find out A, B, C and 'D'. Explain the reactions. **(Sep-2007, March-2010)**

8. Silver reacts with dil.HNO₃ and gives compound 'A' which on heating at 723K gives 'B'. 'B' on Further heating gives 'C' Further heating gives 'C' further 'A' reacts with KBr to give compound 'D'. Which is highly useful in photography. Identify A, B, C and D. explain the reactions. **(June-2006, March- 2009)**

TPTA MODEL QUESTION PAPERS :-

1. Chief ore of chromium (A) on roasting with sodium carbonate gives compound (B) and (C). (B) an acidification gave compound (D) which on treatment with KCl gave compound (E). Identify the compounds A, B, C, D and E. Explain with proper chemical reaction. **[Model Q Paper – I, March-2011]**
2. A reddish brown metal 'A' on heating to redness gives 'B' which is Black in colour. 'B' dissolves in dil.H₂SO₄ to give 'C' which is blue crystal. On heating to 720⁰ C gives back 'B'. What are A, B, C, D. [Model Q Paper-II] (March-10)
3. A sulphate compound of a metal in group II, is also called as blue Vitriol. The Compound undergoes deaxmposition at Various temperatures A $\xrightarrow{373K}$ B $\xrightarrow{503K}$ C $\xrightarrow{993K}$ D Identify the compound A, B, C and D. Explain the reaction. **(June -09, Model Q paper – II)**
4. An Element 'A' belongs to group number II period number 5 is a lustrous white metal 'A' reacts with dil.HNO₃ give 'B'. 'B' with KI gives 'C' which is bright yellow in colour. Identify A, B, and C. Explain the Reaction. **(Model Q Paper – IV)**
5. A bluish white metal when treated with dil.HNO₃ give 'A' along with Zinc Nitrate and water. With very dilute HNO₃, it gives 'B' along with Zinc nitrate and water. The metal heated with air gives 'C'. **(Model Q. Paper V)**
6. An element (A) belong to group number II and period 4. (A) is a reddish brown metal. (A) reacts with HCl in the presence of air and gives compound (B). (A) also reacts with con.HNO₃ to give compound (C) with the liberation of NO₂. Identify (A), (B), (C). Explain the reaction. **[M-06]**
7. The sulphide ore of an element of group 12 when roasted gave compound A which on reduction with carbon gave the element B. The carbonate C of this element is used for skin disease. Identify A, B and C write the required reaction. **[O-06]**
8. An element A occupies group number 11 and period number 4. This metal is extracted from its mixed sulphide ore B. A reacts with dil.H₂SO₄ in presence of air and forms C which is colourless. With water C gives a blue compound D. Identify A,B,C,D

9. The metal B is extracted from the ore A. On treatment with dil. nitric acid metal B gives a compound C, which is also known as Lunar Caustics. The compound C on treatment with KI gives a yellow precipitate D. Find A, B, C and D. Explain the reactions of the formation of A and D. **[M-08]**
10. A bluish white metal A present in 4th period and 12th group on heating in air gives a white cloud B. Metal A on treatment with conc. H_2SO_4 gives the compound C and SO_2 gas. Find A, B and C. Explain the reactions. **[J-08]**
11. An element belonging to group 12 and period 4 is bluish white in colour. (A) reacts with hot conc. H_2SO_4 forming (B) with liberation of N_2O . Identify (A) also reacts with dil. HNO_3 forming (C) with liberation of N_2O . Identify (A), (B) and (C).
Explain the reactions involved. **[S-08]**
12. Compound A is a sulphate compound of group II element. This compound is also called Blue Vitriol. The compound undergoes decomposition at various temperatures. **[J-09]**
13. A bluish white metal when treated with dilute nitric acid gives (A) along with zinc nitrate and water. With very dilute acid it gives (B) along with zinc nitrate and water. The metal when heated with air gives (C). What are (A), (B) and (C)? Explain the reaction. **[S-09]**