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1 CHAPTER The Solid State

1 Mark Questions.

Q.1 The number of tetrahedral and octahedral holes in a hexagonal primitive unit cell are :
(A) 8, 4 (B) 6, 12 (C) 2, 1 (D) 12, 6
[*H.P. Board 2020*] **[1]**

Q.2 The number of octahedral voids per atom present in cubic close-packed structure is :
(A) 1 (B) 3 (C) 2 (D) 4
[*H.P. Board 2020*] **[1]**

Q.3 The number of tetrahedral voids per atom present in cubic close-packed structure is :[*H.P. Board 2020*] **[1]**
(A) 1 (B) 3 (C) 2 (D) 4

Q.4 Volume occupied by atoms in bcc is
(A) 52.4% (B) 74% (C) 68% (D) None
[*HP Board 2018*] **[1]**

Q.5 Volume occupied by atoms in scc is
(A) 74% (B) 68%
(C) 52.4% (D) 75%[*HP Board 2018*] **[1]**

Q.6 With increase in temperature the conductivity of semi conductor [*HP Board 2018*] **[1]**
(A) Decreases (B) Increases
(C) No change (D) Increases then decreases

Q.7 Which of the following is an amorphous solid ?
(A) Graphite (B) Glass
(C) Chrome alum (D) Silicon carbide
[*HP Board 2017*] **[1]**

Q.8 Which of the following is an insulator
(A) Graphite (B) Al
(C) Diamond (D) Si [*HP Board 2018*] **[1]**

Q.9 In a body-centred unit cell the number of atoms present is [*HP Board 2017*] **[1]**
(A) 1 (B) 2 (C) 3 (D) 4

Q.10 The number of tetrahedral voids per atom in a crystal lattice is: [*H.P. Board 2016*] **[1]**
(A) 4 (B) 2 (C) 6 (D) 8

Q.11 The number of atoms in bcc arrangement per unit cell are [*H.P. Board 2016*] **[1]**
(A) 2 (B) 1 (C) 6 (D) 4

Q.12 The appearance of colour in solid alkali metal halide is generally due to [*H.P. Board 2016*] **[1]**
(A) Schottky defect (B) Frenkel defect
(C) F-centre (D) Interstitial position

Q.13 Explain : [*HP Board 2018*] **[1]**
i) Radius ratio ***ii)*** Unit Cell.

Q.14 Give an example of molecular solid.
[*HP Board 2015*] **[1]**

Q.15 How much empty space is present within the hcp arrangement? [*HP Board 2015*] **[1]**

Q.16 How much space is occupied by spheres in bcc arrangement ? [*HP Board 2015*] **[1]**

Q.17 Define anisotropy. [*HP Board 2012*] **[1]**

2 Marks Questions.

Q.18 In term of band theory, what is the difference between a conductor and a semiconductor ?[*H.P. Board 2020*] **[2]**

Q.19 In term of band theory, what is the difference between a conductor and an insulator ? [*H.P. Board 2020*] **[2]**

Q.20 What are semiconductors ? Describe the two main types of semiconductors. [*H.P. Board 2020*] **[2]**

Q.21 Explain : [*HP Board 2018*] **[1,1]**
i) Ferromagnetism ***ii)*** Ferri magnetism.

Q.22 Explain : [*HP Board 2018*] **[1,1]**
i) F-Centre ***ii)*** Doping

Q.23 Write short notes on the following :
a) F-centres
b) Frenkel defect in crystals [*HP Board 2017*] **[1,1]**

Q.24 Explain the following : [*HP Board 2017*] **[1,1]**
a) Space lattice ***b)*** Diamagnetic substances

Q.25 Define unit cell. Calculate the number of atoms in bcc unit cell. [*H.P. Board 2016*] **[2]**

Q.26 Sodium crystallizes in a bcc unit cell. Calculate the approximate no. of unit cells in 9. grams of sodium . (atomic mass of Na = 23 u) [*H.P. Board 2016*] **[2]**

Q.27 Silver metal crystallise with a face centered cubic lattice. The length of unit cell is found to be 4.077×10^{-8} cm. Calculate the atomic radius and density of silver. (Atomic mass of Ag = 108u; $N_A = 6.02 \times 10^{23}\ mol^{-1}$). [*H.P. Board 2016*] **[2]**

Q.28 Explain the following : [*HP Board 2015*] **[2]**

a) F - centres ***b)*** doping

Q.29 Differentiate between crystalline and amorphous solids. [*HP Board 2015*] **[2]**

Q.30 What are Frenkel defects ? Discuss. [*HP Board 2013, 2014*] **[2]**

Q.31 Electrical conductivity of metals decreases with rise in temperature while that of semi-conductor increases. Explain. [*HP Board 2012*] **[2]**

Q.32 Define : [*HP Board 2012*] **[2]**

i) Diamagnetism. ***ii)*** Space lattice.

Q.33 Explain the Schottky defect in crystals. [*HP Board 2011*] **[2]**

Q.34 Distinguish between Schottky and Frenkel defects. [*HP Board 2010*] **[2]**

2 CHAPTER Solutions

1 Mark Questions.

Q.1 The solution showing positive deviation :

(A) have ΔV (mixing) = +ve

(B) have ΔH (mixing) = –ve

(C) form minimum boiling azeotropes

(D) have ΔV (mixing) = – ve [*H.P. Board 2020*] **[1]**

Q.2 The two solutions A and B are separated by semipermeable membrane. If the solvent flows from A to B : [*H.P. Board 2020*] **[1]**

(A) A is more concentrated than B

(B) A is less concentrated than B

(C) Both A and B ae of same concentration

(D) Both A and B get diluted

Q.3 The boiling point increases and freezing point decreases when sodium chloride is added to water. Explain. [*H.P. Board 2020*] **[1]**

Q.4 When a sugar solution is slowly frozen, the first solid which separate out is : [*H.P. Board 2020*] **[1]**

(A) ice

(B) sugar

(C) solid solution of sugar and ice

(D) a compound formed from sugar and water (hydrated sugar)

Q.5 Why does the molality of a solution remain unchanged with temperature ? [*H.P. Board 2020*] **[1]**

Q.6 At high altitudes, the boiling point of water decreases because [*HP Board 2017*] **[1]**

(A) the atmospheric pressure is high

(B) the temperature is low

(C) the atmospheric pressure is low

(D) the temperature is high

Q.7 If the concentrations are expressed in mol $litre^{-1}$ and time in s, then the units of rate constant for the first-order reactions are [*HP Board 2017*] **[1]**

(A) mol $litre^{-1}\ s^{-1}$ (B) mol^{-1} litre s^{-1}

(C) s^{-1} (D) $mol^2\ litre^{-2}\ s^{-1}$

Q.8 Isotonic solutions are the solutions having the same

(A) surface tension (B) vapour pressure

(C) osmotic pressure (D) viscosity

[*HP Board 2017*] **[1]**

Q.9 Under what conditions Vant Hoff's factor is less than unity? [*H.P. Board 2016*] **[1]**

Q.10 Under what condition Vant Hoff's factor is greater than unity? [*H.P. Board 2016*] **[1]**

Q.11 Vant Hoff's factor 'i' is equal to unity? [*H.P. Board 2016*] **[1]**

Q.12 Define azeotropic mixture. [*H.P. Board 2016*] **[1]**

Q.13 Define parts per million (ppm). [*H.P. Board 2016*] **[1]**

Q.14 Why is molality preferred than molarity? [*H.P. Board 2016*] **[1]**

Q.15 Define mass percentage. [*H.P. Board 2016*] **[1]**

Q.16 Define mole fraction. [*H.P. Board 2016*] **[1]**

Q.17 Define osmotic pressure. [*H.P. Board 2016*] **[1]**

Q.18 What are hypertonic solutions? Explain with the help of example. [*HP Board 2012*] **[1]**

Q.19 Define Raoult's law. [*HP Board 2012*] **[1]**

Q.20 What is meant by 'reverse osmosis' ? [*HP Board 2012*] **[1]**

2 Marks Quetions.

Q.21 Explain the solubility rule 'like dissolve like' in term of intermolecular fores that exist in solution. [*H.P. Board 2020*] **[2]**

Q.22 A solution of glucose in water is labelled as 10% w/w. What would be the molality of the solution ? (Molar mass of glucose = 180 g mol^{-1}) [*H.P. Board 2020*] **[2]**

Q.23 State Henry's law and mention some important application. [*H.P. Board 2020*] **[2]**

Q.24 An antifreeze solution is prepared from 222.6 g of ethylene glycol, ($C_2H_6O_2$) and 200 g of water. Calculate the molality of the solution. [*H.P. Board 2020*] **[2]**

Q.25 How does sprinkling of salt help in clearing the snow covered roads in hilly areas ? Explain the phenomenon involved in the process. [*H.P. Board 2020*] **[2]**

Q.26 Concentrate nitric acid used in laboratory work is 68% nitric acid by mass in aqueous solution. What should be the molarity of such a sample of the acid if the density of the solution is 1.504 g mL^{-1}. [*H.P. Board 2020*] **[2]**

Q.27 Prove that relative lowering in the vapour pressure is a colligative property. [*HP Board 2018*] **[2]**

Q.28 Differentiate between ideal and non-ideal solutions. [*HP Board 2018*] **[2]**

Q.29 Define colligative propeties and give its types. [*HP Board 2018*] **[2]**

Q.30 ***a)*** Define hypertonic solution.

b) Explain that the depression in freezing point is colligative property. Calculate the molar mass of solute with it. [*HP Board 2017*] **[1,1]**

Q.31 What are colligative properties? Prove that relative lowering in vapour pressure is a colligative property. [*H.P. Board 2016*] **[2]**

Q.32 State Raoult's law for an ideal solution containing non volatile solute. Why non ideal solutions show positive deviation from Raoult's Law? [*H.P. Board 2016*] **[2]**

Q.33 Explain, why does elevation in boiling point occur on the addition of non-volatile solute into it ? [*HP Board 2013*] **[2]**

Q.34 A solution containing 12.5 g of a non-electrolyte substance in 175 g of water gave boilng point elevation of 0.70 K. Calculate the molar mass of the substance. (K_b for water = 0.52 K Kg mol^{-1}. [*HP Board 2013*] **[2]**

Q.35 ***a)*** Define boiling point. What is elevation in boiling point? How will you find the molecular mass of a solute by using this property? [*H.P. Board 2016*] **[2]**

b) 45 g of ethylene glycol ($C_2H_6O_2$) is mixed with 600 g of water. Calculate the freezing point of solution. (K_f for water = 1.86 Kkg mol^{-1}). [*HP Board 2015*] **[2]**

Q.36 Sodium chloride solution freezes at lower temperature than water but boils at higher temperature than water. Explain. [*HP Board 2012*] **[2]**

Q.37 A sugar syrup of weight 214.2 g contains 34.2 g of sugar ($C_{12}H_{22}O_{11}$). Calculate the mole fraction of sugar. [*HP Board 2001,2010,2011*] **[2]**

Q.38 State Henry's law and mention some important applications. [*HP Board 2008, 2009, 2011*] **[2]**

Q.39 Give the points of differences between ideal and non-ideal solutions. [*HP Board 2010, 2011*] **[2]**

3 Marks Questions.

Q.40 ***a)*** What are hypertonic solutions ? [*HP Board 2015*] **[1,2]**

b) A solution is 25% water, 25% ethanol and 50% acetic acid bymass. Calculate the mole fraction of each component.

Q.41 ***a)*** What is vant Hoff factor ? [*HP Board 2015*] **[1,2]**

b) 200 cm^3 of an aqueous solution of a protein contains 1.26g of the protein. The osmotic pressure of such a solution at 300 K is found to be 2.7×10^{-3} bar. Calculate the molar mass of the protein (R = 0.083 L are mol^{-1})

Q.42 Define the following terms : [*HP Board 2014*] **[3]**

i) Mole fraction ***ii)*** Molality ***iii)*** Molarity

3 CHAPTER Electrochemistry

1Mark Questions.

Q.1 Rust is a mixture of : [*H.P. Board 2020*] **[1]**

(A) FeO and $Fe(OH)_3$ (B) FeO and $Fe(OH)_2$

(C) Fe_2O_3 and $Fe(OH)_3$ (D) Fe_3O_4 and $Fe(OH)_3$

Q.2 Which of the following statements is correct regarding rusting/corrosion ? [*H.P. Board 2020*] **[1]**

(A) Iron rusts faster in saline water than in pure water

(B) Less active metals are readily corroded.

(C) Air and moisture decreases corrosion.

(D) Corrosion occurs slowly at bends, scratches or cuts in metals.

Q.3 The electrode Potential of SHE fixed is

(A) 0.34 V (B) –0.44 V

(C) 0 V (D) – 0.76 V

[*HP Board 2018*] **[1]**

Q.4 In a galvanic cell, which one of the following statements is not correct? [*HP Board 2017*] **[1]**

(A) Anode is negatively charged

(B) Cathode is positively charged

(C) Reduction takes place at the anode

(D) Reduction takes place at the cathode

Q.5 E^o_{cell} and ΔG^o are related as [*HP Board 2017*] **[1]**

(A) $\Delta G^o = nFE^o_{cell}$ (B) $\Delta G^o = -nFE^o_{cell}$

(C) $\Delta G^o = -nFE^o_{cell}$ (D) $\Delta G^o = nFE^o_{cell} = 0$

Q.6 The SI units of molar conductivity are

(A) S m^2 mol^{-1} (B) S m^{-1} mol^{-1}

(C) S m^{-2} mol^{-1} (D) S m^3 mol^{-1}

[*HP Board 2017*] **[1]**

Q.7 The unit of specific conductance is

(A) Ohm (B) Ohm^{-1} cm^{-1}

(C) $Ohm^{-1}cm$ (D) Ohm^2

[*H.P. Board 2016*] **[1]**

Q.8 The unit of cell constant are [*H.P. Board 2016*] **[1]**

(A) Ohm^{-1} cm^{-1} (B) cm

(C) Ohm^{-1} cm (D) cm^{-1}

Q.9 Give two differences between emf and potential difference. [*H.P. Board 2016*] **[1]**

Q.10 What are primary cells? [*H.P. Board 2016*] **[1]**

Q.11 Define molar conductance. [*H.P. Board 2016*] **[1]**

Q.12 Write expression for Nernst equation.

[*HP Board 2015*] **[1]**

Q.13 Write Nernst equation for the cell reaction :
Mg (s) | Mg^{2+} (IM) | | Cu^{2+} (IM) | Cu (s).
[*H.P. Board 2016*] **[1]**

Q.14 What is Galvanisation ? [*HP Board 2012*] **[1]**

Q.15 What are fuel cells ? Give example.
[*HP Board 2013*] **[1]**

Q.16 Give chemical formula of rust. What is the colour of rust ? [*HP Board 2013*] **[1]**

2 Marks Questions.

Q.17 ***a)*** Calculate the *e.m.f* of the cell in which the following reaction takes place :
Ni(s) + 2Ag (0.002 M) → Ni(0.160 M) + 2Ag(s)
Given that $E°_{cell}$ = 1.05 V

b) Explain construction and working of Nickel-Cadmium Storage cell. [*H.P. Board 2020*] **[2]**

c) Why Fluorine is the strongest oxidizing agent ?
[*H.P. Board 2020*] **[1]**

Q.18 ***a)*** The sandard electrode potential for Daniel cell is 1.1V. Calculate the standard Gibbs energy for the reaction. [*H.P. Board 2020*] **[2]**

b) Explain construction and working of Dry cell.
[*H.P. Board 2020*] **[2]**

Q.19 ***a)*** Explain electrochemical series.

b) Can we store 1 M $CuSO_4$ in Zn vessel or not why?
[*HP Board 2018*] **[1,1]**

Or

a) Explain the working of fuel cell.

b) Define Faraday's Second Law.
[*HP Board 2018*] **[1,1]**

Q.20 ***a)*** Explain Ni-Cd storage cell. [*HP Board 2018*] **[2]**

Or

a) Define Faraday's First Law. [*HP Board 2018*] **[1]**

c) Define Molar conductivity. [*HP Board 2018*] **[1]**

Q.21 Explain lead-storage cell. [*HP Board 2018*] **[2]**

Q.22 ***a)*** Explain Electrochemical Theory of Rusting of Iron.
[*HP Board 2018*] **[1]**

b) Define fuel cell. [*HP Board 2018*] **[1]**

Q.23 Represent the cell in which the following reaction takes place: [*HP Board 2017*] **[2]**

$$Mg(s) + 2Ag^{+}(0.0001M) \rightarrow Mg^{2+}(0.130M) + 2Ag(s)$$

Calculate its E_{cell}; if E^{o}_{cell} = 3.17 V.

Q.24 Explain the term strong electrolytes and weak electrolytes with the help of suitable examples. [*HP Board 2012*] **[2]**

Q.25 Given that : $E^{o}_{Zn^{2+}/Zn} = -0.76V$ and $E^{o}_{Cu^{2+}/Cu} = 0.34V$
[*HP Board 2017*] **[2]**

Q.26 What is standard hydrogen electrode? Explain its construction and working. [*HP Board 2017*] **[2]**

Q.27 What is salt bridge? Describe its main functions.
[*H.P. Board 2016*] **[2]**

Q.28 Explain the Kohlrausch's law.
[*HP Board 2011, 2014*] **[2]**

Q.29 What are the functions of salt bridge ?
[*HP Board 2013*] **[2]**

Q.30 Distinguish between e.m.f. and Potential difference.
[*HP Board 2012*] **[2]**

Q.31 What are Fuel cells ? Discuss $H_2 - O_2$ fuel cell.
[*HP Board 2008, 2012*]

Q.32 Explain the working of dry cell with diagram.
[*HP Board 2008, 2011*] **[3]**

4 CHAPTER

Chemical Kinetics

1 Mark Questions.

Q.1 The rate constant of a reaction has same units as the rate of reaction. The reaction is of.....

(A) Third order (B) Second order

(C) Fifth order (D) Zero order

[H.P. Board 2020] **[1]**

Q.2 The rate constant of reaction is 3×10^{-3} $atm^{-1}sec^{-1}$. The order of reaction is .....*[H.P. Board 2020]* **[1]**

(A) 1 (B) 2 (C) 3 (D) 0

Q.3 The rate constant of a reaction hs s^{-1} units. The reaction is of ..... *[H.P. Board 2020]* **[1]**

(A) Third order (B) Second order

(C) First order (D) Zero order

Q.4 If the rate of reaction between A and B is expressed as $k[A][B]^2$, the reaction is *[HP Board 2017]* **[1]**

(A) first order in A

(B) second order in B

(C) overall having third order

(D) All are correct

Q.5 What is rate determining step of a reaction ?

[H.P. Board 2020] **[1]**

Q.6 Give units of rate constant for First Order Reaction.

[HP Board 2018] **[1]**

Q.7 Rate of reaction = $K[H_2]^{\circ}[Cl_2]^{\circ}$, according to rate law equation. Predict the order of reaction.

[HP Board 2018] **[1]**

Q.8 Define order of the reaction. *[HP Board 2018]* **[1]**

Q.9 Explain Arrhenius equation. *[HP Board 2017]* **[1]**

Q.10 What are zero-order reactions? Derive integrated rate equation for zero-order reactions.

[HP Board 2012, 2017] **[1]**

Q.11 What is activation energy? *[H.P. Board 2016]* **[1]**

Q.12 What is collision frequency? *[H.P. Board 2016]* **[1]**

Q.13 Give the units of rate constant for zero order reaction.

[H.P. Board 2016] **[1]**

Q.14 Give the example of zero order reaction.

[H.P. Board 2016] **[1]**

Q.15 Give example of pseudo first order reaction.

[HP Board 2015] **[1]**

Q.16 What is half life period ? Show that the half life period for a first order reaction is independent of the initial concentration of reactant. *[HP Board 2015]* **[1]**

Q.17 What is the effect of catalyst on the activation energy of a reaction? *[HP Board 2015]* **[1]**

Q.18 Derive integrated rate equation for a first order reaction.

[HP Board 2015] **[1]**

Q.19 Define half life period. Derive the relation for it.

[HP Board 2014] **[1]**

Q.20 What are pseudochemical reactions ? Give an example.

[HP Board 2014] **[1]**

Q.21 What is Arrhenius equation ? *[HP Board 2014]* **[1]**

Q.22 What are zero order reactions ? Give example.

[HP Board 2013] **[1]**

Q.23 Give the units of zero order rate constant.

[HP Board 2013] **[1]**

Q.24 Give the unit of first order rate constant.

[HP Board 2013] **[1]**

Q.25 Give the unit of second order rate constant.

[HP Board 2013] **[1]**

Q.26 Define rate constant. *[HP Board 2012]* **[1]**

Q.27 Give the units of rate constant for third-order reaction.

[HP Board 2017] **[1]**

2 Marks Questions.

Q.28 Calculate the half life period of a first order reaction where the specific rate constant is 2 min^{-1}.

[H.P. Board 2020] **[2]**

Q.29 Derive integrated rate equation for a first order reactin. [*H.P. Board 2020*] **[2]**

Q.30 Calculate the half life period of a first order reaction where the specific rate constant is 200 s^{-1}. [*H.P. Board 2020*] **[2]**

Q.31 Derive integrated rate equation for a zero order reaction. [*H.P. Board 2020*] **[2]**

Q.32 Calculate the half life period of a first order reaction where the specific rate constant is 4 $year^{-1}$. [*H.P. Board 2020*] **[2]**

Q.33 Derive an expression for half life period in case of first order reaction. [*H.P. Board 2020*] **[2]**

Q.34 What is temperature coefficient ? [*HP Board 2014*] **[2]**

Q.35 What is rate law ? Explain with an example. [*HP Board 2013*] **[2]**

Q.36 Rate constant for a first order reaction is $60s^{-1}$. How much time will it take to reduce the concentration of the reaction to $\frac{1}{10}$ th of its initial value? [*HP Board 2012*] **[2]**

Q.37 A first order reaction is 20% complete in 10 minutes. Calculate the time for 75% completion of the reaction. [*HP Board 2012*] **[2]**

Q.38 Distinguish between order and the molecularity of a reaction. [*HP Board 2010*] **[2]**

Q.39 Derive the integrated rate equation for the rate constant for the first order reaction. [*H.P. Board 2016*] **[2]**

Q.40 What are Pseudo order reactions ? [*HP Board 2012, 2015*] **[2]**

Q.41 ***a)*** What is Activation energy? [*HP Board 2018*] **[1]**

b) Write Arrhenius equation. [*HP Board 2018*] **[1]**

3 Marks Questions.

Q.42 ***a)*** What is meant by half-life period of a reaction? Derive an expression for the half-life period for the first-order reaction. [*HP Board 2017*] **[2]**

b) What is an activated complex? [*HP Board 2014, 2017*] **[1]**

Q.43 Calculate the half life of a first order reaction from their rate constants given below :

i) 200 s^{-1} ***ii)*** 2 min^{-1} ***iii)*** 4 $years^{-1}$

[*HP Board 2013,2014*] **[1,1,1]**

5 CHAPTER Surface Chemistry

1 Mark Questions.

Q.1 Tyndall effect is observed in [*HP Board 2018*] **[1]**
(A) True solution (B) Precipitate
(C) Colloidal solution (D) Vapour

Q.2 In the coagulation of solution As_2S_3 which has maximum coagulating value [*HP Board 2018*] **[1]**
(A) NaCl (B) KCl
(C) $BaCl_2$ (D) $AlCl_3$

Q.3 Blood may be purified by [*HP Board 2018*] **[1]**
(A) Dialysis (B) electro-osmosis
(C) Coagulation (D) Filtration

Q.4 Differentiate between chemisorption and physisorption. [*HP Board 2018*] **[1]**

Q.5 What is Tyndall effect? [*H.P. Board 2016*] **[1]**

Q.6 Explain Brownian movement. [*H.P. Board 2016*] **[1]**

Q.7 How will you differentiate Lyophilic colloids from Lyophobic colloids ? [*H.P. Board 2016*] **[1]**

Q.8 State Hardy-Schulze rule. [*HP Board 2015*] **[1]**

Q.9 Name the type of emulsion to which butter belongs to. [*HP Board 2012*] **[1]**

Q.10 Name the emulsion to which cold cream belongs to. [*HP Board 2012*] **[1]**

2 Marks Questions.

Q.11 What are the differences between adsorption and absorption ? [*H.P. Board 2020*] **[1]**

Q.12 What is dialysis ? [*H.P. Board 2020*] **[1]**

Q.13 Differentiate between Chemisorption and Physisorption. (Four difference only) [*H.P. Board 2020*] **[2]**

Q.14 ***a)*** Differentiate between Homogenous catalysis and Heterogeneous catalysis. [*H.P. Board 2020*] **[2]**
b) What are emulsions ? [*H.P. Board 2020*] **[1]**

Q.15 Define coagulation and Peptisation. [*HP Board 2018*] **[2]**

Q.16 What are emulsions? Explain their types. [*H.P. Board 2016*] **[2]**

Q.17 Differentiate between homogeneous and hetero geneous catalyst? [*H.P. Board 2016*] **[2]**

Q.18 What are the differences between physical and chemical adsorption? [*HP Board 2014*] **[2]**

Q.19 What is the difference between multimolecular and macromolecular colloids ? Give one example of each. How are associated colloids different from these two types of colloids ? [*HP Board 2013*] **[2]**

Q.20 What is peptization ? What are different methods of peptisation. [*HP Board 2013*] **[2]**

Q.21 Describe the cleansing action of soap. [*HP Board 2012*] **[2]**

Q.22 Explain : ***a)*** Associated colloids [*HP Board 2017*]
b) Electrophoresis [*HP Board 2015*] **[2]**

6 CHAPTER General Principles and Processes of Isolation of Elements

1 Mark Questions.

Q.3 In galvanisation, metal plating on iron to protect against corrosion is : [*H.P. Board 2020*] **[1]**
(A) Nickel plating (B) Copper plating
(C) Tin plating (D) Zinc plating

Q.1 Purest form of iron is [*HP Board 2018* **[1]**
(A) cast iron (B) wrought iron
(C) steel (D) pig iron

Q.2 Metal always found in free state is [*HP Board 2018* **[1]**
(A) Gold (B) Silver (C) Copper (D) Sodium

Q.3 The most abundarnt element in earth crust is [*HP Board 2018*] **[1]**

(A) Si (B) Al

(C) O (D) Fe

Q.4 What is calcination? [*HP Board 2018*] **[1]**

Q.5 Name the ore of Aluminium. [*HP Board 2018*] **[1]**

Q.6 Write a short note on 'Liquation'. [*H.P. Board 2016*] **[1]**

Q.7 Write a short note on electrolytic refining of copper. [*H.P. Board 2016*] **[1]**

Q.8 What is Blister copper? [*H.P. Board 2016*] **[1]**

Q.9 State and explain the term flux. [*H.P. Board 2016*] **[1]**

Q.10 All the ores are minerals but all the minerals are not ores. Justify the statement. [*H.P. Board 2016*] **[1]**

Q.11 Name the method used for refining metals which are used as semiconductor in electronic devices. [*HP Board 2013*] **[1]**

Q.12 What is the difference between a mineral and ore ? [*HP Board 2003 (S),2011,2012*] **[1]**

Q.13 Differentiate between calcination and roasting. [*2009, 2010, 2011, 2012*] **[1]**

Q.14 Define metallurgy. [*HP Board 2017*] **[1]**

2 Marks Questions.

Q.15 Explain along with diagram of Froth Floatation Process. [*H.P. Board 2020*] **[2]**

Q.15 Explain Zone refining method. [*H.P. Board 2020*] **[2]**

Q.15 Explain van Arkel method for refining metals. [*H.P. Board 2020*] **[2]**

Q.15 Define the following :

a) Roasting ***b)*** Smelting

[*HP Board 2017*] **[2]**

Q.16 What is meant by Leaching ? Explain with an example? [*HP Board 2015*] **[2]**

Q.17 Explain Van-Arkel method of refining. [*HP Board 2015*] **[2]**

Q.18 Explain Froth-floatation process. [*HP Board 2015*] **[2]**

7 CHAPTER — The p-Block Elements

1 Mark Questions.

Q.1 Why does OF_6 not exist but SF_6 exists ? [*H.P. Board 2020*] **[1]**

Q.2 Why are halogens coloured ? [*H.P. Board 2020*] **[1]**

Q.3 Why does Nitrogen show anomalous behaviour from rest of its family members ? [*H.P. Board 2020*] **[1]**

Q.4 The correct order of thermal stability of hydrogen halides (HX) is [*HP Board 2017*] **[1]**

(A) HI > HBr > HC*l* > HF

(B) HF > HC*l* > HBr > HI

(C) HC*l* < HF < HBr < HI

(D) HI > HC*l* > HF > HBr

Q.5 The correct order of acid strength is [*HP Board 2017*] **[1]**

(A) $HClO_4 < HClO_3 < HClO_2 < HClO$

(B) $HClO < HClO_2 < HClO_3 < HClO_4$

(C) $HClO_4 < HClO < HClO_2 < HClO_3$

(D) $HClO_2 < HClO_3 < HClO_4 < HClO$

Q.6 The correct order of the acidic strength is

(A) $H_2O < H_2S < H_2Se < H_2Te$

(B) $H_2O > H_2S > H_2Se > H_2Te$

(C) $H_2S > H_2O > H_2Te > H_2Se$

(D) $H_2Te < H_2S < H_2O < H_2Se$ [*HP Board 2017*] **[1]**

Q.7 The basicity of phosphorous acid H_3PO_3 is

(A) Two (B) Three

(C) One (D) zero [*HP Board 2017*] **[1]**

Q.8 Which of the following element has maximum electron gain enthalpy : [*H.P. Board 2016*] **[1]**

(A) F (B) Cl

(C) Br (D) I

Q.9 The basicity of H_3PO_2 is : [*H.P. Board 2016*] **[1]**

(A) +1 (B) +2

(C) +3 (D) +4

Q.10 Draw the geometry of XeF_4. [*HP Board 2017*] **[1]**

Q.11 Give the geometry of XeF_6 molecule. [*HP Board 2017*] **[1]**

Q.12 Give the structure of $XeOF_2$. [*HP Board 2018*] **[1]**

Q.13 Why interhalogen compounds are more reactive than halogens? [*H.P. Board 2016*] **[1]**

Q.14 Draw the structure $HClO_4$. [*H.P. Board 2016*] **[1]**

Q.15 Why noble gases have very high value of ionisation enthalpy? [*H.P. Board 2016*] **[1]**

Q.16 Why are halogens strong oxidising agents? [*H.P. Board 2016*] **[1]**

Q.17 Why oxygen shows anomalous behaviour from rest of members of its family? [*H.P. Board 2016*] **[1]**

Q.18 Why are halogens coloured? [*H.P. Board 2016*] **[1]**

Q.19 Fluorine exhibit only –1 oxidation state whereas other halogens also show +1, +3, +5 and +7 oxidation state. Explain. [*H.P. Board 2016*] **[1]**

Q.20 How does O_3 react with PbS? Give chemical reaction. [*H.P. Board 2016*] **[1]**

Q.21 Why noble gases are generally inert? [*H.P. Board 2016*] **[1]**

Q.22 Using VSEPR theory draw the structure of BrF_3. [*H.P. Board 2016*] **[1]**

Q.23 Why is OF_6 compound not known ? [*HP Board 2011*] **[1]**

Q.24 Why does O_3 act as a powerful oxidising agent ? Give two examples. [*HP Board 2014*] **[1]**

Q.25 Give the structure of various oxoacids of chlorine. [*HP Board 2014*] **[1]**

Q.26 Halogens are highly reactive. Explain. [*HP Board 2013*] **[1]**

Q.27 Why fluorine always exhibits oxidation state of –1 ? [*HP Board 2013*] **[1]**

Q.28 HI is stronger acid than HF. Why ? [*HP Board 2013*] **[1]**

Q.29 SF_6 is known but $SC\ell_6$ is not known. Explain. [*HP Board 2012*] **[1]**

Q.30 Which is stronger acid in aqueous solution, $HC\ell$ or HBr and why? [*HP Board 2012*] **[1]**

Q.31 What is laughing gas ? [*HP Board 2012*] **[1]**

Q.32 Why 18^{th} group elements are inert ? [*HP Board 2012*] **[1]**

Q.33 Why $NC\ell_5$ is not known while $PC\ell_5$ is known ? [*HP Board 2010, 2011*] **[1]**

Q.34 H_2S is a gas while H_2O is liquid at room temperature. Explain. [*HP Board 2011*] **[1]**

Q.35 Give the structure of XeO F_2. [*HP Board 2012*] **[1]**

2 Marks Questions.

Q.36 Nitrogen exists as diatomic molecule and phosphorous as P_4. Why ? [*H.P. Board 2020*] **[2]**

Q.37 ***a)*** What are interhalogen compounds ? [*H.P. Board 2020*] **[1]**

b) Boiling point of H_2O (373 K) is very much higher than that of H_2S(213 K). Give reason [*H.P. Board 2020*] **[1]**

Q.38 ***a)*** What is the basicity of H_3PO_3? [*H.P. Board 2020*] **[1]**

b) Draw the structure of $[XeO_2]_3$ [*H.P. Board 2020*] **[1]**

Q.39 ***a)*** Why are pentahalides more reactive than trihalides? [*H.P. Board 2020*] **[1]**

b) Why does nitrogen show catenation properties less than phosphorus? [*H.P. Board 2020*] **[1]**

Q.40 Describe the manufacture of Ammonia by Haber's Process. [*H.P. Board 2020*] **[2]**

Q.41 ***a)*** Why Halogens are most reactive elements ? [*H.P. Board 2020*] **[1]**

b) Concentrated nitric acid turns yellow on exposure to sunlight. Why ? [*H.P. Board 2020*] **[1]**

Q.42 ***a)*** What is the basicity of H_3PO_4 ? [*H.P. Board 2020*] **[1]**

b) Draw the structure of XeO_4. [*H.P. Board 2020*] **[1]**

Q.43 ***a)*** What are pseudo halogens ? [*H.P. Board 2020*] **[1]**

b) Why is N_2 less reactive at room temperature? [*H.P. Board 2020*] **[1]**

Q.44 Describe manufacturing of sulphuric acid by contact process. [*H.P. Board 2020*] **[2]**

Q.45 ***a)*** Why electron gain enthalpy of fluorine is less than that of chlorine ? [*H.P. Board 2020*] **[1]**

b) Ammonia is regarded as a good complex agent. Explain why ? [*H.P. Board 2020*] **[1]**

Q.46 ***a)*** What is the basicity of H_3PO_2? [*H.P. Board 2020*] **[1]**

b) Draw the structure of $XeOF_4$. [*H.P. Board 2020*] **[1]**

Q.47 ***a)*** Why halogens have very high electron gain enthalpy? [*H.P. Board 2020*] **[1]**

b) Nitrogen exist as diatomic molecule and phosphorus exist as tetra atomic P_4. Explain . [*H.P. Board 2020*] **[1]**

Q.48 Describe manufacturing of nitric acid by Ostwald Process. [*H.P. Board 2020*] **[2]**

Q.49 Describe the manufacture of nitric acid (HNO_3) by Ostwald process. [*HP Board 2017*] **[2]**

Q.50 ***a)*** Halogens have maximum negative electron gain enthalpies in their respective periods. Why? [*HP Board 2017*] **[1]**

b) Draw the structure of PCl_5. [*HP Board 2017*] **[1]**

Q.51 Give a method of preparation of Dioxygen. Give its important uses. [*HP Board 2015*] **[2]**

Q.52 Account for the following :

a) H_2O is a liquid whereas H_2S is a gas at room temperature. [*HP Board 2015*] **[1]**

b) PCl_5 is known, but NCl_5 is not known. Give reason. [*HP Board 2015*] **[1]**

Q.53 Write equations for the manufacture of HNO_3 by Ostwald process. [*HP Board 2015*] **[2]**

Q.54 Give the structure of interhalogen compounds on the basis of hybridisation : ***a)*** $C\ell F_3$ ***b)*** BrF_5 [*HP Board 2013, 2014*] **[2]**

Q.55 How are XeO_3 and XeO_2F_2 prepared ? Describe their molecular shapes. [*HP Board 2014*] **[2]**

Q.56 Why does NH_3 form hydrogen bond but PH_3 does not? [*HP Board 2013*] **[2]**

Q.57 Arrange the following in the order of their acidic strength as acid $HC\ell O$, $HC\ell O_3$, $HC\ell O_2$, $HC\ell O_4$ and give reason. [*HP Board 2013*] **[2]**

Q.58 Arrange the following in the increasing order of their acidic strength HBrO, $HC\ell O$, HIO and give reason. [*HP Board 2013*] **[2]**

Q.59 Explain :

i) Why halogens are coloured ?

ii) Fluorine always shows-1 oxidation state in its compounds. [*HP Board 2012*] **[2]**

Q.60 Explain the preparation of ozone from Siemen's ozoniser. [*HP Board 2010, 2011*] **[2]**

Q.61 How are XeO_3 and XeO_2F_2 prepared ? Describe their molecular shapes. [*HP Board 2010, 2011*] **[2]**

Q.62 PCl_5 is known but NCl_5 does not? [*HP Board 2018*] **[2]**

Q.63 All bonds in PCl_5 are not equivalent why? [*HP Board 2018*] **[2]**

Q.64 Bond Angle in H_2S is lower than H_2O, why? [*HP Board 2018*] **[2]**

Q.65 ***a)*** Interhalogen are more reactive than Halogen, why? [*HP Board 2018*] **[1]**

b) Draw the shape of $C\ell F_3$. [*HP Board 2018*] **[1]**

Q.66 Explain, why ammonia is a good complexing agent. [*HP Board 2015*] **[2]**

3 Marks Questions.

Q.67 Describe the contact process for the manufacture of sulphuric acid. [*HP Board 2010*] **[3]**

Q.68 H_2S is less acidic than H_2Te. Why ? [*HP Board 2015*] **[3]**

8 CHAPTER The d - and f - Block Elements

1 Mark Questions.

Q.1 With respect to aqueous solutions of copper salts, which of the following is correct : [*H.P. Board 2020*] **[1]**

(A) Cu(II) is more stable

(B) Cu(II) is less stable

(C) Cu(I) and Cu(II) are equally stable

(D) Cu(I) and Cu(II) are equally unstable

Q.2 Electronic configuration of a transition element X in + 3 oxidation state is [Ar] $3d^5$. What is its atomic number? [*H.P. Board 2020*] **[1]**

(A) 25 (B) 26 (C) 27 (D) 24

Q.3 What are transition elements ? Give the general electronic configuration of transition elements. [*H.P. Board 2020*] **[2]**

Q.4 Which is colourless in H_2O [*HP Board 2018*] **[1]**

(A) Ti^{+3} (B) V^{+3} (C) Cr^{+3} (D) Sc^{+3}

Q.5 Which has maxmum unpaired electrons

(A) Zn^{+2} (B) Fe^{+2} (C) Ni^{+2} (D) Cu^{+2} [*HP Board 2018*] **[1]**

Q.6 Which does not belong to First Transition series? [*HP Board 2018*] **[1]**

(A) Fe (B) V (C) Ag (D) Cu

Q.7 Many transition elements act as good catalyst why? [*HP Board 2018*] **[1]**

Q.8 Out of Fe^{+2} and Fe^{+3} which is more paramagnetic and why? [*H.P. Board 2016*] **[1]**

Q.9 What are transition elements? [*H.P. Board 2016*] **[1]**

Q.10 Why transition metals show variable oxidation state? [*H.P. Board 2016*] **[1]**

Q.11 Write the general electronic configuration of f-block elements. [*H.P. Board 2016*] **[1]**

Q.12 Why are Cd^{+2} salts white? [*H.P. Board 2016*] **[1]**

Q.13 What are coinage metals? [*H.P. Board 2016*] **[1]**

Q.14 What is Misch metal? [*H.P. Board 2016*] **[1]**

Q.15 $La(OH)_3$ is more basic than $Lu(OH)_3$. Explain. [*H.P. Board 2012, 2016*] **[1]**

Q.16 How many unpaired electrons are present in Fe^{2+}. [*HP Board 2015*] **[1]**

Q.17 What is the number of unpaired electrons in Ni^{2+} ? [*HP Board 2015*] **[1]**

Q.18 The oxidation state of Cr in $K_2Cr_2O_7$ is ..... [*HP Board 2015*] **[1]**

Q.19 $KMnO_4 \xrightarrow{\Delta} \underline{\quad ? \quad} + MnO_2 + \underline{\quad ? \quad}$? [*HP Board 2015*] **[1]**

Q.20 $K_2Cr_2O_7 \xrightarrow{\Delta}$? + ? + ? [*HP Board 2015*] **[1]**

Q.21 Why enthalpy of atomisation of the transition elements are quite high ? [*HP Board 2014*] **[1]**

Q.22 Explain, why transition metal ions usually show paramagnetic behaviour ? [*HP Board 2014*] **[1]**

Q.23 Why compounds of Zn (II) are white but of Cu (II) are blue? [*HP Board 2014*] **[1]**

Q.24 Why transition elements form a large number of alloys? [*HP Board 2014*] **[1]**

Q.25 Draw the shape of $Cr_2O_7^{2-}$ ion and chromate ion. [*HP Board 2014*] **[1]**

Q.26 Why Zn, Cd and Hg are not transition elements ? [*HP Board 2011,2012*] **[1]**

Q.27 Write the general electronic configuration of *f*-Block elements. [*HP Board 2012*] **[1]**

Q.28 What is the cause of lanthanoid contraction ? [*HP Board 2012*] **[1]**

Q.29 Why are the Ionisation energies of 5 d elements greater than 3 d elements ? [*HP Board 2012*] **[1]**

Q.30 Why do transition metals show variable oxidation states? [*HP Board 2011*] **[1]**

Q.31 Define lanthanoid contraction. [*HP Board 2010, 2011*] **[1]**

Q.32 Explain, why d-block elements or their compounds, act as good catalysts. [*HP Board 2011*] **[1]**

Q.33 Cu(I) compounds are colourless whereas Cu (II) compounds are coloured, why? [*HP Board 2018*] **[1]**

Q.34 Why transition elements form a large number of alloys? [*HP Board 2012*] **[1]**

Q.35 Give reason, Mn^{2+} ion is more paramagnetic than Fe^{2+} ion. [*HP Board 2011, 2012*] **[1]**

Q.36 Why do Zr and Hf exhibit similar properties ? [*HP Board 2015*] **[1]**

Q.37 Draw the geometry of dichromate $\left(Cr_2O_7^{2-}\right)$ ion. [*HP Board 2017*] **[1]**

Q.38 Out of V (IV) and V (V) which one is paramagnetic and why ? [*HP Board 2012*] **[1]**

2 Marks Questions.

Q.39 What is Lanthanide contraction ? What is its significance ? [*H.P. Board 2020*] **[2]**

Q.40 Why is f-block elements placed at the bottom of the periodic table ? Write General Electronic Configuration of f-block elements. [*H.P. Board 2020*] **[2]**

Q.41 ***a)*** Gold (Aurum) is regarded as transition metal though it has completely filled d-orbitals (d^{10}). Explain. [*H.P. Board 2020*] **[2]**

b) Why do the transition elements exhibit higher enthalpies of atomisation ? [*H.P. Board 2020*] **[2]**

Q.42 ***a)*** Copper is regarded as transition metal though it has completely filled *d*- orbitals (d^{10}). Explain. [*H.P. Board 2020*] **[2]**

b) What are interstitial compounds ? Why are such compounds well known for transition metals ? [*H.P. Board 2020*] **[2]**

Q.43 Explain why many transition metals and their compounds act as good catalyst. [*H.P. Board 2020*] **[2]**

Q.44 ***a)*** Zn, Cd, Hg are soft. Why?

b) d-block elements form complexes. Why?
[*HP Board 2018*] **[1,1]**

Q.45 ***a)*** Define Transition elements.

b) Give General electronic configuration of f-block elements. [*HP Board 2018*] **[1,1]**

Q.46 What is the cause of lanthanoid contraction? Discuss. [*H.P. Board 2016*] **[2]**

Q.47 What is Lanthanoid contraction? What are its consequences? [*H.P. Board 2016*] **[2]**

Q.48 On what ground can you say that scandium (Z=21) is a transition element but zinc (Z=30) is not ?
[*HP Board 2014*] **[2]**

Q.49 Give similarities and differences between the lanthanoids and actinoids. [*HP Board 2010,2012*] **[2]**

Q.50 Why transition metals are generally coloured ?
[*HP Board 2012*] **[2]**

Q.51 Explain : Chromyl chloride test for chlorides.
[*HP Board 2010*] **[2]**

Q.52 Explain : How $K_2Cr_2O_7$ is prepared from chromite ore ? [*HP Board 2012*] **[2]**

Q.53 ***a)*** Most of the Transition elements are coloured, why?

b) Transition elements show variable oxidation states, why? [*HP Board 2018*] **[2]**

Q.54 How will you prepare potassium permanganate ($KMnO_4$) from pyrolusiteore? Give the reactions of the steps involved. [*HP Board 2017*] **[2]**

Q.55 ***a)*** Explain whether Cu^{+2} is paramagnetic or diamagnetic.
[*HP Board 2017*] **[1]**

b) Transition elements behave as good catalysts. Explain. [*HP Board 2017*] **[1]**

3 Marks Questions.

Q.56 ***a)*** Write the IUPAC name of $[Co(NH_3)_4\,Cl(NO)_2]\,Cl$.
[*H.P. Board 2020*] **[1]**

b) On the basis of valence bond theory explain the geometry and magnetic behaviour of $[Ni(CN)_4]^{2-}$ complex ion. [*H.P. Board 2020*] **[2]**

Q.57 Explain the following :

a) Transition elements are known to form many interstitial compounds.

b) Zn^{2+} salts are colourless.

c) Transition metals and their compounds are good catalysts. [*HP Board 2015*] **[1,1,1]**

Q.58 Draw a structure of dichromate ion and write any two oxidation reaction of Potassium dichromate.
[*HP Board 2012*] **[3]**

9 CHAPTER

Coordination Compounds

1 Mark Questions.

Q.1 In which of the following complexed the metal ion is in zero oxidation state : [*H.P. Board 2016*] **[1]**

(A) $Mn(CO)_{10}$ (B) $Zn_2[Fe(CN)_6]$

(C) $[Cu(NH_3)_4]Cl_2$ (D) $[Ag(NH_3)_2]Cl$

Q.2 The oxidation number of iron in $K_3[Fe(CN)_6]$ is : [*H.P. Board 2016*] **[1]**

(A) +1 (B) +2 (C) +3 (D) Zero

Q.3 The correct IUPAC named of $\left[Pt(NH_3)_2C\ell_2\right]$ is : [*H.P. Board 2016*] **[1]**

(A) Diammine dichlorido platinum (II)

(B) Diammine dichlorido platinum (IV)

(C) Diammine dichlorido platinum (O)

(D) Chlorido diammine Platinim (IV)

Q.4 Define ligand. [*HP Board 2018*] **[1]**

Q.5 Define chelating ligands. [*HP Board 2018*] **[1]**

Q.6 Write the IUPAC name of $K_3[Fe(CN)_5NO]$. [*HP Board 2017*] **[1]**

Q.7 Write IUPAC name of $[CoCl(NH_3)_5]Cl_2$. [*HP Board 2015*] **[1]**

Q.8 Write the IUPAC name of $K_3[Fe(CN)_6]$. [*HP Board 2015*] **[1]**

Q.9 Define chelate and chelating ligand. Give one example of chelate complex. [*HP Board 2014*] **[1]**

2 Marks Questions.

Q.10 ***a)*** Write the IUPAC name of $[Co(NH_3)_6]Cl_3$. [*H.P. Board 2020*] **[1]**

b) On the basis of valence bond theory expiain the geometry and magnetic behaviour of $[NiCl_4]^{2-}$ complex ion. [*H.P. Board 2020*] **[2]**

Q.11 ***a)*** Write the IUPAC name of $K_3[Co(C_2O_4)_3]$ [*H.P. Board 2020*] **[1]**

b) On the basis of valence bond theory explain the geometry and magnetic behaviour of $[Co(NH_3)_6]^{3+}$ complex ion. [*H.P. Board 2020*] **[2]**

Q.12 Discuss the Magnetic behaviour, Nature, geometry of $[NiCl_4]^{-2}$ ion on the basis of VBT. [*HP Board 2018*] **[2]**

Q.13 Discuss the geometry, nature and magnetic behaviour of $[Cr(NH_3)_6]^{+3}$ ion on the basis of VBT. [*HP Board 2018*] **[2]**

Q.14 Define ligands. Give one example each of bidentate and hexadentate ligands. [*HP Board 2017*] **[2]**

Q.15 On the basis of valence bond theory, explain that ferricyanide ion $[Fe(CN)_6]^{3-}$ is weakly paramagnetic while ferrocyanide ion $[Fe(CN)_6]^{4-}$ is diamagnetic. [*HP Board 2017*] **[2]**

Q.16 Explain the geometry and magnetic behaviour of $[Ni(CN)_4]^{2-}$ on basis of Valence Bond theory. [*H.P. Board 2016*] **[2]**

Q.17 Explain the geometry and magnetic behaviour of $[CO(NH_3)]^{3+}$ complex according to valence bond theory. [*H.P. Board 2016*] **[2]**

Q.18 Based on VBT, explain geometry and magnetic behaviour of $[Fe(CN)_6]^{-4}$ ion. [*H.P. Board 2016*] **[2]**

Q.19 What are ambident nucleophiles? Explain with an example. [*H.P. Board 2016*] **[2]**

Q.20 By using valence bond theory discuss the geometry of $[Co(NH_3)_6]^{3+}$ ion. [*HP Board 2012*] **[2]**

Q.21 Define crystal field splitting energy. Give the number of unpaired electrons in $[Fe(CN)_6]^{4-}$. [*HP Board 2012*] **[2]**

Q.22 What is ligand? Give the example of unidentate and polydentate ligand. [*HP Board 2012*] **[2]**

Q.23 What is the difference between a complex compound and a double salt ? [*HP Board 2011*] **[2]**

Q.24 By using valence bond theory discuss the geometry and magnetic nature of $[Cr(NH_3)_6]^{3+}$ ion. [*HP Board 2010, 2011*] **[2]**

Q.25 Out of $[Sc(H_2O)_6]^{+3}$ and $[Ti(H_2O)_6]^{+3}$ ions which is coloured and why ? Give reason. [*HP Board 2011*] **[2]**

Q.26 How would you account for the fact that $[Ni(CO)_4]$ has tetrahedral geometry ? [*HP Board 2010*] **[2]**

Q.27 On the basis of valence bond theory explain the structure of $[Fe(CN)_6]^{3-}$ complex. [*HP Board 2010*] **[2]**

10 CHAPTER

Haloalkanes and Haloarenes

1 Mark Questions.

Q.1 2R – Cl + Na Dryether R – R +2NaCl. The reaction is:
(A) wurtz reacton
(B) Fittig reaction
(C) Finkelstein reaction
(D) Frankland reaction [*H.P. Board 2020*] **[1]**

Q.2 $2Ar - Cl + Na \xrightarrow{\text{Dry Ether}} Ar - Ar + 2NaCl$. The reaction is : [*H.P. Board 2020*] **[1]**
(A) Wurtz reaction (B) Fittig reaction
(C) Finkelstein reaction (D) Frankland reaction

Q.3 $Ar - Cl + Na + Cl\text{-}R \xrightarrow{\text{Dry Ether}} Ar\text{–}R + 2NaCl$. The reaction is : [*H.P. Board 2020*] **[1]**
(A) Wurtz reaction (B) Fittig reaction
(C) Finkelstein reaction (D) Wurtz-Fittig reaction

Q.4 Explain why Haloalkanes give cyanide with KCN (alc.) and isocyanide with AgCN (alc.).[*HP Board 2018*] **[1]**

Q.5 Haloalkanes are polar in nature though they are practically insoluble in water, why?
[*HP Board 2018*] **[1]**

Q.6 What are freons? Give one example.
[*HP Board 2017*] **[1]**

Q.7 Explain : Racemisation [*H.P. Board 2016*] **[1]**

Q.8 Chloroform is stored in dark coloured bottles. Why ?
[*HP Board 2013,2014*] **[1]**

Q.9 Give Hunsdiecker reaction.
[*HP Board 2010,2011, 2012, 2013,2014*] **[1]**

Q.10 Give one example of Balz-schiemann reaction.
[*HP Board 2013*] **[1]**

Q.11 Write equation for Sandmeyer's reaction.
[*HP Board 2010, 2011, 2012*] **[1]**

Q.12 Write Wurtz-Fitting reaction.
[*H.P. Board 2016*] **[1]**

Q.13 Write Sandmeyer reaction. [*H.P. Board 2016*] **[1]**

Q.14 What are enantiomers ? [*HP Board 2015*] **[1]**

Q.15 What are ambident nucleophiles ?
[*HP Board 2015*] **[1]**

Q.16 Write short note on Finkelstein reaction.
[*HP Board 2012*] **[1]**

Q.17 Give the preparation of D.D.T.
[*HP Board 2012*] **[1]**

Q.18 Explain diazotisation reaction. [*HP Board 2011*] **[1]**

Q.19 Explain with an example. What are Freons ?
[*HP Board 2017*] **[1]**

Q.20 Why is chloroform stored in dark coloured bottles ?
[*HP Board 2017*] **[1]**

Q.21 How will you prepare phosgene gas from chloroform?
[*HP Board 2017*] **[1]**

Q.22 Explain : Sandmeyer's Reaction.
[*HP Board 2018*] **[1]**

2 Marks Questions.

Q.23 Write following reactions only :
a) Sandmeyer reaction
[*H.P. Board 2020*] **[1]**
b) Friedel-Crafts Alkylation reaction
[*H.P. Board 2020*] **[1]**

Q.24 ***a)*** Write Balz-Schiemann reaction.
[*H.P. Board 2020*] **[1]**
b) Write Diazotisation reaction.[*H.P. Board 2020*] **[1]**

Q.25 Write following reaction only :

a) Finkelstein reaction [*H.P. Board 2020*] **[1]**

b) Friedel-Crafts Alkylation reaction using Chlorobenzene as a starting material. [*H.P. Board 2020*] **[1]**

c) Give IUPAC name of the following compound : $CH_3CH(Cl)\,CH(Br)\,CH_3$ [*H.P. Board 2020*] **[1]**

Q.26 ***a)*** Why Haloarenes are less reactive than Haloalkanes?

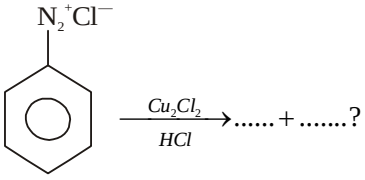
b) Give IUPAC name of D.D.T.

[*HP Board 2018*] **[2]**

Q.27 ***a)*** Aryl halides are less reactive than alkyl halides, explain why? [*HP Board 2017*] **[1]**

b) Draw the structure of DDT. [*HP Board 2017*] **[1]**

Q.28 ***a)*** Complete the following reaction : [*HP Board 2017*] **[1]**



b) Explain Finkelstein reaction.

[*HP Board 2010, 2016 2017*] **[1]**

Q.29 ***a)*** Explain Gattermann reaction.

[*HP Board 2016, 2017*] **[1]**

b) Write short notes on : Hunsdiecker reaction [*HP Board 2017*] **[1]**

Q.30 Write DDT structure. Give harmful effects of DDT. [*H.P. Board 2016*] **[2]**

Q.31 ***a)*** Complete the reaction : $CH_3CH_2Br + KOH(alc) \rightarrow$ [*HP Board 2015*] **[2]**

b) Define Chirality. [*HP Board 2015*] **[2]**

Q.32 Discuss Friedel - Craft alkylation and acylation reaction with respect to haloarenes. [*HP Board 2013, 2015*] **[2]**

Q.33 Write a chemical reaction to illustrate Saytzeff's rule. [*HP Board 2012, 2014*] **[2]**

Q.34 How will you prepare haloalkanes from alkene ? [*HP Board 2013*] **[2]**

Q.35 What is freon ? How is it prepared from CCl_4 ? Write its one use. [*HP Board 2010, 2011*] **[2]**

3 Marks Questions.

Q.36 Write following reactions only :

a) Gattermann reaction [*H.P. Board 2020*] **[1]**

b) Friedel-Crafts Acylation reaction [*H.P. Board 2020*] **[1]**

c) Give IUPAC name of the following compound :

$Cl - CH_2 - CH_2 - C \equiv C - CH_2I$ [*H.P. Board 2020*] **[1]**

Q.37 ***a)*** Write down Balz-Schiemann Reaction. [*HP Board 2018*] **[2]**

b) Out of S_N^1 and S_N^2 reactions which reaction [*HP Board 2018*] **[1]**

Q.38 ***a)*** Haloarenes are insoluble in water but soluble in benzene. Explain. [*HP Board 2015*] **[1]**

b) What are racemic mixtures? [*HP Board 2017*] **[1]**

c) Explain why aryl halides are ortho- and para-directing in nature. [*HP Board 2017*] **[1]**

11 CHAPTER

Alcohols, Phenols and Ethers

1 Mark Questions.

Q.1 Which of the following cannot be prepared by using Williamson's synthesis :
(A) Methoxybenzene
(B) Benzyl-p-nitrophenyl ether
(C) Methyl tert-butyl ether
(D) Di-tertiary butyl ether [*H.P. Board 2020*] **[1]**

Q.2 Which is formed when diethyl ether is heated with excess of HI ? [*H.P. Board 2020*] **[1]**
(A) Ethyl alcohol and ethyl iodide
(B) Ethyl iodide only
(C) Ethyl alcohol only
(D) Ethyl iodide and ethane

Q.3 Which is simple ether among the following ethers :
(A) $C_2H_5OCH_3$ (B) CH_3OCH_3
(C) $C_6H_5OCH_3$ (D) None of these
[*H.P. Board 2020*] **[1]**

Q.4 Explain why propanol has higher boiling point than that of the hydrocarbon butane ?
[*H.P. Board 2020*] **[1]**

Q.5 Benzene diazonium chloride on treatment with warm H_2O gives [*H.P. Board 2016*] **[1]**
(A) Diphenyl ether (B) p-Hydroxy azobenzene
(C) Chlorobenzene (D) Phenol

Q.6 Write short note on : Reimer-Tiemann reaction
[*HP Board 2018*] **[1]**

Q.7 How will you prepare picric acid from phenol? Give reaction. [*HP Board 2017,2010,11*] **[1]**

Q.8 Alcohols are weaker acids than water. Why?
[*HP Board 2017*] **[1]**

Q.9 Explain, why ortho-nitrophenol is more acidic than ortho methoxy phenol. [*HP Board 2015,2012*] **[1]**

Q.10 Explain Williamson's synthesis.
[*HP Board 2012, 2014*] **[1]**

Q.11 Draw the structure of isobutyl alcohol and give its IUPAC name. [*HP Board 2003, 2013*] **[1]**

Q.12 How will you show whether a given –OH group is alcoholic or phenolic ? [*HP Board 2013*] **[1]**

Q.13 Write the structure and IUPAC name of aspirin.
[*HP Board 2010, 2013*] **[1]**

Q.14 Complete the following reaction : $C_2H_5ONa + C_2H_5Br \rightarrow$ .....+ ..... . [*HP Board 2011, 2012*] **[1]**

Q.15 What happens when phenol is treated with *aq.* bromine water? [*HP Board 2006,2010*] **[1]**

Q.16 Explain that the relative ease of dehydration of alcohols is : tertiary > secondary > primary.
[*HP Board 2015*] **[1]**

Q.17 Write esterification Reaction. [*HP Board 2018*] **[1]**

Q.18 What happens when phenol is heated with Zn dust ?
[*HP Board 2015,2012*] **[1]**

2 Marks Questions

Q.19 ***a)*** Give Lucas chemical test to distinguish between primary, secondary and tertiary alcolho.
[*H.P. Board 2020*] **[1]**
b) Give chemical test to distinguish between ethahol and acetic acid. [*H.P. Board 2020*] **[1]**

Q.20 Give reason for the higher boiling point of ethanol in comparison to methoxymethane.
[*H.P. Board 2020*] **[1]**

Q.21 ***a)*** How will you distinguish between Phenol and Alcohol ? [*H.P. Board 2020*] **[1]**
b) Give chemical test to distinguish between phenol and benzoic acid. [*H.P. Board 2020*] **[1]**

Q.22 Alcohols are comparatively more soluble in water than hydrocarbons of comparable molecular masses. Explain this fact. [*H.P. Board 2020*] **[1]**

Q.23 ***a)*** What happens when phenol is treated with concentrated Nitric acid ? Give reaction.
[*H.P. Board 2020*] **[1]**
b) Why alcohols are less acidic than phenols ?
[*H.P. Board 2020*] **[1]**

Q.24 Phenols are more acidic than alcohols. Explain.
[*HP Board 2018*] **[2]**

Q.25 How will you distinguish between primary, secondary and tertiary alcohols with Lucas test? Explain.
[*HP Board 2017,2011*] **[2]**

Q.26 Explain why phenols are more acidic than alcohols.
[*HP Board 2017,2012*] **[2]**

Q.27 Why alcohols are higher boiling compounds than hydrocarbons of corresponding molecular masses but have low boiling points than corresponding acids?
[*H.P. Board 2016*] **[2]**

Q.28 Alcohols are comparatively more soluble in water than hydrocarbons of comparable molecular masses. Explain. [*HP Board 2015*] **[2]**

Q.29 Account for the following : Out of phenol and benzene which is more easily nitrated and why ?
[*HP Board 2012*] **[2]**

3 Marks Questions

Q.30 Write equations of the following reactions :
i) Nitration of anisole. [*HP Board 2011*] **[1]**
ii) Bromination of anisole in ethanoic acid medium.
[*HP Board 2011*] **[1]**
iii) Friedel–Crafts acetylation of anisole.
[*HP Board 2011*] **[1]**

12 CHAPTER — Aldehydes, Ketones and Carboxylic Acids

1 Mark Questions.

Q.1 The reagent which can be used to distinguish acetophenone from benzophenone is :
(A) 2, 4 – Dinitrophenyl hydrazine
(B) Benedict's solution
(C) Tollen's reagent
(D) I_2 and Na_2CO_3 *[H.P. Board 2020]* **[1]**

Q.2 When ethanal is heated with Fehling's solution, it gives a precipitate of :
(A) Cu (B) CuO
(C) Cu_2O (D) Cu + Cu_2O + CuO
[H.P. Board 2020] **[1]**

Q.3 CH_3CHO and $C_6H_5CH_2CHO$ can be distinguished chemically by : *[H.P. Board 2020]* **[1]**
(A) Benedict's test (B) Iodoform test
(C) Tollen's reagent test (D) Fehling's solution test

Q.4 Explain HVZ Reaction. *[HP Board 2018]* **[1]**

Q.5 Write short note on : Etard reaction.
[HP Board 2017] **[1]**

Q.6 Cannizzaro reaction *[HP Board 2015, 2017]* **[1]**

Q.7 Clemmensen Reduction. *[HP Board 2018]* **[1]**

Q.8 Complete the following reaction :

$$CH_3CHO + CH_3OH \xrightarrow{HCl} .....?.....$$

[H.P. Board 2016] **[1]**

Q.9 Do aldehydes exhibit position isomerism?
[H.P. Board 2016] **[1]**

Q.10 Arrange the following in increasing order of acidic strength :
CH_3CH_2COOH, $HOCH_2COOH$, $C_6H_5CH_2COOH$, ClCH2COOH. *[H.P. Board 2016]* **[1]**

Q.11 Why the bond length of C = O in carboxylic acid is slightly larger than that in aldehyde and ketone?
[H.P. Board 2016] **[1]**

Q.12 Complete the following reaction :

$$C_6H_5Br + Mg \xrightarrow{ether} ? \xrightarrow[H_3O^+]{CO_2} ?$$

[H.P. Board 2016] **[1]**

Q.13 How will you distinguish between

$$CH_3CHO \text{ and } CH_3-\overset{\overset{O}{\|}}{C}-CH_3 ?$$

[H.P. Board 2016] **[1]**

Q.14 Complete the following reaction: *[H.P. Board 2016]* **[1]**
2 HCHO + NaOH (50%) → .....?.... + ...?.....

Q.15 Arrange the following in decreasing order acidic strength :
H_2O, CH_3OH, C_6H_5OH, CH_3COOH
[H.P. Board 2016] **[1]**

Q.16 Write short note on the Rosenmund reduction.
[H.P. Board 2016] **[1]**

Q.17 Benzoic acid is stronger acid than Acetic acid. Justify.
[HP Board 2015] **[1]**

Q.18 Complete the following reaction : $CH_3COCl + H_2 \xrightarrow[\text{Quinoline or S}]{Pd/BaSO_4}$ *[HP Board 2015]* **[1]**

Q.19 Write short note on the following : Decarboxylation reaction. *[HP Board 2015]* **[1]**

Q.20 Arrange the following in increasing order of acidic strength :
$(CH_3)_2CHCOOH$, $CH_3CH_2CH(Br)COOH$, $CH_3CH(Br)CH_2COOH$ *[HP Board 2015]* **[1]**

Q.21 How will you distinguish acetone and acetaldehyde ? Give one test. *[HP Board 2014]* **[1]**

Q.22 p-nitrobenzoic acid is stronger acid than benzoic acid. Justify. [*HP Board 2015*] **[1]**

Q.23 Give aldol condensation reaction of acetaldehyde and explain why formaldehyde does not give this reaction? [*HP Board 2009, 2011, 2013*] **[1]**

Q.24 How will you convert benzoic acid to ethyl benzoate? [*HP Board 2012*] **[1]**

Q.25 Formic acid is stronger acid than acetic acid. Justify. [*HP Board 2012*] **[1]**

Q.26 Ethanoic acid is weaker acid than benzoic acid. [*HP Board 2012*] **[1]**

Q.27 Write short note on Kolbe's electrolysis. [*HP Board 2011, 2012*] **[1]**

Q.28 Explain Wolf-Kishner Reduction. [*HP Board 2018*] **[1]**

Q.29 Boiling points of carboxylic acids are higher than corresponding alcohols. Why? [*HP Board 2017*] **[1]**

Q.30 How will you bring about the following conversions ?

***i*)** Ethanol to 3-hydroxybutanal

***ii*)** Benzaldehyde to Benzophenone

[*HP Board 2014*] **[1]**

2 Marks Questions.

Q.31 Discuss the preparation of aldehydes by

***i*)** Rosenmund's reduction

***ii*)** Stephen's reaction [*HP Board 2012*] **[2]**

Q.32 Which is more reactive—aldehyde or ketone, in nucleophilic addition reaction and why? [*HP Board 2017*] **[2]**

Q.33 Write the following reactions :

***i*)** Aldol condensation reaction.

***ii*)** Cross Cannizzaro's reaction.

[*H.P. Board 2016*] **[1, 1]**

Q.34 Why aldehyde group is meta directing in nature for electrophilic substitution reaction in benzene ring ? [*HP Board 2013*] **[2]**

Q.35 Write short notes on the following :

***a*)** Aldol condensation [*HP Board 2017*] **[1]**

***b*)** Aliphatic aldehydes do not show position isomerism. Why? [*HP Board 2017*] **[1]**

Q.36 ***a*)** Aldol condensation reaction. [*H.P. Board 2020*] **[1]**

***b*)** HVZ reaction. [*H.P. Board 2020*] **[1]**

***c*)** How will you distinguish between Benzaldehyde and Acetone ? [*H.P. Board 2020*] **[1]**

d) Convert Formaldehyde to acetaldehyde. [*H.P. Board 2020*] **[1]**

13 CHAPTER

Amines

1 Mark Questions.

Q.1 Which is the incorrect statement in the following :
(A) Methyl amine is more basic than ammonia
(B) Amines form hydroen bonds
(C) Ethyl amine has higher boiling point than propane
(D) Dimethylamine is less basic than methylamine
[H.P. Board 2020] **[1]**

Q.2 Which of the following is more basic than aniline : *[H.P. Board 2020]* **[1]**
(A) benzyl amine (B) diphenylamine
(C) triphenylamine (D) p-nitroaniline

Q.3 Choose one incorrect statement :
(A) Primary amines show intermolecular hydrogen bonds
(B) Tert-butylamine is a primary amine
(C) Tertiary amine do not show hydrogen bonds
(D) Isopropyl amine is a secondary amine
[H.P. Board 2020] **[1]**

Q.4 What is Zwitter ion ? *[H.P. Board 2020]* **[1]**

Q.5 Which compound undergoes Hoffmann's Bromamide Reaction? *[HP Board 2017]* **[1]**
(A) HCHO (B) CH_3CHO
(C) CH_3OH (D) $CH_3-\overset{\overset{O}{\|}}{C}-NH_2$

Q.6 Which one of the following is more basic?
(A) C_6H5-NH_2 (B) NH_3
(C) $CH_3CH_2-NH_2$ (D) CH_2-NH_2
[HP Board 2017] **[1]**

Q.7 Benzene diazonium chloride on treatment with warm H_2O gives: *[H.P. Board 2016]* **[1]**
(A) Diphenylether (B) P-Hydroxy azobenzene
(C) Chlorobenzene (D) Phenol

Q.8 What is Coupling Reaction. *[HP Board 2018]* **[1]**

Q.9 Dimethyl amine is more basic than methyl amine. Why? *[HP Board 2017]* **[1]**

Q.10 How will you convert aniline to chlorobenzene? *[H.P. Board 2016]* **[1]**

Q.11 Write a short note on carbylamine test. *[H.P. Board 2016]* **[1]**

Q.12 How will you convert benzoic acid to aniline? *[H.P. Board 2016]* **[1]**

Q.13 Write a short note on Hoffmann's degradation reaction. *[H.P. Board 2016]* **[1]**

Q.14 How will you convert aniline to benzzene diazonium chloride? *[H.P. Board 2016]* **[1]**

Q.15 Aromatic primary amines cannot be prepared by Gabriel phthalimide Synthesis. Explain. *[H.P. Board 2016]* **[1]**

Q.16 How will you convert benzene to aniline? *[H.P. Board 2016]* **[1]**

Q.17 Write short note on ammonolysis reaction. *[H.P. Board 2016]* **[1]**

Q.18 Aniline does not undergo Friedel Craft alkylation. Explain. *[H.P. Board 2016]* **[1]**

Q.19 Arrange the following compounds in order of their basic strength in aqueous solution :NH_3, $C_6H_5NH_2$, CH_3NH_2, $(CH_3)_3N$. *[H.P. Board 2016]* **[1]**

Q.20 Why ethylamine is more basic than ammonia ? *[HP Board 2015]* **[1]**

Q.21 Explain Mendius reaction. *[HP Board 2013]* **[1]**

Q.22 Write short note on diazotisation reaction. *[HP Board 2012]* **[1]**

Q.23 Write short note on Sandmeyer's reaction. *[HP Board 2011]* **[1]**

Q.24 Write short note on coupling reaction. *[HP Board 2011]* **[1]**

Q.25 What is Hinsberg Reagent? *[HP Board 2018]* **[1]**

2 Marks Questions.

Q.26 ***a)*** Write Carbylamine reaction.*[H.P. Board 2020]* **[1]**
b) Write Ammonolysis reaction.*[H.P. Board 2020]* **[1]**

c) What is Hoffmann bromamide reaction ? Why it is regarded as Hofmann degradaton reaction ?
[*H.P. Board 2020*] **[1]**

Q.27 *a)* Coupling reaction. [*H.P. Board 2020*] **[1]**

b) Gabriel phthalimide synthesis.
[*H.P. Board 2020*] **[1]**

Q.28 *a)* Why aniline is less basic than ethylamine?
[*HP Board 2018*] **[1]**

b) Explain Hoffmann Bromoamide Reaction
[*HP Board 2018*] **[1]**

Q.29 *a)* $C_6H_5NH_2 + CHCl_3 + KOH\ (alc.) \rightarrow .... ?$
[*HP Board 2018*] **[1]**

b) How will you convert : Nitrobenzene to Aniline?
[*HP Board 2015*] **[1]**

Q.30 Tertiary amines do not undergo acylation. Explain.
[*H.P. Board 2016*] **[2]**

Q.31 Give one chemical test to distinguish between the following pair of compounds :Methylamine and dimenthylamine. [*H.P. Board 2016*] **[2]**

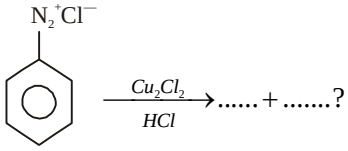
Q.32 Give possible explanation that aliphatic amines are stronger bases than ammonia. [*HP Board 2013*] **[2]**

Q.33 What happens when ethylamine is warmed with chloroform and alcoholic KOH ?
[*HP Board 2012, 2013*] **[2]**

Q.34 Which is more basic, aliphatic amines or ammonia and why ? [*HP Board 2010, 2011, 2012*] **[2]**

Q.35 *a)* Convert Aniline into Benzoic Acid.
[*HP Board 2018*] **[1]**

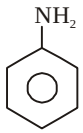
b) Complete the Reaction :



[*HP Board 2018*] **[1]**

Q.36 Explain ethylamine is more basic than Ammonia.
[*HP Board 2018*] **[2]**

Q.37 *a)* Explain the basicity of Primary, Secondary and Tertiary ammines. [*HP Board 2018*] **[1]**

b) 

$+ Br_2\ (aq.) \rightarrow .....?$

[*HP Board 2018*] **[1]**

Q.38 How will you convert :
a) Ethanamine to methanamine ? [*HP Board 2015*] **[1]**
b) Aniline to Phenol ? [*HP Board 2015*] **[1]**

3 Marks Questions.

Q.39 How will you convert [*HP Board 2015*] **[1]**
a) Propionamide to Ethylamine ? [*HP Board 2015*] **[1]**
b) Aniline to Benzene ? [*HP Board 2015*] **[1]**
c) Aniline to Chlorobenzene? [*HP Board 2015*] **[1]**

Q.40 Name the test with which primary, secondary and tertiary amines can be distinguished.
[*HP Board 2013*] **[3]**

14 CHAPTER Biomolecules

1 Mark Questions.

Q.1 Name the enzyme which converts glucose into ethanol. [*HP Board 2018*] **[1]**

Q.2 What is peptide linkage? Give one example. [*HP Board 2017*] **[1]**

Q.3 What do you understand by glycosidic linkage? [*H.P. Board 2016*] **[1]**

Q.4 Name the vitamin whose deficiency causes beri-beri. [*H.P. Board 2016*] **[1]**

Q.5 What are essential and non-essential amino acids ? [*HP Board 2010*] **[1]**

Q.6 Differentiate between globular proteins and fibrous proteins. [*HP Board 2015*] **[1]**

Q.7 What is mutarotation ? [*HP Board 2015*] **[1]**

Q.8 What is nucleotide ? [*HP Board 2012*] **[1]**

Q.9 ***a)*** Explain Primary and Secondary structure of Proteins. [*HP Board 2018*] **[1]**

b) What is Zwitter ion? [*HP Board 2018*] **[1]**

Q.10 ***a)*** What are essential and non-essential amino acids? [*HP Board 2018*] **[1]**

b) Give chemical name of Vitamin-A. [*HP Board 2018*] **[1]**

Q.11 What type of bonds hold a DNA double helix together? [*HP Board 2012*] **[1]**

2 Marks Questions.

Q.12 ***a)*** Why are Vitamin -A and Vitamin - C essential to us? Give their important sources. [*H.P. Board 2020*] **[1]**

b) What are essential amino acids ? [*H.P. Board 2020*] **[1]**

Q.13 ***a)*** Give the classification of vitamins. [*H.P. Board 2020*] **[2]**

Q.14 ***a)*** Give one example each of water soluble and fat soluble vitamins. [*H.P. Board 2020*] **[2]**

b) What are amino acids ? [*H.P. Board 2020*] **[1]**

Q.15 Give four points of difference between RNA and DNA. [*HP Board 2011,2017*] **[2]**

Q.16 Give different uses of carbohydrates. [*HP Board 2011*] **[2]**

Q.17 What is the difference between α–glucose and β–glucose? Write their cyclic structures. [*H.P. Board 2016*] **[2]**

Q.18 What is denaturation of Proteins? [*HP Board 2018*] **[2]**

Q.19 Write the chemical name of vitamin C and name the disease caused by the deficiency of vitamin C. [*HP Board 2017*] **[2]**

Q.20 ***a)*** Define the term Genetic code. [*HP Board 2012*] **[1]**

b) What are reducing sugars ? [*HP Board 2012*] **[1]**

3 Marks Questions.

Q.21 What is peptide linkage? Give difference between polypeptides and proteins. [*HP Board 2011*] **[3]**

Q.22 Give points of difference between fibrous proteins and globular proteins. [*HP Board 2011, 2014*] **[3]**

15 CHAPTER Polymers

1 Mark Questions.

Q.1 The monomer unit of PVC is [*HP Board 2017*] **[1]**

(A) vinyl chloride (B) ethylene

(C) chloroprene (D) acrylonitrile

Q.2 $F_2C = CF_2$ is a monomer of [*HP Board 2017*] **[1]**

(A) Glyptal (B) Teflon

(C) Orlon (D) Buna-S

Q.3 The element used for vulcanisation of rubber is

(A) potassium (B) sulphur

(C) zinc (D) chlorine

[*HP Board 2017*] **[1]**

Q.4 Which is not a polymer [*HP Board 2017*] **[1]**

(A) Nylon -6 (B) Rubber

(C) Teflon (D) Chlorophyll

Q.5 Which is not true about polymers? [*H.P. Board 2016*] **[1]**

(A) Polymers do not carry any charge

(B) Polymers have high viscosity

(C) Polymers scatter light

(D) Polymers have low molecular weight

Q.6 Vulcanisation makes rubber [*H.P. Board 2016*] **[1]**

(A) more elastic

(B) Soluble in inorganic solvent

(C) Crystalline

(D) None of these

Q.7 Differenctiate between Thermoplastics and Thermosetting Plastics. [*HP Board 2018*] **[1]**

Q.8 What is vulcanisation of Rubber? [*HP Board 2018*] **[1]**

Q.9 What is the monomer of natural rubber? [*HP Board 2018*] **[1]**

Q.10 Define elastomer. [*HP Board 2018*] **[1]**

Q.11 Give synthesis of Buna-S. [*HP Board 2018*] **[1]**

Q.12 What are fibres? [*HP Board 2018*] **[1]**

Q.13 What are thermosetting polymers? [*HP Board 2018*] **[1]**

Q.14 Give synthesis of Nylon-66. [*HP Board 2018*] **[1]**

Q.15 What is vulcanization of rubber? Explain. [*H.P. Board 2016*] **[1]**

Q.16 Write the names and structures of monomers of Buna-S. [*H.P. Board 2016*] **[1]**

Q.17 Give the synthesis of Bakelite. [*H.P. Board 2016*] **[1]**

Q.18 Why is Nylon-66 so called? [*H.P. Board 2016*] **[1]**

Q.19 How is Nylon - 66 Synthesised? [*H.P. Board 2016*] **[1]**

Q.20 Explain biodegradable polymers. [*H.P. Board 2016*] **[1]**

Q.21 What are the monomers of bakelite ? [*HP Board 2015*] **[1]**

Q.22 What are Thermosetting polymers ? Give example. [*HP Board 2015*] **[1]**

Q.23 What are thermoplastics? Give one example. [*HP Board 2017*] **[1]**

Q.24 Describe the preparation of Buna-S. [*HP Board 2017*] **[1]**

2 Marks Questions.

Q.25 ***a)*** Distinguish between the homopolymer and copolymer. Give four differences only. [*H.P. Board 2020*] **[2]**

b) Write synthesis of Teflon polymer. **[1]**

Q.26 ***a)*** Distinguish between the thermoplastic polymer and thermosetting polymer. Give four differences only. [*H.P. Board 2020*] **[2]**

b) Write synthesis of Buns-S polymer. [*H.P. Board 2020*] **[1]**

Q.27 ***a)*** How can you differentiate between addition and condensation polymerisation ? Give four differences only. [*H.P. Board 2020*] **[2]**

b) Write synthesis of any one addition polymer. [*H.P. Board 2020*] **[1]**

Q.28 ***a)*** What are condensation polymers? Give one example. [*HP Board 2017*] **[1]**

b) Describe the preparation of bakelite. [*HP Board 2017*] **[1]**

Q.29 Describe the preparation of : Polyvinyl chloride. [*HP Board 2015*] **[2]**

Q.30 What are Copolymers ? Give chemical equation for the preparation of glyptal. [*HP Board 2015*] **[2]**

Q.31 Distinguish between the term homopolymer and copolymer with suitable example. [*HP Board 2012*] **[2]**

16 CHAPTER Chemistry in Everyday Life

1 Mark Questions.

Q.1 Which of the following chemical can be added for sweetening of food items at cooking temperature and does not provide calories:

(A) Sucrose (B) Glucose

(C) Aspartame (D) Sucralose

[*H.P. Board 2020*] **[1]**

Q.2 Equanil is : [*H.P. Board 2020*] **[1]**

(A) artificial sweetener

(B) tranquilizer

(C) antihistamine

(D) antifertility drug

Q.3 What are antiseptics ? [*H.P. Board 2020*] **[1]**

Q.4 The compound that causes general anti-depressant action on the central nervous system belongs to the class of : [*H.P. Board 2020*] **[1]**

(A) analgesics (B) tranquilizers

(C) narcotic analgesics (D) antihistamines

Q.5 What are antibiotics? [*H.P. Board 2020*] **[1]**

Q.6 Which of the following is used as artificial sweetener?

(A) Saccharin (B) Aspirin

(C) Omeprazole (D) Pheniramine

[*HP Board 2018*] **[1]**

Q.7 Which is not a tranquillizer? [*HP Board 2018*] **[1]**

(A) Luminal (B) Seconal

(C) Valium (D) Bithanol

Q.8 Penicillin is [*HP Board 2018*] **[1]**

(A) an Analgesics (B) a Tranquillizer

(C) an antibiotics (D) an Antiseptics

Q.9 Define Analgesics. [*HP Board 2018*] **[1]**

Q.10 Define Antifertility drugs. [*HP Board 2018*] **[1]**

Q.11 Name a substance which can be used as an antiseptic as well as a disinfectant. [*HP Board 2017*] **[1]**

Q.12 What are anitpyretics? Give one example. [*HP Board 2017*] **[1]**

Q.13 What are the main constituents of Dettol? [*HP Board 2017*] **[1]**

Q.14 What are antibiotics? Give one example. [*HP Board 2017*] **[1]**

Q.15 What is tincture of iodine and what is it used for? [*HP Board 2017*] **[1]**

Q.16 What are food preservatives? [*H.P. Board 2016*] **[1]**

Q.17 What are tranquillizers? [*H.P. Board 2016*] **[1]**

Q.18 Define Chemotherapy. [*H.P. Board 2016*] **[1]**

Q.19 Name the sweetening agent used in the preparation of sweets for a diabetic patient. [*HP Board 2015*] **[1]**

Q.20 What is an antacid? [*H.P. Board 2015, 2016*] **[1]**

Q.21 Name first antibiotic and who discovered it . [*HP Board 2013*] **[1]**

Q.22 Name two artificial sweeteners used in food materials. [*HP Board 2012*] **[1]**

Q.23 What is the role of bithional in the toilet soap ? [*HP Board 2012*] **[1]**

Q.24 Name a broad-spectrum antibiotic and state two diseases for which it is prescribed. [*HP Board 2013*] **[1]**

2 Marks Questions.

Q.25 How are antiseptics distinguished from disinfectants? Give one example of each of the substances. [*H.P. Board 2016*] **[2]**

Q.26 What is tincture of iodine? Give the constituents of dettol. [*H.P. Board 2016*] **[2]**

Q.27 How do analgesics differ from antipyretics ? Give one example of each. [*HP Board 2013*] **[2]**

3 Marks Questions.

Q.28 What are detergents ? Give their scheme of classification. Why are detergents preferred over soaps ? [*HP Board 2014*] **[3]**