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STD:12 Unit- 1- Metallurgy SUBJECT:CHEMISTRY

1. Aluminothermic process is used for the extraction of metals, whose oxides are
   a. fusible b. not easily reduced by carbon
   c. not easily reduced by hydrogen d. strongly basic
2. Heating of carbonates ores to remove carbon is called
   a. roasting b. calcination
   c. smelting d. fluxing
3. Sulphide ores are common for the metals
   a. Ag, Cu and Pb b. Ag, Cu and Sn
   c. Ag, Mg and Pb d. Al, Cu and Pb
4. The metal used in storage batteries is
   a. Cu b. Pb
   c. Sn d. Au
5. Vapour phase refining can be done in the case of
   a. Ni b. Zr
   c. Ti d. All of these
6. In Ellingham diagram of ΔG° Vs T, which of the following graphs has a negative slope?
7. a. $C \rightarrow CO$ b. $Fe \rightarrow Fe_2O_3$
   c. $Mg \rightarrow MgO$ d. all of these
8. Aluminium is used as a reducing agent in the reduction of
   a. SnO_2 b. Al_2O_3
   c. ZnO d. MgO
9. In the extraction of copper from its sulphide ore, the metal finally obtained by the reduction of cuprous oxide with
   a. FeS b. CO
   c. Cu_2S d. SO_2

10. Which of the following is a mineral of Iron?

a. Pyrolusite b. Cassiterite

c. malachite d. Magnetite

11. Which of the following pair of metals is purified by van Arkel method?

a. Zr& Ti b. Ag & Au

c. Ni & Fe d. Ga& In

12. Sulphide ores of metals are usually concentrated by froth floatation method. Which of the following sulphide ores offers an exception and is concentrated by chemical leaching?

a. Argentite b.Galena

c. copper pyrite d. Zinc blende

13. Consider the following reactions at 1000^0C

(i) $ZnS + 1/2\ O_2 \xrightarrow{\Delta} ZnO \quad \Delta G^0 = -360\ kJ\ mol^{-1}$

(ii) $C + 1/2\ O_2 \xrightarrow{\Delta} CO \quad \Delta G^0 = -460\ kJ\ mol^{-1}$

And choose the correct statement.

a. ZnO is more stable than CO

b. ZnO can be reduced to Zn by C

c. ZnO and CO are formed at equal rate

d. ZnO cannot be reduced to Zn by C

14. When ZnS and PbS minerals are present together, then NaCn is added to seprate them in the froth floatation process as a depresent , because

(a) $Pb(CN)_2$ is precipitated while no effect on ZnS

(b) ZnS forms a soluble complex $Na_2[Zn(CN)_4]$

(c) PbS forms a soluble complex $Na_2[Pb(CN)_4]$

(d) they cannot be separated by adding NaCN

15. Leaching of gold ore is carried out by heating it with a dilute solution of

(a) NaCN Only (b) HCl

(c) NaOH (d) NaCN and O_2

16. Which of the following is used as a collector in froth floatation method?

(a) Sodium ethyl xanthate (b) sodium nitroprusside

(c) SiO_2 (d) Pine oil

17. Incorrect statement in electrolysis of Al2O3 by Hall- Heroult process is

(a) Cryolite(Na_3AlF_6) lowers the m.pt of Al_2O_3 and increases its electrical conductivity

(b) Al is obtained at cathode and CO_2 at anode

(c) Li_2CO_3 can be used in place of Cryolite(Na_3AlF_6)

(d) MgF2 can be used in place of Fluorspar

18. The electrolyte used in electro refining of silver is

(a) Acidified aqueous solution of $AgNO_3$

(b) Acidified aqueous solution of Ag_2S

(c) Acidified aqueous solution of AgCl

(d) Alkaline aqueous solution of $AgNO_3$

19. Wolframite ore consists of

(a) Zn (b) W

(c) Au (d) Hg

20. Roasting is carried out to

(i) convert sulphide to oxide and shlphate

(ii) remove water of hydration

(iii) melt the ore

(iv) remove arsenic and sulphur impurities

Of these statements

(a) 1,2 and 3 are correct (b) 1 and 4 are correct

(c) 1,2 and 4 are correct (d) 2,3 and 4 are correct

21. Which of the following is used as acidic flux?

(a) FeO (b) CaO

(c) SiO_2 (d) $FeSiO_3$

STD:12 **SUBJECT:CHEMISTRY**

Unit- 2–P-BLOCK ELEMENTS-I

1. Which of the following structures is similar to graphite?
   a. BN b. B
   c. B_4C d. B_2H_6
2. Which of the following is electron deficient?
   a. $(CH_3)_2$ b. $(SiH_3)_2$
   c. $(BH_3)_2$ d. PH_3
3. Al_2O_3 can be converted into anhydrous $AlCl_3$ by heating
   a. Al_2O_3 with HCl gas b. Al_2O_3 with NaCl solid
   c. Al_2O_3 with Cl_2 gas d. a mixture of $Al_2O_3$and C in dry Cl_2 gas
4. Boric acid cannot be used
   a. as antiseptic in medicine b. for washing eyes
   c. in soda bottles d. for enamels and glazes
5. Which of the following does not give borax bead test?
   a. Al b. Ni
   c. Cr d. Cu
6. Orthoboric acid is a weak acid because
   a.it accepts OH^- ion b.it donates OH^- ion
   c.it accepts H^+ ion d. it donates H^+ ion
7. The structure of diborane contains
   a. Four 2c-2e bonds and two 3c-2e bonds
   b. two 2c-2e bonds and four 3c-2e bonds
   c. two 2c-2e bonds and two 3c-2e bonds
   d. Four 2c-2e bonds and four 3c-2e bonds
8. Common alum is
   a. $K_2SO_4.Cr_2(SO_4)_3.24H_2O$ b. $K_2SO_4.Fe_2(SO_4)_3.24H_2O$
   c. $FeSO_4.(NH_4)_2(SO_4)_3.24H_2O$ d. $K_2SO_4.Al_2(SO_4)_3.24H_2O$
9. The type of hybridisation of Boron in diborane is
   a. Sp^2 b. SP^3

c. SP d. sp^3d^2

10. Which of the following is not true about potash alum

a. its molecular formula is $K_2SO_4.Al_2(SO_4)_3.24H_2O$

b. its aqueous solution is basic

c. it is used in dyeing industries

d. on heating it loses water of crystallization to give burnt alum

11. quartz is an example of

a.chain silicate b.sheet silicate

c. cyclic silicate d. 3D network silicate

12. Match the items of column-I and II and mark the correct option

Column-I	Column-II
A. Phenacite	1. Chain silicate
B. Thortiveitite	2. Cyclic silicate
C. Beryl	3. Soro silicate
D. Spodumene	4. Niso silicate

a. A-4 , B-3 , C-2, D-1 b. A-3 , B-4 , C-1, D-2

c. A-4 , B-1 , C-2, D-3 d. A-2 , B-1 , C-3, D-4

13. On controlled hydrolysis and condensation of R_3SiCl yields

(a) $R_3Si\text{-}O\text{-}SiR_3$ (b) R_3SiOH

(c) $R_3Si_4O_4$ (d) R_4Si

14. Aluminium vessels should not be washed with material containing washing soda because(a) Al is a noble metal

(b) washing soda is easily decomposed

(c) washing soda reacts with Al and forms soluble aluminate

(d) washing soda reacts with Al and forms insoluble aluminium oxide

15. Inorganic benzene is

(a) B_2H_6 (b) $B_3N_3H_6$

(c) $B_3O_3H_6$ (d) $(BH_3)_3$

16. An aqueous solution of borax is

(a) acidic (b) basic

(c) neutral (d) amphoteric

17. Linear silicones are obtained by the hydrolysis of

(a) $SiCl_4$ (b) $RSiCl_3$

(c) R_2SiCl_2 (d) R_3SiCl

18. Which of the following doesnot show inert pair effect?

(a) Al (b) In

(c) Tl (d) Ga

19. Which of the following is a metalloid

(a) Phosphorous (b) Tellurium

(c) Iodine (d) Nitrogen

20. Which one of the following property does not support anamolous behaviour of of boron?a) small size (b) High electronegativity

(c) high ionisation energy (d) Formation of tri halides

STD:12 SUBJECT:CHEMISTRY

Unit- 3–P-BLOCK ELEMENTS-II

1. In which of the following compounds, nitrogen exhibits highest oxidation state?
   a. NH_3 b. NH_2OH
   c. N_2H_4 d. N_3H
2. When Cl_2 gas reacts with hot and concentrated sodium hydroxide solution, the oxidation number of chlorine changes from
   a. zero to -1 and zero to +3 b. zero to +1 and zero to -3
   c. zero to +1 and zero to -5 d. zero to -1 and zero to +5
3. P_4O_{10} is the anhydride of
   a. H_3PO_2 b. H_3PO_3
   c. H_3PO_4 d. $H_4P_2O_7$
4. Which of the following statements regarding ozone is not correct?
   a. the oxygen bond length in ozone is identical with that of molecular oxygen
   b. the ozone is response hybrid of two structures.
   c. the ozone molecule is angular in shape
   d. ozone is used as germicide and disinfectant in purification of water
5. Which noble gas is most abundant in atmosphere?
   a. He b. Ne
   c. Ar d. Kr
6. The reaction of P_4 with X leads selectively to P_4O_6. The X is
   a. Dry O_2 b. a mixture of O_2 and N_2
   c. Moist O_2 d. O_2 in the presence of moist NaOH
7. The brown ring test for nitrates depends on
   a. reduction of ferrous sulphate to Iron
   b. oxidation of nitric oxide into nitrogen dioxide

c. reduction of nitrate to nitric oxide

d. oxidising action of sulphuric acid

8. One mole of magnesium nitride on the reaction with an excess of water gives

a. 1 mole NH_3 b. 2 moles NH_3

c. 1 mole HNO_3 d. 2 moles HNO_3

9. Which of the following is correct for P_4 molecule of white phosphorous?

a. it has six P-P single bonds and 6 lone pairs of electrons

b. it has six P-P single bonds and 4 lone pairs of electrons

c. it has three P-P single bondsand 4 lone pairs of electrons

d. it has fourP-P single bondsand 4 lone pairs of electrons

10. In which of the following reactions conc H_2SO_4 is used as an oxidising agent?

a. $CaF_2 + H_2SO_4 \rightarrow CaSO_4 + 2HF$

b. $2HI + H_2SO_4 \rightarrow I_2 + SO_2 + 2H_2O$

c. $Cu + 2H_2SO_4 \rightarrow CuSO_4 + SO_2 + 2H_2O$

d. $NaCl + H_2SO_4 \rightarrow NaHSO_4 + HCl$

11. Which of the following statements are true?

a.only type of interactions between the particles of noble gases are due to weak dispersion forces.

b.XeF2 does not form addition compounds.

c. Hydrolysis of XeF_6 is a redox reaction.

d. Xenon fluorides are not reactive.

12. Match the items of column-I and II and mark the correct option

Column-I	Column-II
A. H_2SO_4	1. Highest electron gain enthalpy
B. CCl_3NO_2	2. Chalcogen
C. Cl_2	3. Tear gas

D. Sulphur	4. Storage batteries

a. A-4 , B-3 , C-1, D-2 b. A-3 , B-4 , C-1, D-2

c. A-4 , B-1 , C-2, D-3 d. A-2 , B-1 , C-3, D-4

13. Which of the following is the correct statement?

(a) F_2 has higher dissociation energy than Cl_2

(b) F has higher electron affinity than Cl

(c) HF is stronger acid than HCl

(d) Boiling point increases down the group in halogens.

14. When PCl_3 is hydrolysed oxyacid of phosphorous is obtained. The basicity of oxyacid is (a) one (b) two

(c) three (d) four

15. S-S bond is not present in

(a) $H_2S_2O_4$ (b) $H_2S_2O_5$

(c) $H_2S_2O_6$ (d) $H_2S_2O_7$

16. Bleaching action of SO2 is due to

(a) acidic property (b) oxidising property

(c) reducing property (d) basic property

17. Which is not hydrolysed with water?

(a) PCl3 (b) NCl3

(c) NF3 (d) BCl3

18. White phosphorous reacts with Calcium to form certain compounds, which on hydrolysis forms

(a) PH_3 (b) H_3PO_4

(c) P_4O_6 (d) P_4O_{10}

19. When copper is heated with conc HNO_3, it produces

(a) $Cu(NO_3)_2$ and NO (b) $Cu(NO_3)_2$ and NO_2

(c) $Cu(NO_3)_2$ and N_2O (d) $Cu(NO_3)_2$ alone

20. Which one of the following is not true at room temperature and pressure?

(a) P_4O_{10} is a white solid (b) SO_2 is a colourless gas

(c) SO_3 is a colourless gas

(d) NO_2 is a brown gas

STD:12

SUBJECT:CHEMISTRY

UNIT 4. d&f BLOCK ELEMENTS

1. Which of the following Lanthanoid ions is diamagnetic?
   a. Ce^{2+} b. Sm^{2+}
   c. Eu^{2+} d. Yb^{2+}
2. Which of the following statements about the interstitial compounds is incorrect?
   a. They retain metallic conductivity
   b. They are chemically reactive
   c. They are much harder than the pure metal
   d. They have higher melting points than the pure metal
3. All the metals form oxides of the type MO except
   a. copper b. barium
   c. silver d. lead
4. Among the following, the coloured compound is
   a. CuCl b. $K_3[Cu(CN)_4]$
   c. CuF_2 d. $[Cu(CH_3CN)_4]BF_4$
5. Potassium permanganate acts as an oxidant in neutral, alkaline as well as acidic media. The final products obtained from it in the three conditions are, respectively
   a. MnO_2, MnO_2, Mn^{2+} b. $MnO_2^{-4}, Mn^{3+}, Mn^{2+}$
   c. $MnO_2, MnO_2^{-4}, Mn^{3+}$ d. MnO, MnO_4, Mn^{2+}
6. How many ‘d’ electrons are in present Cr^{2+} ion
   a. 4 b. 5
   c. 6 d. 3
7. Formation of coloured solution is possible when metal ion in the compound contains
   a. paired electrons b. unpaired electrons
   c. lone pair of electrons d. none of these
8. Identify the incorrect statement among the following

a. d-Block elements show irregular and erratic chemical properties among themselves

b. La and Lu have partially filled d orbitals and no other partially filled orbitals

c. The chemistry of various lanthanoids is very similar

d. 4f and 5f orbitals are equally shielded

9. Knowing that the chemistry of lanthanoids (Ln) is dominated by its +3 oxidation state, which of the following statements is incorrect?

a. The ionic sizes of Ln (III) decrease in general with increasing atomic number

b. Ln (III) compounds are generally colourless

c. Ln (III) hydroxides are mainly basic in character

d. Because of the large size of the Ln (III) ions the bonding in its compounds is predominantly ionic in character

10. The outer electron configuration of Gd (Atomic number: 64) is

a. $4f^3\ 5d^5\ 6s^2$ b. $4f^8\ 5d^0\ 6s^2$

c. $4f^4\ 5d^4\ 6s^2$ d. $4f^7\ 5d^1\ 6s^2$

11. The bonds present in the structure of dichromate ion are

a. four equivalent Cr – O bonds only

b. six equivalent Cr – O bonds and one O – O bond

c. six equivalent Cr – O bonds and one Cr – Cr bond

d. six equivalent Cr – O bonds and one Cr – O – Cr bond

12. The correct order of $E^{O}_{M^{2+}/M}$ values with negative sign for the four successive elements Cr, Mn, Fe and Co is

a. Cr > Mn > Fe > Co b. Mn > Cr > Fe > Co

c. Cr > Fe > Mn > Co d. Fe > Mn > Cr > Co

13. When I^- is oxidized by MnO_4^- in alkaline medium, I^- converts into

a. IO_3^- b. I_2

c. IO_4^- d. IO^-

14. Which do not decolourise $KMnO_4$ aqueous solution?

a. $C_2O_4^-$ b.HSO_3^-

c. CO_3^{2-} d. SO_3^{2-}

15. What would happen when a solution of potassium chromate is treated with an excess of dilute nitric acid?

a. Cr^{3+} and $Cr_2O_7^{2}$ b. $Cr_2O_7^{2-}$ and H_2O are formed

c. $Cr_2O_4^{2-}$ is reduced to +7 state of Cr d. $Cr_2O_4^{2-}$ is reduced to +3 state of Cr

16. AgCldissolves in a solution ofNH_3but not in water because

a. NH_3 is a better solvent than H_2O

b. Ag^+ forms a complex ion with NH_3

c. NH_3 is a stronger base than H_2O

d. The dipole moment of H_2O is higher than NH_3

17. Which of the statements is not true?

a. $K_2Cr_2O_7$ solution in acidic medium is orange

b. $K_2Cr_2O_7$ solution becomes yellow on increasing the pH beyond 7

c. On passing H_2S through acidified $K_2Cr_2O_7$ solution, a milky colour is observed

d. $Na_2Cr_2O_7$ is preferred over $K_2Cr_2O_7$ in volumetric analysis

18. Acidified potassium dichromate is treated with hydrogen sulphide. In the reaction, the oxidation number of chromium

a. Increases from + 3 to + 6 b. Decreases from +6 to +3

c. Remains unchanged d. Decreases from +6 to +2

19. Which statement is true about the transitional elements

a All are metals b They show variable oxidation states

c They have low melting points d They are highly electropositive

20. The tendency towards complex formation is maximum in

a. s - block elements b. p - block elements

c. d- block elements d. f- block elements

STD:12 SUBJECT:CHEMISTRY

Unit- 5–Coordination chemistry

1. Consider the coordination compound, $Na_2[Pt(CN)_4]$. The Lewis acid is
   a. $[Pt(CN)_4]^{2-}$ b. Na^+
   c. Pt^{2+} d. CN^-
2. Select the correct IUPAC name for: $[Co(NH_3)_6]^{2+}$
   a. hexammoniacobaltate(II) ion b. hexaamminecobaltate(II) ion
   c. hexammoniacobalt(II) ion d. hexaamminecobalt(II) ion
3. Magnetic measurements indicate that $[Co(OH_2)_6]^{2+}$ has 3 unpaired electrons. Therefore, the hybridization of the metal's orbitals in $[Co(OH_2)_6]^{2+}$ is
   a. sp^3 b. sp^3d^2
   c. d^2sp^3 d. dsp^2
4. The coordination complex, $[Cu(OH_2)_6]^{2+}$ has one unpaired electron. Which of the following statements are true?
   (1) The complex is octahedral.
   (2) The complex is an outer orbital complex.
   (3) The complex is d^2sp^3 hybridized.
   (4) The complex is diamagnetic.
   (5) The coordination number is 6.
   a. 1,4 b. 1,2,5
   c. 2,3,5 d. 2,3
5. Which one of the following statements is false?
   a. In an octahedral crystal field, the d electrons on a metal ion occupy the e_g set of orbitals before they occupy the t_{2g} set of orbitals.
   b. Diamagnetic metal ions cannot have an odd number of electrons.
   c. Low spin complexes contain strong field ligands.
   d. In high spin octahedral complexes, Δ_{oct} is less than the electron pairing energy, and is relatively very small.
6. How many unpaired electrons are there in a strong field iron(II) octahedral complex?

a. 0 b. 1

c. 2 d. 4

7. Consider the violet-colored compound, $[Cr(OH_2)_6]Cl_3$ and the yellow compound, $[Cr(NH_3)_6]Cl_3$. Which of the following statements is false?

   a. Both chromium metal ions are paramagnetic with 3 unpaired electrons.

   b. Δ_{oct} for $[Cr(NH_3)_6]^{3+}$ is calculated directly from the energy of yellow light.

   c. The two complexes absorb their complementary colors.

   d. Δ_{oct} for $[Cr(OH_2)_6]^{3+}$ is less than Δ_{oct} for $[Cr(NH_3)_6]^{3+}$.

8. Strong field ligands such as CN^-

   a. usually produce high spin complexes and small crystal field splitting.

   b. usually produce low spin complexes and high crystal field splitting.

   c. usually produce low spin complexes and small crystal field splitting.

   d. usually produce high spin complexes and high crystal field splitting.

9. The volume (in mL) of 0.1 M $AgNO_3$ required for complex precipitation of chloride ions present in 30 mL of 0.01 M solution of $[Cr(H_2O)_5Cl]Cl_2$, as silver chloride is close to

   a. 3 b. 6

   c. 30 d. 4

10. Total number of geometrical isomers for the complex $[RhCl(CO)(PPh_3)(NH_3)]$is

    a. 1 b. 2

    c. 3 d. 4

11. The spin only magnetic moment value (in Bohr magneton units) of $Cr(CO)_6$ is

    a. 0 b. 2.84

    c. 4.90 d. 5.92

12. The value of the 'spin only' magnetic moment for one of the following configurations is 2.84 BM. The correct one is

    (a) d^4 – in strong field (b) d^4 – in weak field

    (c) d^3 – in strong field (d) d^5 – in strong field

13. Which has maximum paramagnetic character?

    (a) $[Fe(CN)_6]^{4-}$ (b) $[Cu(H_2O)_4]^{2+}$

(c) $[Cu(NH_3)_4]^{2+}$ (d) $[Mn(H_2O)_6]^{2+}$

14. The correct statement with respect to the complexes $Ni(CO)_4$ and $[Ni(CN)_4]^{2-}$ is

(a) nickel is in same oxidation state in both

(b) both have tetrahedral geometry

(c) both have square planar geometry

(d) havetetrahedral and square planar geometry respectively

15. The magnetic moment (spin only) of $[NiCl_4]^{2-}$ is

(a) 1.41BM (b) 1.82BM

(c) 5.46 BM (d) 2.82BM

16. Dimethyl glyoxime forms a rose red coloured complex with

(a) Ag (b) Ni

(c) Cr (d) Zn

17. The cation that does not form an amine complex with excess of ammonia is

(a) Cd^{2+} (b) Al^{3+}

(c) Cu^{2+} (d) Ag^{+}

18. Ziegler-Natta catalyst is an organometallic compound of which metal

(a) Iron (b) Zirconium

(c) Rhodium (d) Titanium

19. Wilkinson's catalyst is used in

(a) Polymerization (b) Condensation

(c) Halogenation (d) Hydrogenation

20. Assertion (A) : Coordination compounds have great importance in biological systems

Reason (R): Chlorophylls are green pigments in plants and contains calcium.

(a) I is true; II is true; Statement II is a correct explanation for Statement I.

(b) Statement I is true; Statement II is true; Statement II is not a correct explanation for Statement I.

(c) Statement I is true; Statement II is false.

(d) Statement I is false; Statement II is true.

12 STD 8. Ionic Equilibrium CHEMISTRY

1. 1In which of the following cases the acid strength is lightest?

(a) $Ka = 10^{-5}$ **(b)** $Pka = 6$ **(c)** $Pkb = 1$ **(d)** $Kb = 10^{-13}$

2. Which of the following salts undergoes anionic hydrolysis?

(a) $CuSo_4$ **(b)** Na_2Co_3 **(c)** NH_4cl **(d)** $Fecl_3$

3. The number of H^+ **ions in 10 ml of a solution with** $PH = 13$

(a) 7.8×10^{9} **(b)** 6.02×10^{8} **(c)** 4.54×10^{5} **(d) None of them**

4. PH of $10^{-8}M$ $NaOH$ **Solution is (a) 10 (b) 7.04 (c) 6.99 (d) 4.0**

5. If K_{5p} **of MOH is** $1\times10^{-10}\,mol^2\,lit^{-2}$, **then PH of its aqueous solutions in**

(a) 3 (b) 6 (c) 9 (d) 12

6. The Solubility of AS_2S_3 **is** 1×10^{-4} **mol lit** $^{-1}$ **its solubility product would be**

(a) 1.08×10^{18} **(b)** 1.08×10^{-18} **(c)** 1.08×10^{20} **(d)** 2.6×10^{-8}

7. The $\left[OH^-\right]$ **in 100 ml of 0.015 M HCL (aq)**

(a) $5\times10^{-12}M$ **(b)** $3\times10^{-10}M$ **(c)** $6.7\times10^{-13}M$ **(d)** $2\times10^{-9}M$

8. The Dissociation constant of a weak acid is 4.9×10^{-8}. **Its degree of dissociation in 0.1m Solution is (a) 0.07 (b) 0.007 (c) 0.7 (d) 0.0007**

9. K_a **value for the acid HA is** 1×10^{-5} **The value for k for** $A^- + H_3o^+ \rightleftharpoons HA + H_2o$ **is**

(a) 1×10^{-5} **(b)** 1×10^{-9} **(c)** 1×10^{5} **(d)** 1×10^{-10}

10. Dissociation constant of NH_4OH **is** 1.8×10^{5}. **The hydrolysis constant of** NH_4cl **would be A.** 1.8×10^{-19} **(b)** 5.55×10^{-10} **(c)** 5.55×10^{-5} **(d)** 1.80×10^{-5}

11. If the solubility of $AgBr$ **(M.wt=188) is** $1.88\times10^{-4}\,g/100ml$. **The solubility product of** $AgBr$ **is (a)** 1×10^{-5} **(b)** 1×10^{-10} **(c)** 1×10^{-8} **(d)** 1×10^{-4}

12.. The solubility of electrolyte MX_2 **is** 0.5×10^{-4} **mol / lit. Ksp of electrolyte is**

(a) 5×10^{-12} **(b)** 25×10^{-10} **(c)** 1×10^{-13} **(d)** 5×10^{-13}

13. Ksp value of saturated $Al(OH)_3$ **solution is** 2.7×10^{-11}. **The PH of this solution is nearly.**
(a) 10 (b) 3 (c) 2.5 (d) 11.5

14. Which of the following is least likely to behave as low is base?

(a) NH_3 **(b)** BF_3 **(c)** OH^- **(d)** H_2O

15. The solubility in water of a sparingly soluble salt AB_2 **is** 1×10^{-5} **mol,**

its solubility product (Ksp) **is (a)** 4×10^{-15} **(b)** 4×10^{-10} **(c)** 1×10^{-18} **(d)** 1×10^{-10}

16. The PH of a sample of vingar is 3.76. calculate the concentration of hydrogen ion in it.

(a) 1.84×10^{-4} **(b)** 1.97×10^{-4} **(c)** 1.738×10^{-4} **(d)** 1.283×10^{-4}

17. By adding 20ml of 0.1N Hcl to 20 ml of 0.001N KOH, the PH of the obtained solution will be

(a) 2 **(b) 1.3** **(c) 0** **(d) 7**

18. The Lewis base among the following is (a) BF_3 **(b)** $Alcl_3$ **(c)** $Becl_2$ **(d)** H_2O

19. The conjugate base of H_2PO4^- **(a)** $PO4^{3-}$ **(b)** P_2O_3 **(c)** H_3PO_4 **(d)** HPO_4^{2-}

20. 40 ml of 0.1 m ammonia solution is mixed with 20 ml of 0.1M Hcl. What is the PH of the mixture? (Pk_b **of ammonia solution = 4.74) (a) 4.74 (b) 2.26 (c) 9.26 (d) 5.00**

21. PH of 0.08 mol dm^{-3} **HOCl solution is calculate its ionisation constant 2.85**

(a) 24.9×10^{-6} **(b)** 28.6×10^{-5} **(c)** 2.5×10^{-6} **(d)** 24.9×10^{-5}

22. If the solubility of sodium lexes fluoro cobalt ate (iii) is x **mol lit** $^{-1}$**, its** Ksp **value is**

(a) x^2 **(b)** $4x^3$ **(c)** $27x^4$ **(d)** $108x^3$

23. 0.005M acid solution has PH=6, the percentage ionisation of acid is

(a) 0.02 % **(b) 0.4 %** **(c) 0.2%** **(d) 0.05%**

24. At 300K, the saturated solution of $Ca(OH)_2$ **for PH=10, Its** Ksp **value would be**

(a) 5×10^{-31} **(b)** 2×10^{-14} **(c)** 5×10^{-13} **(d)** 4×10^{-31}

25. Which of the following relations is correct for degree of hydrolysis of CH_3CooNH_4 **?**

(a) $h=\sqrt{\frac{kh}{c}}$ **(b)** $h=\sqrt{\frac{ka}{kb}}$ **(c)** $h=\sqrt{\frac{kw}{Ka.kb}}$ **(d)** $h=\sqrt{\frac{Ka.kb}{Kh}}$

26. Conjugate acid of SO_4^{2-} **is (a)** HSO_4^- **(b)** HSO_4^- **(c)** H_2SO4 **(d)** $HSO4$

27. The Ph of the aqueous solution is zero. The solution is

(a) slightly acidic (b) strongly acidic (c)neutral (d) basic

28. The PH of $10^{-4}M$ **NaoH is (a) 9 (b) 10 (c) 4 (d) None of them**

29. solution of 0.01N NH_4OH **and 0.1N** NH_4cl **has Ph=9.25. The Kb of** NH_4OH **is**

(a) 9.25 (b) 4.75 (c) 3.75 (d) 8.25

30. At 298k, $Kw=1\times10^{-14}$ **The Ka value for the reaction** $2H_2o \rightleftharpoons H_3o^+ + O^-H$ **is**

(a) 1.8×10^{-16} **(b)** 1×10^{-14} **(c)** 1×10^{-7} **(d)** 5.56×10^{-12}

31. Which solution Highest PH? (a) CH_3COOK **(b)** Na_2CO_3 **(c)** NH_4Cl **(d)** $NaNO_3$

32. Ionisation constant of CH_3COOH is 1.7×10^{-5} and concentration of H^+ ion is 3.4×10^{-4} . The initial concentration of CH_3COOH is

(a) 3.4×10^{-4} **(b)** 3.4×10^{-3} **(c)** 6.8×10^{-4} **(d)** 6.8×10^{-3}

33. Conjugate acid of NH_2^- is

(a) NH_4^+ **(b)** NH_3 **(c)** NH_2 **(d) NH**

34. The Solubility product of AgI at $25°C$ is $1\times10^{-16}\,mol^2L^{-2}$. The solubility of AgI is $10^{-4}N$ Solution of KI at $25°C$ is (in mol L^{-1})

(a) 1×10^{-10} **(b)** 1×10^{-8} **(c)** 1×10^{-16} **(d)** 1×10^{-12}

35. Calculate the PH of a solution at $25°C$ that contains $1\times10^{-5}M$ of hydronium ions ie H_3O^+ . (a) 7.000 (b) 5.000 (c) 9.000 (d) 1000

36. What is the PH of the resulting solution, when equal volume of 0.1M NaOH and 0.01M Hcl are mixed.

(a) 1.04 (b) 2.0 (c) 7 (d) 12.65

37. Which of these is least likely to act as a lewis base? (a) Co (b) PF_3 (c) BF_3 (d) F^-

38. When, in 100ml aqueous HNO_3 Solution of $PH=1,$ 900 ml of distilled water is added, the Ph of the resultant solution becomes

(a) 2 (b) 4 (c) 8 (d) 0.5

39. What is the Ph value at which $Mg(OH)_2$ begins to precipitate from a solution containing 0.10M Mg^{2+} ion? (Ksp of $Mg(OH)_2$ is 1×10^{-11}

(a) 3 (b) 6 (c) 9 (d) 11

40. Which of the following pairs of solution is not an acidic buffer?

(a) $HClO_4$ **and** $NaClO_4$ **(b)** CH_3COOH **and** CH_3COONa

(c) H_3PO_4 **and** Na_3PO_4 **(d)** H_2CO_3 **and** Na_2CO_3

12 STD Electrochemistry CHEMISTRY

1. **During the electrolysis of fused NaCl, which reaction occurs at anode ….**
   (a)Chloride ions are oxidized (b)Chloride ions are reduced (c)Sodium ions are oxidised d)Sodium ions are reduced
2. **Which one of the following material conducts electricity a) Diamond (b) Crystalline sodium chloride**
   (c) Barium sulphate (d) Fused potassium chlorides
3. **In electrolysis of a fused salt, the weight of the deposit on an electrode will not depend on**
   (a) Temperature of the bath (b) Current intensity (c) Electrochemical equivalent of ions d) Time for electrolysis
4. **The equivalent weight of a certain trivalent element is 20. Molecular weight of its oxide is a) 152 (b)56 (c)168 (d) 68**
5. **The number of coulombs required to reduce 12.3 g of nitrobenzene to aniline**
   a) 115800 C (b) 5790 C (c) 28950 C (d) 57900 C
6. **The highest electrical conductivity of the following aqueous solutions is of**
   (a) 0.1 M acetic acid (b) 0.1 M chloroacetic acid (c) 0.1 M fluoroacetic acid (d) 0.1 M difluoroacetic acid
7. **In electrolysis of dilute H_2SO_4 using platinum electrodes**
   a) H_2 is evolved at cathode (b) NH_3 is produced at anode (c) Cl_2 is obtained at cathode(d) O_2 is produced

8. **When 9.65 coulombs of electricity is passed through a solution of silver nitrate (atomic weight of Ag=107.87 taking as 108) the amount of silver deposited is A) 10.8 mg B) 5.4 mg C) 16.2 mg D) 21.2 mg**

9. **2.A certain current liberated 0.504 gm of hydrogen in 2 hours. How many grams of copper can be liberated by the same current flowing for the same time in a copper sulphate solution A) 12.7 gm B) 15.9 gm**
   (c) 31.8 gm D) 63.5 gm

10. **The limiting molar conductivities Λ^0m for NaCl, KBr and KCl are 126, 152 and 150**
    S cm^2mol^{-1}. respectively. The Λ^0 for NaBr is 278 S cm^2mol^{-1} B) 176 S cm^2mol^{-1} C) 128 S cm^2mol^{-1} D) 302 S cm^2mol^{-1}

11. **The standard reduction potential NaCl for the half reactions are as $Zn=Zn^{2+}+2e-$; Eo=+0.76V $Fe=Fe^{2+}+2e-$; Eo=+0.41V. The EMF for cell reaction $Fe^{2+}+Zn\rightarrow Zn^{2+}$ + Fe is A) −0.35V B) +0.35V C) +1.17V D) −1.17V**

12. **molar conductivity of ionic solution depends on**
    A) Temperature B) distance between electrodes C) concentration of electrolytes D) Surface area of electrodes
13. **An electrochemical cell can behave like an electrolytic cell when….A)$E_{cell} = 0$ B) $E_{cell} > E_{ext}$ C) $E_{ext} > E_{cell}$ D) $E_{cell} = E_{ext}$**
14. **Corrosion is basically a / an……A) Altered reaction in presence of H_2O B) Electrochemical phenomenon**
    C) Interaction D) Union between light metal and heavy metal
15. **Corrosion of iron is essentially an electrochemical phenomenon where the cell reactions are**
    a. **Fe is oxidised to $Fe^{2+}$and dissolved oxygen in water is reduced to OH**
    b. **Fe is oxidised to Fe^{3+} and H_2O is reduced to O_2^{2-} (c) Fe is oxidised to Fe^{2+} and H_2O is reduced to O_2^-**
    (d) **Fe is oxidised to Fe^{2+} and H_2O is reduced to O_2**
16. **Which of the following will not conduct electricity in aqueous solution A) Copper sulphate B) Sugar**
    (c) Common salt D) None of these
17. **An electrolyte …… (a) Forms complex ions in solution (b) Gives ions only when electricity is passed**

(c) Possesses ions even in solid state (d) Gives ions only when dissolved in water

18. Which one of the following metals could not be obtained on electrolysis of aqueous solution of its salts

A) Ag B) Mg C) Cu D) Cr

19. If the E°cell for a given reaction has a negative value, which of the following gives the correct relationships for the values of $\Delta G°$ and K_{eq} ? (A) $\Delta G° < 0; K_{eq} > 1$ (B) $\Delta G° < 0; K_{eq} < 1$ (C) $\Delta G° > 0; K_{eq} < 1$ (D) $\Delta G° > 0; K_{eq} > 1$

20. Amount of charge is required to convert 17 gm H_2O_2 in to O_2 is … (A) 1F (B) 2F (C) 6F (D) None of these

21. Electrode potential of hydrogen electrode is 18mV then $[H^+]$ is …. (A) 0.2 (B) 1 (C) 2 (D) 5

22. On heating one end of piece of metal, the other becomes hot because of

a. energised electron moving to the other end (b) minor perturbation in the energy of atom

(c) resistance of the metal (D) mobility of atoms in the metal

23. Kohlrausch's law states that at

a. Infinite dilution, each ion makes definite contribution to equivalent conductance of an electrolyte, whatever be the nature of the other ion of the electrolyte

b. Finite dilution, each ion makes definite contribution to equivalent conductance of an electrolyte, whatever be the nature of the other ion of the electrolyte

c. Infinite dilution each ion makes definite contribution to equivalent conductance of an electrolyte depending on the nature of the other ion of the electrolyte

d. Infinite dilution, each ion makes definite contribution to conductance of an electrolyte whatever be the nature of the other ion of the electrolyte

24. Which of the following aqueous solution will conduct electric current quite well?

(A) Glycerol (B) HCl (C) Sugar (D) Pure water

25. The products formed when an aqueous solution of NaBr is electrolysed in a cell having inert electrodes are

(A) Na and Br_2 (B) Na and O_2 (C) H_2, Br_2 and NaOH (D) H_2 and O_2

26. The cell constant of a conductivity cell

a. changes with change of electrolyte (c). changes with change of concentration of electrolyte

b. changes with temperature D) remains constant for a cell

27. In a hydrogen – Oxygen fuel cell, the combustion of hydrogen occurs to

a. Generate heat c).Create potential difference between the two electrodes

b. Produce high purity water (d) Remove adsorbed O_2 from electrode surfaces

28. In galvanic cell, the salt bridge is used to

(a) Complete the circuit (b) Reduce the electric resistance in the cell

(c) Separate cathode from anode (d) Carry salts for the chemical reaction

29. Nernst equation is related with

(a) The electrode potential and concentration of ions in the solution

(b) Equilibrium constant and concentration of ions

(c) Free energy change and E.M.F. of the cell (d) None of these

30. Which of the following is a highly corrosive salt

(a) $FeCl_2$ (b) $PbCl_2$ (c) Hg_2Cl_2 (d) $HgCl_2$

1. In physical adsorption, the gas molecules are held on solid surface by

   a) Chemical forces (b) Electrostatic forces (c) Gravitational forces (d) Vander Waal's forces

2. Which among the following statement is false?

   (a) The adsorption may be monolayered or multi-layered

   (b) Particle size of adsorbent will not affect the amount of adsorption

   (c) Increase of pressure increases amount of adsorption

   d) Increase of temperature may decrease the amount of adsorption

3. For the adsorption of a gas on a solid, the plot of log (x/m) versus log P is linear with slope equal to a) k (b) log k (c) n (d) 1/n

4. Enzyme activity is maximum at a) 300 K (b) 310 K (c) 320 K (d) 330 K

5. Movement of colloidal particles under the influence of electrostatic field is

   (a) Electrophoresis (b) Electrolysis (c) Dialysis (d) Ionisation

6. Tyndall phenomenon is exhibited by

   (a) *NaCl* solution (b) Starch solution (c) Urea solution (d) 3 *FeCl* solution

7. Which one of the following is not a colloid

   (a) Milk (b) Blood (c) Solution of urea (d) Ice cream

8. Tyndall effect is shown by (a) Sol (b) Solution (c) Plasma (d) Precipitation

9. Fog is a colloidal solution of

   (a) Solid in gas (b) Liquid in gas (c) Gas in liquid (d) Gas in solid

10. In shaving cream, the dispersion medium is (a) Liquid (b) Gas (c) Solid (d) None of these

11. The zig-zag motion of colloidal particles is due to

    (a) Small size of colloidal particles (b) Large size of colloidal particles

    (c) The conversion of potential energy into kinetic energy (d) Bombardment on colloidal particles by molecules of dispersion medium

12. When the temperature is lowered and pressure is raised, the adsorption of a gas on a solid

    (a) Decreases (b) Increases (c) Remains unaffected (d) Decreases first then increases

13. In Freundlich adsorption, isotherm adsorption is proportional to pressure P as

    (a) P^0 (b) P (c) P^n (d) $P^{1/n}$

14. In a reversible reaction, a catalyst will affect the rate of

    (a) Forward reaction (b) Reverse reaction (c) Forward and reverse (d) Neither (a) nor (b)

15. For the functioning of enzymes which of the following statements is not correct

(a) An optimum temperature is needed b) An optimum pH is needed

(c) They are substrate specific (d) They always increase activation energy

16. Which of the following will have highest coagulating power for *As2S3* colloids

(a) PO_4^{2-} (b) SO_4^{2-} (c) Na^+ (d) Al^{3+}

17. Milk is (a) Dispersed fats in oil (b) Dispersed fats in water (c) Dispersed water in fats

(d) Dispersed water in oil

18. On adding few drops of dilute *HCl* or 3 *FeCl* to freshly precipitated ferric hydroxide a red coloured colloidal solution is obtained. The phenomenon is known as

(a) Peptisation (b) Dialysis (c) Protective action (d) Dissolution

19. Bredig arc method can not be used to prepare colloidal solution of which of the following

(a) Pt (b) Fe (c) Ag (d) Au

20. The ability of an ion to bring about coagulation of a given colloid depends upon

(a) Its size (b) The magnitude of its charge only

(c) The sign of its charge (d) Both the magnitude and the sign of its charge

12 STD **UNIT – II : Hydroxy Compounds and Ethers** **CHEMISTRY**

Choose the correct answer:

1. **Propene on hydroboration oxidation gives**
   a) Propan -1-01 **b) Propan -2-ol** **c) Propane -1,3-diol** **d) Propane – 1, 2 – diol**
2. **Which of the following compounds could not be easily oxidised by $K_2Cr_2O_7$ and sulphuric acid?**
   a) CH_3CH_2OH **b)** $(CH_3)_2CHOH$ **c)** $(CH_3)_3C-OH$ **d)** CH_3CHO
3. **An alcohol of molecular formulae** $C_5H_{11}OH$ **on dehydration gives an alkene, which on oxidation gives a mixture of ketone and an acid. The alcohol is**
   a) $CH_3CH_2CH(OH)CH_2CH_3$ **b)** $CH_3CH(OH)CH_2CH_2CH_3$ **c)** $(CH_3)_2CHCH(OH)CH_3$
   d) $(CH_3)_3-C-CH_2OH$
4. **Which one of the following reactions will give propan -2-ol?**
   (I) $CH_2=CH-CH_3+H_2O \xrightarrow{H^+}$ **(II)** $CH_3CHO \xrightarrow[H_2O]{CH_3MgI}$
   (III) $CH_2O \xrightarrow[H_2O]{C_2H_5MgI}$ **(IV)** $CH_2=CH-CH_3 \xrightarrow{Neutral\ KMnO_4}$
   a) I and II **b) IIand III** **c)III and I** **d)II and IV**
5. **Which of the following will not form yellow precipitate on heating with an alkaline solution of iodine?**
   a) $CH_3CH_2CH(OH)CH_3$ **b)** CH_3OH **c)** CH_3CH_2OH **d)** $(CH_3)_2CHOH$
6. **The most suitable reagent for the conversion of** $R-CH_2-OH \rightarrow R-CHO$ **is**
   a) PCC (pyridinium chlorochromate) **b) $KMnO_4$** **c)** $K_2Cr_2O_7$ **d)** CrO_3
7. **The reagent which oxidises 1^0 alcohol to aldehyde without affecting C = C double bond is**
   a) CrO_3 **in aqueous solution** **b)aqueous** $K_2Cr_2O_7$ **C) alkaline** $KMnO_4$ **d) none of these**
8. **During dehydration of alcohols to alkenes by heating with con** H_2SO_4 **, the initial step is**
   a) Formation of an ester **b) Protonation of alcohol molecule**
   c) Formation of carbocation **d) elimination of water**
9. **Consider the following reaction. Ethanol** $\xrightarrow{PBr_3} X \xrightarrow{alc.KOH} Y \xrightarrow[ii)H_2O,\Delta]{i)H_2SO_4} Z$ **. The product Z is**
   a) $CH_3CH_2O\,CH_2CH_3$ **b)** $CH_3CH_2OSO_3H$ **c)** CH_3CH_2OH **d)** $CH_2=CH_2$
10. **Which of the following reagent would distinguish *Cis*-cyclopenta-1,2 -diol from trans-isomer**
    a) MnO_2 **b) Aluminium iso-propoxide** **c)acetone** **d) ozone**
11. **The end product in the following sequence, Phenol** $\xrightarrow{NaOH} A \xrightarrow{CO_2} B \xrightarrow{H^+,H_2O} C$
    a) Salicylic acid **b) salicylaldehyde** **c) phenyl acetate** **d) Aspirin**
12. **Phenol reacts with bromine water in CS_2, at low temperature to give**
    a) o-Bromophenol **b) p-Bromophenol** **c) o & p – Bromo Phenol** **d) 2,4,6-Tribromophenol**
13. **Which of the following will give phenol on decarboxylation?**
    a) Picric acid **b) Saliylic acid** **c) Benzoic acid** **d) acetic acid**
14. **Which functional group is introduced when phenol is treated with chloroform in the presence of NaOH**

a) –COOH **b) – CHO** **c) – $CHCl_2$** **d) –CO–**

15. Which of the following reagents distinguish phenol from benzoic acid

a)Molisch reagent **b) Neutral $FeCl_3$** **c) aqueous NaOH** **d) Tollens reagent**

16. **Which of the following is benzlic alcohol?**

a) C_6H_5OH **b)** $C_6H_5 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - OH$

c) $C_6H_5 - CH_2 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - OH$ **d) $C_6H_5 – CH_2 – CH_2 – OH$**

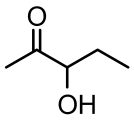
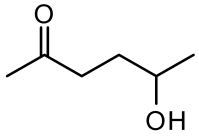
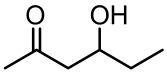
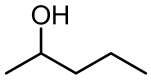
17. **Which of the following is the strongest acid?**

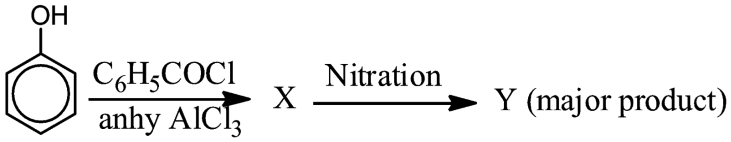
a) o-methoxyphenol **b) p-methoxyphenol** **c) m-methoxyphenol** **d) phenol**

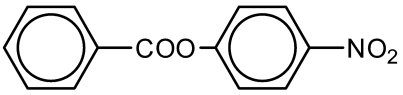
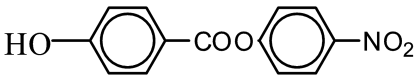
18. $Phenol \xrightarrow{Zn\,dust} X \xrightarrow[anhy\ AlCl_3]{CH_3Cl} Y \xrightarrow[KMnO_4]{alkaline} Z$ **.The product Z is**

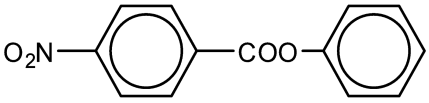
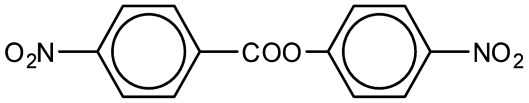
a) Benzaldehyde **b) benzoic acid** **c) Benzene** **d) Toluene**

19. **Which of the following is most readily dehydrated in acdic solution**

a)  **b)**  **c)**  **d)** 

20. 

a)  **b)** 

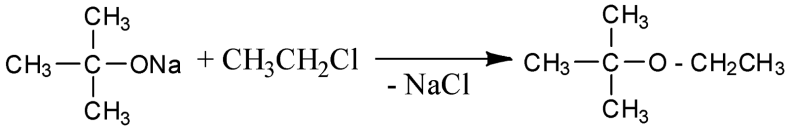
c)  **d)** 

21. Diethyl ether on treatment with excess Cl_2 gives

a) Perchorodiethyl ether **b) ethylchloride** **c) ethanoylchloride** **d) Diethyl ether peroxide**

22. Ethers can be distinguished from alcohols by the following reaction

a) Reaction with PCl_5 **b) Reaction with Sodium** **c) Reaction with 2,4 dinitrophenyl hydrazine** **d)none of these**

23. The reaction  **is called**

a) Etard reaction **b) Gattermann – Koch reaction**

c) Williamsm synthesis **c) Fridel craft reaction**

24. Arrange the following set of reactants which will produce anisole?

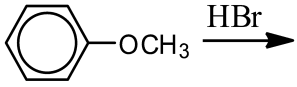
a) $CH_3CHO + RMgX$ **b)** $C_6H_5OH + NaOH + CH_3I$

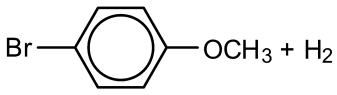
c) $C_6H_5OH + neutral\ FeCl_3$ **d)** $C_6H_5CH_3 + CH_3COCl + AlCl_3$

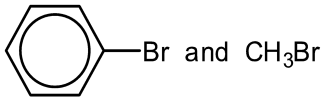
25. An ether is more volatile than alcohol having same molecular formula. This is due to

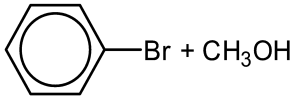
a) intermolecular hydrogen bonding in alcohol **c) dipolar character of ethers**

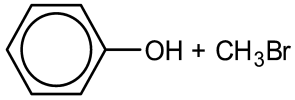
b) alcohols have resonance structure **d) intramolecular hydrogen bonding in alcohol**

26. **In the reaction**  **The product are**

a) 

b) 

c) 

d) 

27. Ethers may be used as solvents because they react only with which of the following reactants?

a) acids **b) bases** **c) oxidising agent** **d) reducing agent**

28. Which of the following will be obtained by keeping ether in contact with air for a long time

a) $C_2H_5-O-CH(CH_3)-O-OH$ **b)** $C_2H_5-O-CH_2OH$

c) $C_2H_5-O-C_2H_5OH$ **d)** $CH_3-O-CH(CH_3)-O-OH$

29. In which case would a williamson ether synthesis fail?

a)Soduim ethoxide + iodomethane **b) sodium ethoxide+ iodoethane**

c)Soduim ethoxide + 2- iodopropane **d) Soduim ethoxide + 2-iodo-2-methylpropane**

30. Which of the following mechanism is followed in Williamson synthesis

a) S_N1 **b)** S_N2 **c)** E_1 **d)** E_2

Unit – 12 Carbonyl compounds and Carboxylic acids

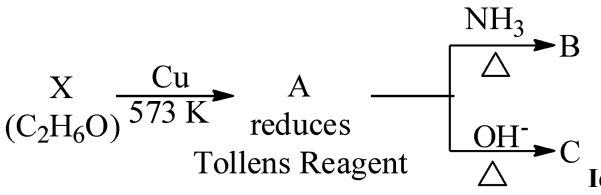
Choose the correct answer:

1. **Which of the following cannot be prepared using Rosenmund reaction?**
   a) Acetaldehyde b) Benzaldehyde c) Formaldehyde d) both (a) and (b)
2. **An alkene which on ozonolysis gives two identical aldehydes**
   a) 1 – Butene b) 2 – Butene c) 1 – Pentene d) 2 – Pentene
3. **An unknown compound, that gives a positive haloform test and positive Fehlings test. The compound is**
   a) formaldehyde b) dimethyl ketone c) diethyl ketone d) ethanol
4. **Perspex is a) smokeless powder b) food preservative c) thermo softening plastic d) antiseptic**
5. **Match List I with List II**

	List I		List II
	anhydride		al fruit essence
	acid		amphoteric character
	cetate		asprin
	ide		HVZ reaction

Code	A	B	C	D					
a)	4	1	3	2	b)	3	4	1	2
c)	2	1	3	4	d)	4	3	2	1

6. **The reagent used to distinguish acetophenone and benzophenone is**
   a) I_2 and NaOH b) $NaHSO_3$ c) Na – Hg and H_2O d) Acidified $K_2Cr_2O_7$
7. **Which of the following is most reactive carbonyl compound?**
   a) Acetone b) Acetaldehyde c) Benzaldehyde d) Formaldehyde
8. **Consider the reaction**



Identify X, A, B, C

a) X – Ethanol, A–acetaldehyde B –Aldimine C-crotonaldehyde b) X – Ethanal A – Ethanol B – Ethyl amine C – Lactic acid
c) X – acetaldehyde A – Acetone B – Aniline C – Aldol d) X – Ethanol A – Ethanal B – Aldimine C – Aldol

9. **Phenyl cyanide undergoes acid hydrolysis to give a) benzaldehyde b) phenol c) benzene d) benzoic acid**
10. **Kolbes electrolysis of aqueous solution of sodium ethanoate leads to the formation of**
    a) ethane b) ethene c) ethyne d) methane
11. **Which of the following is the strongest acid ?**
    a) CH_3COOH b) $Cl – CH_2COOH$ c) CH_3CH_2COOH d) $F – CH_2 – COOH$
12. **Acetic acid undergoes reduction with $LiAlH_4$ gives a) ethanol b) ethanal c) ethane d) ethyne**
13. **Which of the following is least reactive ?**
    a) Acetyl chloride b) Acetic anhydride c) Acetamide d) Methyl acetate
14. **Consider the following statements**
    1. The interchange of alcohol portions of the esters is termed as trans esterification

2. Formic acid can be prepared from Grignard reagent 3. Amides show amphoteric character

4. Esterification is reversible in nature Which of the following statement / s are correct?

a) 1 and 2 b) 2 and 3 c) 1, 3 and 4 d) 1, 2 and 4

15. Match List I with List II

	List I		List II
	n formate		
	n acetate + Calcium formate		formaldehyde
	n acetate		acetophenone
	n acetate + Calcium benzoate		acetaldehyde

Code A B C D

a) 2 4 1 3 b) 3 2 4 1 c) 4 1 3 4 d) 1 3 2 2

16. The reaction in which potassium cyanide is used in

a) Perkins reaction b) Riemer – Tiemann reaction c) Benzoin condensation d) Knoevenagal reaction

17. The correct order of increasing acidic strength is ____ a) Phenol < Ethanol < Chloroacetic acid < Acetic acid

b) Ethanol < Phenol < Chloroacetic acid < Acetic acid c) Ethanol < Phenol < Acetic acid < Chloroacetic acid

d) Chloroacetic acid < Acetic acid < Phenol < Ethanol

18. The reagent which does not react with both, acetone and benzaldehyde.

a) Sodium hydrogensulphite b) Phenyl hydrazine c) Fehling's solution d) Grignard reagent

19. Compounds A and C in the following reaction are _____

$$CH_3CHO \xrightarrow[(ii)H_2O]{(i)CH_3MgBr} (A) \xrightarrow{H_2SO_4,} (B) \xrightarrow[\text{oxidation}]{\text{Hydroboration}} (C)$$

a) identical b) positional isomers c) functional isomers d) optical isomers

20. In Clemmensen Reduction carbonyl compound is treated with _____

a) Zinc amalgam + HC*l* b) Sodium amalgam + HC*l* c) Zinc amalgam + nitric acid d) Sodium amalgam + HNO_3

21. Which of the following conversions can be carried out by Clemmensen Reduction?

a) Benzaldehyde into benzyl alcohol b) Cyclohexanone into cyclohexane

c) Benzoyl chloride into benzaldehyde d) Benzophenone into diphenyl carbinol

22. Through which of the following reactions number of carbon atoms can be increased in the chain?

a) Rosenmund reduction b) Cannizaro's reaction c) Aldol condensation d) HVZ reaction

23. Benzophenone can be obtained by _____ a) Phenol + Benzene + A*l*$C*l*_3$ b) Benzoyl chloride + Diphenyl cadmium

c) Benzoyl chloride + Phenyl magnesium chloride d) Benzene + Carbon monoxide + Zn$C*l*_2$

24. Match the reactions given in Column I with the suitable reagents given in Column II

	Column I (Reacions)		Column II (Reagents)
	henone → Diphenylmethane		OH
	lehyde → hydrobenzamide		MnO_4
	ide → Methylamine		/ Conc.HC*l*
	→ Benzoic acid		

Code A B C D

a) ii iii iv i b) i ii iii iv c) iii iv i ii d) iv iii ii i

25. ***Assertion :*** **Aldehydes and ketones, both react with Tollen's reagent to form silver mirror.**

Reason : **Both, aldehydes and ketones contain a carbonyl group.**

a) Assertion and reason both are correct and reason is correct explanation

b) Assertion and reason both are wrong statements **c) Assertion is wrong statement but reason is wrong statement**

d) Assertion is wrong statement but reason is correct statement

26. **Decarboxylation of sodium benzoate on heating with soda lime gives**

a) benzene **b) toluene** **c) benzaldehyde** **d) benzoic acid**

27. **Carboxylic acids are reduced by red P and HI to**

a) alkanes **b) alcohols** **c) alkenes** **d) aldehydes**

28. **Formic acid and acetic acid can be distinguished by**

a) litmus solution **b) caustic soda** **c)** $NaHCO_3$ **d) ammoniacal** $AgNO_3$

29. **Benzoic acid may be converted to ethyl benzoate by reaction with**

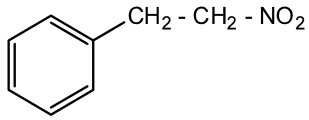
a) Ethyl chloride **b) Dry HCl,** C_2H_5OH **c) Alcoholic KOH** **d) Sodium ethoxide**

30. **When** $CH_2 = CH - COOH$ **is reduced with** $LiAlH_4$**, the compound obtained will be**

a) CH_3CH_2CHO **b)** CH_3CH_2COOH **c)** $CH_2 = CH - CH_2OH$ **d)** CH_3CH_2COOH

12 STD Unit -13 ORGANIC NITROGEN COMPOUNDS CHEMISTRY

Choose the Correct answer

1. **Give the IUPAC name of the following compound** 

a) Benzyl nitromethane b) Phenyl nitro ethane c) 1-Phenyl-1-nitro ethane d) 2-Phenyl-1-nitro ethane

2. **Acetaldoxime reacts with P_2O_5 to give**
   a) Methyl cyanide b) Methyl cyanate c) Ethyl cyanide d) Methyl isocyanide
3. **Tertiary nitro compounds donot tautomerise because**
   a) there is no double bond (c) there is no $\alpha-$hydrogen atom
   b) oxygen is more electronegative than hydrogen (d) All of the above
4. **The reduction of nitrobenzene with Zinc alkali results in the formation of**
   a) aniline b) hydrazobenzene c) nitrosobenzene d) phenyl hydroxylamine
5. **Hydrolysis of** $CH_3CH_2NO_2$ **With** H_2SO_4 **gives**
   a) CH_3CH_2OH **b)** C_2H_6 **c)** $CH_3-CH=NOH$ **d)** CH_3-COOH
6. **Treatment of ammonia with excess of ethyliodide will yield**
   a) diethylamine b) ethylamine c) triethylamine d) tetraethyl ammonium iodide
7. **Butanenitrile may be prepared by heating**
   a) Propylalcohol with KCN b) butylalcohol with KCN
   c) butylchloride with KCN d) Propylchloride with KCN
8. **Which of the following gives primaryamine on reduction?**
   a) $CH_3CH_2NO_2$ **b)** $CH_3CH_2-O-N=O$ **c)** $C_6H_5-N=N-C_6H_5$ **d)** CH_3CH_2NC
9. **Gabriel phthalimide reaction is used for preparing**
   a) Primary aromatic amines b) Secondary amines
   c) Primary aliphatic amines d) tertiary amines
10. **On reduction, Secondary amine is given by**
    a) nitrobenzene b) Methylcyanide c) nitroethane d) methyl isocyanide
11. **Which one of the following will be most basic**
    a) Aniline b) P-methoxyaniline c) P-Nitroaniline d) Benzylamine
12. **The amine that does not react with acetylechloride is _____**
    a) CH_3NH_2 **b)** $(CH_3)_2NH$ **c)** $(CH_3)_3N$ **d)** $C_6H_5NHCH_3$
13. $CH_3CH_2Cl \xrightarrow{NaCN} X \xrightarrow{Ni/H_2} Y \xrightarrow{acetic\ anhydride} Z$ **in the above reacting sequence is**
    a) $CH_3CH_2CH_2NH\ COCH_3$ **b)** $CH_3CH_2CH_2NH_2$
    c) $CH_3CH_2CH_2CO\ NH\ CH_3$ **d)** $CH_3CH_2CH_2CO\ NH\ COCH_3$
14. **Diazonium salts are reaction products between nitrous acid and**
    a) Primary aliphatic amine b) N-alkyl substituted aromatic amines
    c) Primary aromatic amines d) Secondary amines
15. **Nitrosoamines ($R_2N-N=O$) are insoluble in water on heating with $NaNO_2$ Conc HCl gives secondary amines. This reaction is called**
    a)Libermann nitroso reaction b) Etard reaction
    c) Gatterman reaction d) Perkin reaction

16. Which of the following statements is not correct regarding aniline?

a)It is less basic than ethylamine **b)It can be steam –distilled**

c) It has lower boiling point than alcohols **d) It is soluble in water**

17. Towards electrophilic substitution, the most reactive will be

a)Nitrobenzene **b)Aniline** **c) Aniline hydrochloride** **d) N-acetylaniline**

18. $C_6H_6 \xrightarrow[H_2SO_4]{HNO_3} X \xrightarrow[FeCl_3]{Cl_2} Y$ **. In the above sequence, Y can be**

a) 4- Nitrochlorobenzene **b) 1-Nitrochlorobenzene**

c) 3-Nitrochlorobenzene **d) 4-chlorobenzene**

19. A compound 'A' when treated with HNO_3 (in presence of H_2SO_4) gives compound 'B' which is then reduced with Sn and HCl to aniline. The compound 'A' is

a) Toluene **b) benzene** **c) ethane** **d) acetamide**

20. An organic compound 'A' having molecular formula C_2H_3N on reduction gives another compound 'B' Upon treatment with nitrous acid, 'B' gave ethyl alcohol. On warming with chloroform and alcoholic KOH, 'B' forms an offensive smelling compound 'C' The compound 'C' is

a) $CH_3CH_2NH_2$ **b) $CH_3CH_2N \rightrightarrows C$** **c) $CH_3C \equiv N$** **d) CH_3CH_2OH**

21. Which of the following statement is not correct?

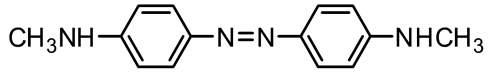
a) Libermann's nitroso test is given by primary amines only

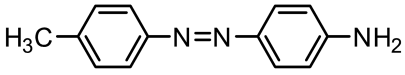
b) Benzaldehyde and nitrobenzene both have smell of bitter almond

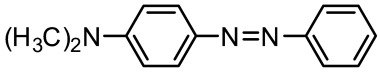
c) Basictty of amine $\propto K_b \propto \frac{1}{P^{K_b}}$

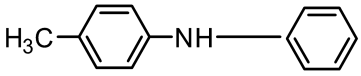
d)order of basicity of amines in gas state is tertiary amine > Secondary amine > Primary amine

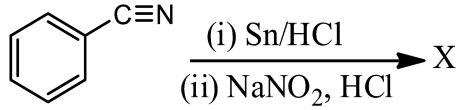
22. Aniline when diazotised in cold and then treated with dimethyl aniline gives a coloured product. Its structure would be

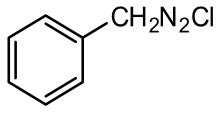
a) 

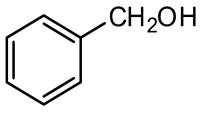
b) 

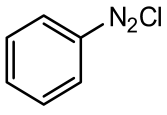
c) 

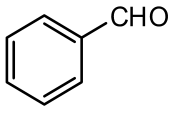
d) 

23.  **is**

a) 

b) 

c) 

d) 

24. Which of the following cannot show tautomerism?

a) 2-Methyl -2-nitropropane **b) 2-Nitropropane**

c) 1-Nitropropane **d) Vinyl alcohol**

25. **Assertion (A): Acetonitrile is another name of ethanenitrile**

Reason (R): $\alpha - H$ atom of acetonitrile exhibit acidic character

a) Both A and R are true R is correct reason of A

b) Both A and R are true R is not correct reason of A

c) A is true but R is false

d) Both A and R are false

12 STD Unit -15 Chemistry in Everyday life CHEMISTRY

Choose the correct answer:

1. **Drugs that mimic the natural messenger by switching on the receptor are called _____**

a) molecular targets b) enzymes c) antagonists d) agonists

2. **The most useful classification of drugs for medicinal chemists is**

   a) on the basis of chemical structure (c) on the basis of molecular targets

   b) on the basis of pharmacological effect (d) on the basis of drug action

3. **Match the classes of drugs given in column I with their action in column II**

Column I	Column II
A. Antipyretics	(i) Treatment of stress
B. Tranquilizers	(ii) Treatment of acidity
C. Anesthetics	(iii) Reducing fever
D. Antacids	(iv)Loss of sensation

   a) **A →(iv) B→ (ii) C→ (i) D→ (iii) (c) A→ (i) B→ (iii) C→ (ii) D→ (iv)**

   b) **A→ (ii) B→ (iv) C→ (iii) D→ (i) (d) A→ (iii) B→ (i) C→ (iv) D→ (ii)**

4. **Anti fertility drug is _____ a) Norethindrone b) Isoflurane c) alprazolam d) Ranitidine**
5. **Cetrizine is an example for _____ a) antiseptics b) antihistamines c) opioids d) antimicrobials**
6. **Which of the following antimicrobials is betalactams a) Gentamycin b) Ciprofloxacin c) ampicillin d) Erythromycin**
7. **_____ act as a antipyretics and analgesics a) Asprin b) Penicillin c) Clozopine d) Codeine**
8. **Medicines that have the ability to kill the pathogenic bacteria are grouped as _____**

   a) disinfectants b) antihistamines c) antipyretics d) antibiotics

9. **_____ inhibits bacterial enzyme DNA gyrase**

   a) Tetracyclines b) Macrolides c) Fluoroquinolones d) Aminoglycosides

10. **Which of the following statements is not true about enyyme inhibitors?**

    a) Enzyme inhibitors can be competitive (c) Strong covalent bond is formed between an inhibitor and an enzyme

    b) Inhibit the catalytic activity of the enzyme (d) Prevent the binding of substrate

11. **The compounds that are used like sugars for sweetening but are metabolised without influence of insulin are called _____ a) artificial sweeteners b) antioxidants c) Sugar substituents d) Sugar stabilizers**
12. **_____ is used as preservatives for fresh vegetables and fruits**

    a) Sodium metabisulphite b) Acetic acid c) Benzoic acid d) Salts of Sorbic acid

13. **Food additives added to prevent oxidation of fats and oils is_____**

    a) Sorbic acid b) Sulphur di oxide c) Mannitol d) butyl hydroxy toluene

14. **Aspartame is an example for_____**

    a)artificial Sweetners b) Flavouring agent c) sugar substituents d) enzyme inhibitors

15. Assertion : Detergents are superior to soaps

Reason : Detergents can be used in hardwater and in acidic conditions

a) Both assertion and reason are true and reason is the correct explanation of assertion

b) Both assertion and reason are true but reason is not the correct explanation of assertion

c) Assertion is true but reason is false (d) Both assertion and reason are false

16. Minimum Total fatty matter (TFM) value for grade - I soap as per BIS standard is ____a)70% b) 60% c) 67% d) 76%

17. Which among the following detergents is non ionic in nature

a) Sodium lauryl sulphate b) n- hexa decyl trimthyl ammonium chloride

c) Penta erythrityl stearate d) Sodium- n- dodecyl benzene sulphonate

18. Which of the following statement is true with respect to cleanising action of Soap

a) Hydrocarbon portion of Soap is polar and the carboxyl Portion is non- Polar

b) Polar end is hydrophobic and non polar end is hydrophilic c) Miscells combine into large drops

d) Cleansing ability of soap depends on its tendency to act as a emulsifying agent water and grease

19. During saponification common salt is added to reaction mixture to_____

a) increase lathering b) prevent rapid drying

c) make soap granules d) decrese the solubility of soap

20. Which of the following is obtained when an oil is hydrolysed with alkali

a) Fat b) Soap c) Wax d) Vanaspathi

21. Which of the following statements are incoreect

I) Biodegradable polymers are not decomposed by enzyme action

II) When 3 to 10% sulphur is used the rubber is some what soft and stretchy

III) Polymerisation of ethylene carried out at 373 K and 6-7 atm pressure using Zeiglar Natta catalyst gives High density poly ethylene IV) Copolymers and homopolymers have similar properties

a) I, III and IV b) II and IV c) I, II and IV d) II, III and I

22. Caprolactam is used for the manufacture of _____ a) Nylon – 2 – Nylon -6 b) Orlon c) Nylon -6,6 d) Nylon – 6

23. Biodegradable polymer which can be produced from 3-hydroxy butanoic acid and 3-hydroxy pentonoic acid is _____ a) PHB b) PHBV c) PGA d) Nylon-2 - Nylon -6

24. Which of the following polymer is semi-synthetic _____ a) Rayon b) Silk c) Cellulose d) PVC

25. The monomer unit of natural rubber is _____ a) trans – 2 methyl buta -1, 3 diene b) neoprene c) cis-isoprene d) chloroprene

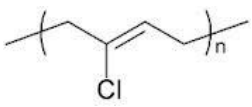
26. Identify the thermo setting polymer a) Poly styrene b) Poly vinyl chloride c) Buna –S d) Bakelite

27. The commercial name of polyacrylonitrile is _____ a) Dacron b) Novaloc c) Teflon d) Orlon

28. PHBV is used in _____a) unbreakable crockery b) tanklinings c) controlled release of drugs d) conveyor belts

29. Which of the following mechanism will not be followed in addition polymerization

a) Step growth polymerisation b) Free radical polymerization c) Cationic polymerization d) Anionic polymeriza

30. The structure 

is a) Styrene b) neoprene c) isoprene d) poly vinyl chloride

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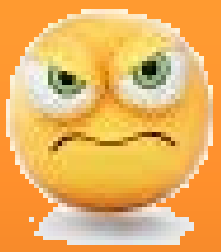

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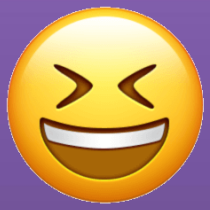
12th – Toppers Answers Sheet

12th – Exam Time Tables



12th Join Telegram Group