(1) Phosphorus pentoxide is widely used as ……

(a) reducing agent (b) oxidizing agent

(c) dehydrating agent (d) bleaching agent

Ans. (c)

(2) Which of the following compounds, when heated at 483K turns to caramel?

(a) Lactose (b) Fructose (c) Sucrose (d) Glucose

Ans. (c)

(3) Calculate the normality of 250 ml aqueous solution of H_2S_4 having pH = 0.00

(a) 2 N (b) 1 N (c) 0.50N (d) 0.25N

Ans. (a)

(4) Which property of $Na_2S_2O_3$ makes it useful in photography?

(a) Reducing agent (b) Oxidizing agent

(c) Complex formation property (d) Photochemical property

Ans. (c)

(5) During which phenomenon does entropy decreases?

(a) Rusting of iron

(b) Sublimation of camphor

(c) Melting of ice

(d) Crystalization of sucrose from its solution

Ans. (d)

(6) Compare vitamin (Part–I) with its deficiency disease (Part-II)

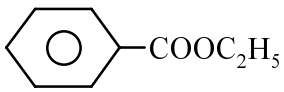
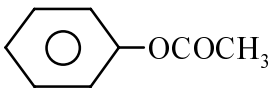
Part – I	Part – II
(I) Vitamin B_{12}	(a) Sterility
(II) Vitamin B_6	(b) Hemorrhagic condition
(III) Vitamin E	(c) Pernicious anaemia
(IV) Vitamin K	(d) Skin disease

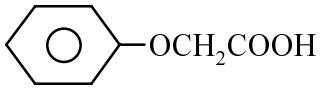
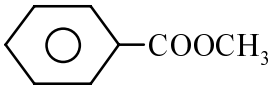
(a) I – c, II – d, III – b, IV – a (b) I – c, II – d, III – a, IV – b

(c) I – b, II – c, III – d, IV – a (d) I – a, II – b, III – c, IV – d

Ans. (b)

(7) Which of the following is phenyl ethanoate?

(a)  (b) 

(c)  (d) 

Ans. (b)

(8) Show the co-ordination number of a metal ion, is oxidation number, the number of electrons in d-orbitals and the number of unpaired electrons in d-orbitals respectively in complex $[Co(H_2O)_4SO_3].Cl$.

(a) 5, 3, 6, 0 (b) 5, 3, 6, 4 (c) 6, 3, 6, 0 (d) 6, 3, 6, 4

Ans. (d)

(9) Give the products available on the cathode and the anode respectively during the electrolysis of an aqueous solution of $MgSO_4$ between inert electrodes.
(a) $O_{2(g)}$ and $SO_{2(g)}$ (b) $O_{2(g)}$ and $Mg_{(s)}$ (c) $O_{2(g)}$ and $H_{2(g)}$ (d) $H_{2(g)}$ and $O_{2(g)}$

Ans. **(d)**

(10) Which type of dyes are not used to dye nylon and polyester fibres?
(a) Insoluble azo dyes (b) Disperse dyes (c) Basic dyes (d) Vat dyes

Ans. **(d)**

(11) For a reaction between gaseous compounds, the reaction rate = K[A] [B]. If the volume of the container is made $\frac{1}{4}$ of the initial, then what will be the rate of reaction as compared to the initial rate? Reaction $2A + B \rightarrow C + D$.
(a) $\frac{1}{16}$ times (b) $\frac{1}{8}$ times (c) 4 times (d) 16 times

Ans. **(c)**

(12) Which of the following is the correct order of priority of groups in D-glyceraldehyde?
(a) CHO (1), OH (2), CH_2OH (3) and H (4)
(b) CH_2OH (1), CHO (2), OH (3) and H (4)
(c) OH (1), CH_2OH (2), CHO (3) and H (4)
(d) OH (1), CHO (2), CH_2OH (3) and H (4)

Ans. **(d)**

(13) Why do 2° and 3° amines fail to undergo the carbylamine test?
(a) All the given reasons are correct?
(b) The Nitrogen atom of the amine group does not have the required number of hydrogen atoms
(c) They react with alcoholic KOH.
(d) They combine with chloroform to give a stable compound.

Ans. **(b)**

(14) Which kind of defect is shown by the given crystal?

K^+	Cl^-	K^+	Cl^-	K^+	Cl^-
Cl^+	€	Cl^-	K^+	€	K^+
K^+	Cl^-	€	Cl^-	K^+	Cl^-
Cl^-	K^+	Cl^-	K^+	€	K^+

(a) Substitution disorder (b) Schottky and Frenkel defects
(c) Frenkel defect (d) Schottky defect

Ans. **(d)**

(15) Which compound polymerizes to neoprene?
(a) $F_2C = CF_2$ (b) $Cl_2C = C \cdot Cl_2$
(c) $CH_2 = C \cdot Cl - CH = CH_2$ (d) $CH_2 = CHCl$

Ans. **(c)**

(16) Given are H_3PO_2, H_3PO_3, H_3PO_4 and $H_4P_2O_7$. Which of the above oxoacids results

into two series of salts?

(a) $H_4P_2O_7$ (b) H_3PO_4 (c) H_3PO_3 (d) H_3PO_2

Ans. **(b)**

(17) What does the electron configuration $1s^2, 2s^2, 2p^5, 3s^1$ indicate?

(a) Excited state of the O_2^- ion (b) Excited state of Neon

(c) Excited state of Fluorine (d) Ground state of Fluorine

Ans. **(b)**

(18) $\frac{3}{4}$ part of a radioactive compound undergoes decay in 2 hours. Calculate its half-life time.

(a) 15 minutes (b) 30 minutes (c) 45 minutes (d) 60 minutes

Ans. **(d)**

(19) Give the pOH range for the isoelectric point of the amphoteric ion of an amino acid.

(a) 9.0 to 10.7 (b) 7.7 to 8.5 (c) 2.5 to 5.0 (d) 5.5 to 6.3

Ans. **(d)**

(20) Choose the correct reaction to prepare mercurous chloride (calomel).

(a) Both options (b) and (d) (b) $HgCl_2 + SnCl_2 \rightarrow$

(c) $Hg + Cl_2 \rightarrow$ (d) $HgCl_2 + Hg \xrightarrow{\Delta}$

Ans. **(a)**

(21) The density of glycerol is higher than propanol due to ……

(a) more number of covalent bonds (b) ionic bonding

(c) hydrogen bonding (d) van der Waal's attraction

Ans. **(c)**

(22) Which of the following reactions define ΔG^o_f?

(a) $SO_{2(g)} + \frac{1}{2}O_{2(g)} \longrightarrow SO_3(g)$ (b) $H_4P_2O_7 + H_2O \longrightarrow 2H_3PO_4$

(c) $\frac{1}{2}H_{2(g)} + \frac{1}{2}F_{2(g)} \longrightarrow HF_{(g)}$ (d) $C_{(diamond)} + O_{2(g)} \longrightarrow CO_{2(g)}$

Ans. **(c)**

(23) $C_2H_5NH_2 \xrightarrow{HNO_2} A \xrightarrow{PCl_5} B \xrightarrow{NH_3} C$. Recognize the compound C from the following

(a) Acetamide (b) Ethylamine (c) Methylamine (d) Propanenitrile

Ans. **(b)**

(24) At a constant temperature, which of the following aqueous solutions will have the maximum vapour pressure?

(Mol. weight: NaCl = 58.5, H_2SO_4 = 98.0 gram. mol^{-1})

(a) 1 molar $H_2SO_{4(aq)}$ (b) 1 molal $H_2SO_{4(aq)}$

(c) 1 molar $NaCl_{(aq)}$ (d) 1 molal $NaCl_{(aq)}$

Ans. **(b)**

(25) Which of the following 0.1 M complex compound solutions will have the minimum

electrical conductivity?

(a) Trichloro triamine platinum (IV) chloride

(b) Dichloro tetraamine platinum (IV) chloride

(c) Chloropentaamine platinum (IV) chloride

(d) Hexaamine platinum (IV) chloride

Ans. **(b)**

(26) Which of the following is a monomer of Teflon?

(a) Difluoroethane (b) Tetrafluroethane (c) Trifluoroethane (d) None of these

Ans. **(c)**

(27) Given are O_2, O_2^{+1}, O_2^{+2} and O_2^{-2} respectively. Find the correct increasing bond order.

(a) $O_2^{+1} < O_2^{-2} < O_2 < O_2^{+2}$ (b) $O_2^{+2} < O_2 < O_2^{+1} < O_2^{-2}$

(c) $O_2^{-2} < O_2 < O_2^{+1} < O_2^{+2}$ (d) $O_2 < O_2^{-2} < O_2^{+2} < O_2^{+1}$

Ans. **(c)**

(28) Which of the following compounds gives chlorine dioxide when it reacts with SO_2 in the presence of acid?

(a) Sodium chlorite (b) Sodium prerchlorate

(c) Sodium chlorate (d) Sodium chloride

Ans. **(c)**

(29) At 25ºC temperature, the cell potential of a given electrochemical cell is 1.92 V. Find the value of x.

$$Mg_{(s)} \,|\, Mg^{+2}_{(aq)} x\,M \,||\, Fe^{+2}_{(aq)}\ 0.01M \,|\, Fe_{(s)}$$

$$E^{o}Mg \,|\, Mg^{+2}_{(aq)} = 2.37V; E^{o}Fe \,|\, Fe^{+2}_{(aq)} = 0.45V$$

(a) x cannot be predicted (b) x > 0.01 M

(c) x < 0.01 M (d) x = 0.01 M

Ans. **(d)**

(30) State the oxidation number of carbonyl carbon in methanol and methanoic acid respectively.

(a) +1 and +3 (b) +1 and +2 (c) 0 and +2 (d) 0 and 0

Ans. **(c)**

(31) Mention the type of reaction to obtain Au(sol).

Reaction: $2\,AuCl_3 + 2\,HCHO + 3H_2O \rightarrow 2\,Au(sol) + 3HCOOH + 6HCl$

(a) Double decomposition (b) Reduction

(c) Oxidation (d) Hydrolysis

Ans. **(b)**

(32) A particle having a mass of 1.0 milligram has a velocity of 3600 km/hour.

(a) 6.626×10^{-31} cm (b) 6.626×10^{-30} cm

(c) 6.626×10^{-29} cm (d) 6.626×10^{-28} cm

Ans. **(c)**

(33) Find the neutron-proton ratio in the daughter element when one α–particle is emitted by $^{238}_{92}U$.

(a) 144/90 (b) 146/90 (c) 144/92 (d) 146/92

Ans. (a)

(34) The resistance of 1N solution of acetic acid is 250 ohm, when measured in a cell having a cell constant of 1.15 cm^{-1}. The equivalent conduction (in ohm^{-1} $cm^2.equiv^{-1}$) of 1N acetic acid is ……

(a) 18.4 (b) 9.2 (c) 4.6 (d) 2.3

Ans. (c)

(35) Which of the following is a wrong statement for physisorphtion?

(a) It generally occurs at a low temperature

(b) The value of adsorption enthalpy is low.

(c) Reaction requires energy of activation

(d) It is a reversible reaction

Ans. (c)

(36) Select the detergent that is used to prepare cosmetics.

(a) LAS (b) Cetyltrimethylammonium chloride

(c) Polyethylene glycol (d) DDBS

Ans. (b)

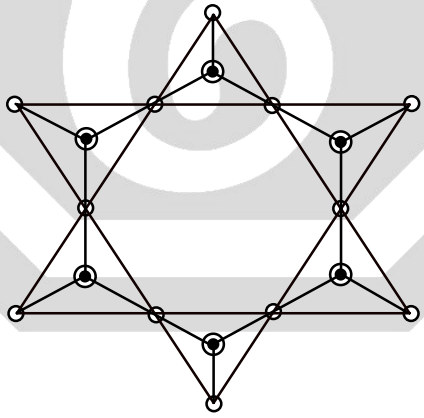
(37) Identify the reaction which is used to obtain β-hydroxy hetone.

(a) Cannizzaro reaction (b) Cross aldol condensation

(c) Aldol condensation (d) Condensation reaction

Ans. (c)

(38) Which type of silicate is shown in the given figure?



(a) Ortho silicate (b) Meta silicate (c) Pyro silicate (d) None of these

Ans. (d)

(39) Cyclo alkanes are isomeric with …….

(a) Arenes (b) Alkynes (c) Alkenes (d) Alkanes

Ans. (c)

(40) By increase in temperature by 10K, the rate of reaction becomes double. How many times the rate of reaction will be if the temperature is increased from 303K to 353K?

(a) 32 (b) 16 (c) 8 (d) 4

Ans. (a)