K-CET EXAMINATION – 2024

CHEMISTRY – A-1 with Key & Solutions

1. For which one of the following mixtures is composition uniform throughout?
   (A) Sand and water
   (B) Grains and pulse with stone
   (C) Mixture of oil and water
   (D) Dilute aqueous solution of sugar

Ans. (D)

Sol. Sugar (s) + H_2O (l) $\longrightarrow$ Homogeneous sugar solution (aq)

2. The energy associated with first orbit of He^+ is
   (A) 0 J
   (B) -8.72×10^{-18} J
   (C) -4.58×10^{-18} J
   (D) -0.545×10^{-18} J

Ans. (B)

Sol. $E_{(1,H)} = -13.6$ eV

$= -13.6 \times 1.602 \times 10^{-19}$ J

$= -21.787 \times 10^{-19}$ J

$$E_{(1,He^+)} = E_{(1,H)} \times \frac{Z^2}{n^2}$$

$$= [-21.787 \times 10^{-19}] \times \frac{2^2}{(1)^2}$$

$= -87.148 \times 10^{-19}$

$= -8.72 \times 10^{-18}$ J

3. A metalloid is
   (A) Bi
   (B) Sb
   (C) P
   (D) Se

Ans. (B)

Sol. Sb is metalloid with metal and non-metal nature.

4. A pair of isoelectronic species having bond order of one is
   (A) N_2, CO
   (B) N_2, NO^+
   (C) O_2^{2-}, F_2
   (D) CO, NO^+

Ans. (C)

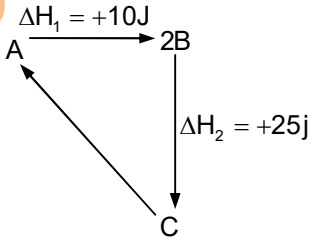
Sol. O_2^{-2}, F_2 having 18 electrons with bond order is one.

5. Identify the **wrong** relation for real gases:
   (A) $Z = \frac{V_{ideal}}{V_{real}}$
   (B) $p_{ideal} = p_{real} + \frac{an^2}{V^2}$
   (C) $V_{real} = V_{ideal} - nb$
   (D) $\left(p + \frac{a}{V^2}\right)(V - b) = RT$

Ans. (A)

Sol. $Z = \frac{V_{real}}{V_{ideal}}$

6. From the diagram



$\Delta_r H$ for reaction C → A is:
   (A) + 35 J
   (B) – 15 J
   (C) – 35 J
   (D) + 15 J

Ans. (C)

Sol. According to Hess Law

$\Delta H_{(A \to 2B)} + \Delta H_{(2B \to C)}$

$= 10\,j + 25\,j = +35\,j$

$= \Delta H_{C \to A} = -35\,j$

7. In the analysis of III group basic radicals of salts, the purpose of adding $NH_3Cl_{(s)}$ to NH_4OH is:
   (A) to increase the concentration of OH^- ions
   (B) to precipitate the radicals of group IV and V
   (C) to suppress the dissociation of NH_4OH
   (D) to introduce Cl^- ions

Ans. (C)

Sol. $NH_4Cl_{(s)}$ with $NH_4OH_{(aq)}$ shows common ion effect decreases the dissociation of $NH_4OH_{(aq)}$

8. Solubility product of CaC_2O_4 at a given temperature in pure water is 4×10^{-9} $(mol\ L^{-1})^2$. Solubility of CaC_2O_4 at the same temperature is
(A) 6.3×10^{-5} mol L^{-1}
(B) 2×10^{-5} mol L^{-1}
(C) 2×10^{-4} mol L^{-1}
(D) 6.3×10^{-4} mol L^{-1}

Ans. (A)

Sol. $K_{(sp)} = S^2$ $\quad CaC_2O_4 \rightleftharpoons Ca^{+2} + C_2O_4^{-2}$

$[CaC_2O_4]$ (AB – type)

$4 \times 10^{-9} = S^2$

$S = (4 \times 10^{-9})^{1/2}$

$= [40 \times 10^{-10}]^{1/2}$

$= 6.3 \times 10^{-5}$ mol L^{-1}

9. In the reaction between moist SO_2 and acidified permanganate solution:
(A) SO_2 is oxidised to SO_4^{2-}
MnO_4^- is reduced to Mn^{2+}
(B) SO_2 is reduced to S
MnO_4^- is oxidised to MnO_4
(C) SO_2 is oxidised to SO_3^{2-}
MnO_4^- reduced to MnO_2
(D) SO_2 is reduced to H_2S
MnO_4^- is oxidised to MnO_4

Ans. (A)

Sol. $MnO_4^{-2} + SO_2 \xrightarrow{H^+} Mn^{+2} + SO_4^{-2}$

10. Which one of the following properties is generally **not** applicable to ionic hydrides?
(A) Non – volatile
(B) Non – conducting in solid state
(C) Crystalline
(D) Volatile

Ans. (D)

Sol. Ionic hydride has large melting point and not volatile.

11. Which one of the following nitrate will decompose to give NO_2 on heating?
(A) $NaNO_3$ (B) KNO_3
(C) $RbNO_3$ (D) $LiNO_3$

Ans. (D)

Sol. $LiNO_{3(s)} \xrightarrow{\Delta} Li_2O_{(s)} + NO_{2(g)}$

12. Which of the following halides **cannot** be hydrolysed?
(A) CCl_4
(B) $SiCl_4$
(C) $GeCl_4$
(D) $SnCl_4$

Ans. (A)

Sol. In CCl_4 compound the absence of vacant d – orbitals in 'C' doesn't hydrolysed.

13. 0.48 g of an organic compound on compete combustion produced 0.22 g of CO_2. The percentage of C in the given organic compound is:
(A) 25
(B) 50
(C) 12.5
(D) 87.5

Ans. (C)

Sol. Sol. $\%C = \frac{12}{44} \times \frac{W_{(CO_2)}}{W_{org.comp}} \times 100$

$= \frac{12}{44} \times \frac{0.22}{0.48} \times 100$

=12.5

14. In the given sequence reactions, identify 'P','Q', 'R' and 'S' respectively.

$CH_2 = CH_2 \xrightarrow{P} CH_2(Br)-CH_2(Br) \xrightarrow{Q} CH_2 = CH - Br \xrightarrow{R} CH \equiv CH \xrightarrow{S} C_6H_6$

(A) Br_2, Alc. KOH, NaOH, Al_2O_3
(B) HBr, Alc. KOH, CaC_2, $KMnO_4$
(C) HBr, Alc. KOH, $NaNH_2$, Red hot iron tube
(D) Br_2, Alc. KOH, $NaNH_2$, Red hot iron tube

Ans. (D)

Sol. $H_2C = CH_2 \xrightarrow[P]{Br_2} H_2C(Br)-CH_2(Br) \xrightarrow[Q]{alc.KOH}$

$H_2C = CH(Br) \xrightarrow[R]{NaNH_2} HC \equiv CH \xrightarrow[S]{Fe/\Delta} C_6H_6$

15. The first chlorinated organic insecticide prepared is
(A) Gammexane
(B) Chloroform
(C) $COCl_2$
(D) DDT

Ans. (D)

Sol. DDT

16. Which of the following crystals has the unit cell such that a = b ≠ c and α = β = 90°, γ = 120°?
(A) Zinc blende
(B) Graphite
(C) Cinnabar
(D) Potassium dichromate

Ans. (B)

Sol. a = b ≠c and α = β = 90°, γ = 120°

It's Hexagpmal → Graphite

17. MnO exhibits
(A) Ferrimagnetism
(B) Antiferromagnetism
(C) Ferromagnetism
(D) Paramagnetism

Ans. (B)

Sol. MnO exhibits antiferromagnetism

18. The number of atoms in 4.5 g of face – centred cubic crystal with edge length 300 pm is: (Given density = 10 g cm^{-3} and $N_A = 6.022 \times 10^{23}$)
(A) 6.6×10^{20}
(B) 6.6×10^{23}
(C) 6.6×10^{19}
(D) 6.6×10^{22}

Ans. (D)

Sol. a = 300 pm

$a^3 = 27 \times 10^{-24}\ cm^3$

$$\rho = \frac{Z \times M}{N_A \times a^3}$$

$$10 = \frac{4 \times M}{6.022 \times 10^{23} \times 27 \times 10^{-24}}$$

$M = 40.65\ g\ mol^{-1}$

No. of atoms = no. of moles $\times 6.023 \times 10^{23}$

$$= \frac{4.5}{40.65} \times 6.023 \times 10^{23}$$

$= 6.6 \times 10^{22}$

19. Vapour pressure of a solution containing 18 g of glucose and 178.2 g of water at 100°C is: (Vapour pressure of pure water at 100°C = 760 torr)
(A) 76.0 torr
(B) 752.4 torr
(C) 7.6 torr
(D) 3207.6 torr

Ans. (B)

Sol. $$\frac{P^0 - P_S}{P^0} = \frac{W_{(solute)}}{M_{(solute)}} \times \frac{M_{(solvent)}}{W_{(solven)}}$$

$$\frac{760 - P_s}{760} = \frac{18}{180} \times \frac{18}{178.2}$$

$P_s = 752.4$ torr

20. A mixture of phenol and aniline shows negative deviation from Raoult's law. This is due to the formation of
(A) Polar covalent bond
(B) Non – polar covalent bond
(C) Intermolecular Hydrogen bond
(D) Intramolecular Hydrogen bond

Ans. (C)

Sol. Phenol + Aniline → Intermolecular Hydrogen bond.

21. Which one of the following pairs will show positive deviation from Raoult's law?
(A) Water – HCl
(B) Benzene – Methanol
(C) Water – HNO_3
(D) Acetone – Chloroform

Ans. (B)

Sol. Benzene – Non polar

Methanol – polar

The mixture will give +ve deviation

22. How many Coulombs are required to oxidize 0.1 mole of H_2O to oxygen?
(A) 1.93×10^5 C
(B) 1.93×10^4 C
(C) 3.86×10^4 C
(D) $9.65 \times 10+3^{C}$

Ans. (B)

Sol. $2H_2O^{(-2)} \rightarrow O_2^{(0)}(g) + 2H_2(g)$

1 mole $H_2O \rightarrow 2$ F

0.1 mole $H_2 \rightarrow 0.2$ F

$= 0.2 \times 96500\ C = 1.93 \times 10^4\ C$

23. A current of 3A is passed through a molten calcium salt for 1hr 47 min 13 sec. The mass of calcium deposited is : (Molar mass of Ca = 40g mol^{-1})
(A) 6.0 g (B) 2.0 g
(C) 8.0 g (D) 4.0 g

Ans. (D)

Sol. $$W = \frac{E}{F} \times i \times t = \frac{20}{96500} \times 3 \times 6433 = 4.0\ g$$

24. The value of 'A' in the equation $\lambda_m = \lambda_m^0 - A\sqrt{C}$ is same for the pair:
(A) NaCl and $CaCl_2$
(B) $CaCl_2$ and $MgSO_4$
(C) NaCl and KBr
(D) $MgCl_2$ and NaCl

Ans. (C)

Sol. 'A' indicates the empirical constant in Debye-Huckel Onsagar equation

NaCl and KBr are having same empirical constant.

25. For the reaction, A ⇌ B, E_a = 50 kJ mol^{-1} and ΔH = – 20 kJ mol^{-1}. When a catalyst is added, E_a decreases by 10 kJ mol^{-1}. What is the E_a for the backward reaction in the presence of catalyst?
(A) 60 kJ mol^{-1}
(B) 40 kJ mol^{-1}
(C) 70 kJ mol^{-1}
(D) 20 kJ mol^{-1}

Ans. (A)

Sol. $A \underset{}{\overset{E_a=50}{\rightleftharpoons}} B,\ \Delta H_r = -20$

$\Delta H_r = Ea_{(f)} - Ea_{(b)};\ Ea_{(b)} = Ea_{(f)} - \Delta Hr$

$= [50 - 10] - (-20) = 60$ KJ mol^{-1}

26. For the reaction $PCl_5 \rightarrow PCl_3 + Cl_2$, rate and rate constant are $1.02 \times 10^{-4}\ mol\ L^{-1} S^{-1}$ and $3.4 \times 10^{-5}\ S^{-1}$ respectively at a given instant .the molar concentration of PCl_5 at that instant is :
(A) $8.0 mol L^{-1}$ (B) $3.0 mol L^{-1}$
(C) $0.2 mol L^{-1}$ (D) $2.0 mol L^{-1}$

Ans. (B)

Sol. Rate = $K[A]^1$

$1.02\times10^{-4} = 3.4\times10^{-5}[A]^1$

$[A] = \frac{10.2\times x10^{-5}}{3.4\times10^{-5}} = 3\,mol^{-1}$

27. Which one of the following does *not* represent Arrhenius equation?

(A) $\log k = \log A - \frac{Ea}{2.3030RT}$

(B) $k = Ae^{-Ea/RT}$

(C) $\ln k = -\frac{Ea}{RT} + \ln A$

(D) $k = Ae^{Ea/RT}$

Ans. (D)

Sol. A, B, C → correct

28. Identify the **incorrect** statement :

(A) Values of colligative properties of colloidal solution are of small order compared to values of true solution.

(B) Tyndall effect is observed only when diameter of the dispersed particles is not much smaller than wavelength of incident light.

(C) Colour of colloidal solution depends on the wavelength of light scattered by the dispersed particles.

(D) Brownian movement is due to balanced bombardment of molecules of dispersion medium on colloidal particles.

Ans. (D)

Sol. Brownian movement has been explained due to the unbalanced bombardment of the particles by the molecule of the dispersion medium.

29. For the coagulation of positively charged hydrated ferric–oxide sol, the flocculating power of the ions is in the oder:

(A) $PO_4^{3-} > SO_4^{2-} > Cl^- > [Fe(CN)_6]^{4-}$

(B) $Cl^- > SO_4^{2-} > PO_4^{3-} > [Fe(CN)_6]^{4-}$

(C) $SO_4^{2-} = Cl^- = PO_4^{3-} = [Fe(CN)_6]^{4-}$

(D) $[Fe(CN)_6]^{4-} > PO_4^{3-} > SO_4^{2-} > Cl^-$

Ans. (D)

Sol. For +ve charged solution → coagulated with more -ve charged ions

30. Gold sol is not a :

(A) Macromolecular colloid

(B) Lyophobic colloid

(C) Multimolecular colloid

(D) Negatively charged colloid

Ans. (A)

Sol. Gold → Multimolecular

→ Lyophobic colloids

→ -ve charged colloids

31. The **incorrect** statement about Hall–Heroult process is :

(A) Carbon anode is oxidised to CO and CO_2

(B) Na_3AlF_6 helps to decrease the melting point of the electrolyte.

(C) CaF_2 helps to increase the conductivity of the electrolyte.

(D) Oxidation state of oxygen changes in the overall cell reaction.

Ans. (D)

Sol. At Anode

$C_{(s)} + O^{-2}_{(melt)} \rightarrow CO_{(g)} + 2e^-$

$C_{(s)} + 2O^{-2}_{(melt)} \rightarrow CO_{2(g)} + 4e^-$

32. Select the correct statement

(A) Roasting involves heating the ore in the absence of air

(B) Calcination involves heating the ore above its melting point

(C) Smelting involves heating the ore with suitable reducing agent and flux below its melting point

(D) Calcination of calcium carbonate is endothermic

Ans. (D)

Sol. Calcination of calcium carbonate is endothermic

33. NO_2 gas is :

(A) Colourless, neutral

(B) Colourless, acidic

(C) Brown, acidic

(D) Brown, neutral

Ans. (C)

Sol. Browm gas, acidic

34. Identify the incorrect statement from the following:

(A) Oxides of nitrogen in the atmosphere can cause depletion of the ozone layer

(B) Ozone absorbs the intense ultraviolet radiation of Sun

(C) Depletion of ozone layer is because of its chemical reactions with chlorofluoro alkanes

(D) Ozone absorbs infrared radiation

Ans. (D)

Sol. IR radiations are electro magnetic radiations. Does not absorbed by O_3 even passing through vacuum.

35. The correct decreasing order of boiling point of hydrogen halides us

(A) HF > HCl > HBr > HI

(B) HI > HBr > HCl > HF

(C) HF > HI > HBr > HCl

(D) HI > HF > HBr > HCl

Ans. (C)

Sol. HF > HI > HBr > HCl

↓

Inter molecular H-bonding.

36. The synthetically produced radioactive noble gas by the collision of $^{248}_{98}Cf$ with $^{48}_{20}Ca$ is
(A) Radon (B) Radium
(C) Oganesson (D) Xenon

Ans. (C)

Sol. $^{249}_{98}Cf + {}^{48}_{20}Ca \rightarrow {}^{294}_{118}Og + 3\ {}_0n^1$

37. The transition element $(\approx 5\%)$ present with lanthanoid metal in Misch metal is
(A) Mg (B) Fe
(C) Zn (D) Co

Ans. (B)

Sol. Lanthanoids (95%)
Fe (5%)
Trace of S, C, Ca, Cl

38. Match the following

I.	Zn^{2+}	i.	d^8 configuration
II.	Cu^{2+}	ii.	Colourless
III.	Ni^{2+}	iii.	μ = 1.73 BM

(A) I–i, II–ii, III – iii
(B) I–ii, II–iii, III – i
(C) I–ii, II–i, III – iii
(D) I–i, II–iii, III – ii

Ans. (B)

Sol. $Zn^{+2} \rightarrow d^{10}$ Colourless no. unpaired electron
$Cu^{+2} \rightarrow d^9 \rightarrow$ one unpaired n = 1
$\mu = \sqrt{n(n+2)}BM = \sqrt{1+(1+2)}BM$
$Ni^{+2} \rightarrow d^8$

39. Which of the following statements related to lanthanoids is incorrect?
(A) Lanthanoids are silvery white soft metals
(B) Samarium shows +2 oxidation state
(C) Ce^{+4} solution are widely used as oxidizing agents in titrimetric analysis
(D) Colour of Lanthanoid ion in solution is due to d–d transition

Ans. (D)

Sol. Due to f-f transition.

40. On treating 100 mL of 0.1 M aqueous solution of the complex $CrCl_3$. 6 H_2O with excess of $AgNO_3$, 2.86 g of AgCl was obtained. The complex is
(A) $\left[Cr(H_2O)_3Cl_3\right].3H_2O$
(B) $\left[Cr(H_2O)_4Cl_2\right]Cl.2H_2O$
(C) $\left[Cr(H_2O)_5Cl\right]Cl_2.H_2O$
(D) $\left[Cr(H_2O)_6Cl_3\right]$

Ans. (C)

Sol. No. of moles of AgCl = $= \frac{wt}{M\omega t} = \frac{2.86}{143.5} = 0.02$

2 Primary valency (Cl) is present outside of sphere.

41. The complex compounds $\left[Co(NH_3)_5SO_4\right]Br$ and $\left[Co(NH_3)_5Br\right]SO_4$ are
(A) Coordination isomers
(B) Geometrical isomers
(C) Optical isomers
(D) Ionisation isomers

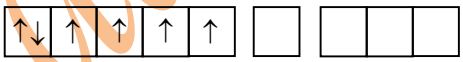
Ans. (D)

Sol. Having same molecular formula but give different ions in solution is called ionization isomerism.

42. Which of the following statements are true about $[CoF_6]^{3-}$ ion?
I. The complex has octahedral geometry
II. Coordination number of Co is 3 and oxidation state is +6
III. The complex is sp^3d^2 hybridises
IV. It is a high spin complex
(A) I, II and IV
(B) I, III and IV
(C) II and IV
(D) II, III and IV

Ans. (B)

Sol. $Co^{+3} = \frac{3d^6}{(n-1)d}\ \frac{4s^0}{ns}\ \frac{4p^0}{np}\ \frac{4d^0}{nd}$



F $\rightarrow$ Weak liquid $\rightarrow$ high spin complex
Hyb. $\rightarrow sp^3d^2$
Geometry $\rightarrow$ Octahedrol

43. A haloalkane undergoes S_N^2 or S_N^1 reaction depending on
(A) Solvent used in the reaction
(B) Low temperature
(C) The type of halogen atom
(D) Stability of the haloalkane

Ans. (A)

Sol. $SN^2 \rightarrow$ Polar aprotic solvent

Ex: $CH_3-\overset{\overset{O}{\|}}{C}-CH_3$, NaOH, KOH, $C_2H_5O^-$
DMSO
DMF
$SN^1 \rightarrow$ Polar protic solvent
Ex: H_2O, NH_3, C_2H_5OH,

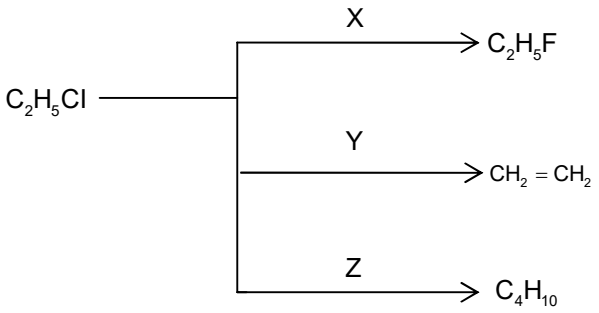
44. 2–Methyl propane can be prepared by wurtz reaction. The haloalkanes taken along with metallic sodium and dry ether are
(A) Chloromethane and 2–chloropropane
(B) Chloroethane and chloromethane
(C) Chloroethane and 1– chloropropane
(D) Chloromethane and 1– chloropropane

Ans. (A)

Sol. $CH_3Cl + CH_3\underset{\underset{CH_3}{|}}{CH}Cl + 2Na \xrightarrow{\text{Dry Ether}} CH_3-\underset{\underset{CH_3}{|}}{CH}-CH_3$

(Cross Wurtz reaction)

45. In the following scheme of reaction,



X, Y and Z respectively are :

(A) AgF, alcoholic KOH and benzene
(B) HF, aqueous KOH and Na in dry ether
(C) Hg_2F_2, alcoholic KOH and Na in dry ether
(D) CoF_2, aqueous KOH and benzene

Ans. (C)

Sol. $2C_2H_5Cl + \underset{(X)}{Hg_2F_2} \rightarrow 2C_2H_5F + Hg_2Cl_2$

$C_2H_5Cl + \underset{(Y)}{KOH}\text{ (alcoholic)} \rightarrow CH_2 = CH_2$

$2C_2H_5Cl + \underset{(Z)}{2Na} \rightarrow C_4H_{10} + 2NaCl$

46. 8.8 g monohydric alcohol added to ethyl magnesium iodide in ether liberates 2240 cm^3 of ethane at STP. This monohydric alcohol when oxidized using pyridinium – chlorochromate, forms acarbony compound that answers siver mirror test (Tollens' test). The monohydric alcohol is :

(A) butan – 2-ol
(B) 2,2 –dimethyl propan -1- ol
(C) pentan -2 -ol
(D) 2,2 –dimethyl ethan -1-ol

Ans. (B)

Sol. $CH_3-\underset{CH_3}{\overset{CH_3}{C}}-CH_2OH \xrightarrow{P.C.C} CH_3-\underset{CH_3}{\overset{CH_3}{C}}-CHO$, it gives Tollen's test

$(CH_3)_3CCH_2OH$ (mol. Wt = 88) + $C_2H_5MgI \rightarrow C_2H_6$ (1 mole) + $(CH_3)_3CCH_2OMgI$

2240 $cm^3 \rightarrow$ 8.8g

22400 $cm^3 \rightarrow$?

= 88 g

47. When a tertiary alcohol 'A' ($C_4H_{10}O$) reacts with 20% H_3PO_4 at 358 K, it gives a compound 'B' (C_4H_8) as a major product. The IUPAC name of the compound 'B' is :

(A) But – 1 - ene
(B) But – 2 ene
(C) Cyclobutane
(D) 2 - Methylpropene

Ans. (D)

Sol. $CH_3-\underset{CH_3}{\overset{CH_3}{C}}-OH \xrightarrow{20\%H_3PO_4} CH_3-\underset{CH_3}{\overset{CH_2}{C}} + H_2O$

2 – methyl propene (B)

48. PCC is :

(A) $K_2Cr_2O_7$ + Pyridine
(B) $CrO_3 + CHCl_3$
(C) $CrO_3 + H_2SO_4$
(D) A complex of chromium trioxide with pyridine + HCl

Ans. (D)

Sol. A complex of chromium trioxide with pyridine + HCl

49. Propanone and Propanal are :

(A) Position (B) Functional isomers
(C) Chain isomers (D) Geometrical isomers

Ans. (B)

Sol. $\underset{\text{propanone}}{CH_3-\overset{O}{\overset{\|}{C}}-CH_3}$ and $\underset{\text{propanal}}{CH_3-CH_2-CHO}$

50. Sodium ethanoate on heating with soda lime gives 'X' Electrolysis of aqueous solution of sodium ethanoate gives 'Y'. 'X' and 'Y' respectively are :

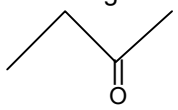
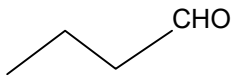
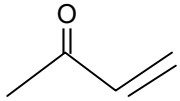
(A) Methane and Ethane
(B) Methane and Methane
(C) Ethane and Methane
(D) Ethane and Ethane

Ans. (A)

Sol. $CH_3COONa + NaOH \xrightarrow[\Delta]{CaO} \underset{(X)}{CH_4} + Na_2CO_3$

$2CH_3COONa + 2H_2O \rightarrow \underset{(Y)}{C_2H_6} + 2CO_2 + 2NaOH + H_2$

51. But–1-yne on reaction with dil. H_2SO_4 in presence of Hg^{2+} ions at 333 K gives :

(A) 
(B) 
(C) 
(D) 

Ans. (A)

Sol. $CH_3-CH_2-C\equiv CH \xrightarrow[Hg^{+2}]{\text{dil. } H_2SO_4}$

$CH_3-CH_2-\underset{OH}{\overset{}{C}}=CH_2 \xleftrightarrow{\text{Tautomerism}} CH_3-CH_2-\overset{O}{\overset{\|}{C}}-CH_3$

52. Biologically active adrenaline and ephedrine used to increases blood pressure contain:

(A) Primary amino group
(B) Secondary amino group
(C) Tertiary amino group
(D) Quaternary ammonium salt

Ans. (B)

Sol. Secondary amino group

53. In the reaction

Aniline $\xrightarrow[\text{dil.HCl}]{NaNO_2} P \xrightarrow[NaOH]{\text{Phenol}} Q,$

'Q' is

(A) $C_6H_5N_2Cl$

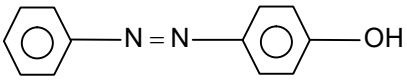
(B) ortho-hydroxyazobenzene

(C) para- hydroxyazobenzene

(D) meta- hydroxyazobenzene

Ans. (C)

Sol. $C_6H_5NH_2 \xrightarrow[HCl]{NaNO_2} C_6H_5N_2Cl \xrightarrow[NaOH]{C_6H_5OH}$



P – hydroxy azobenzene

54. The female sex hormone which is responsible for the development of secondary female characteristics and participates in the control of menstrual cycle is :

(A) Testosterone

(B) Estradiol

(C) Insulin

(D) Thyroxine

Ans. (B)

Sol. Estradiol

55. The type of linkage present between nucleotides is

(A) Phosphoester linkage

(B) Phosphodiester linkage

(C) Amide linkage

(D) Glycosidic linkage

Ans. (B)

Sol. The type of linkage present between nucleotides is Phosphodiester linkage

56. $\alpha-D-(+)-$glucose and $\beta-D-(+)-$ glucose are

(A) Enantiomers

(B) Conformers

(C) Epimers

(D) Anomers

Ans. (D)

Sol. $\alpha-D-(+)-$glucose and $\beta-D-(+)-$ glucose are Anomers

57. Which of the following set of polymers are used as fibre?

(i) Teflon

(ii) Starch

(iii) Terylene

(iv) Orlon

(A) (i) and (ii)

(B) (ii) and (iii)

(C) (iii) and (iv)

(D) (i) and (iv)

Ans. (C)

Sol. Terylene and Orlon are used as fibre.

58. The biodegradable polymer obtained by polymerization of Glycine and Aminocaproic acid is

(A) Nylon – 6

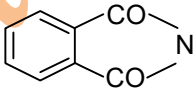
(B) PHBV

(C) Nylon – 2 – Nylon 6

(D) Nylon – 6, 10

Ans. (C)

Sol. Nylon 2 – Nylon 6 is biodegradable polymer.

59. The compound  is

(A) Sucralose

(B) Aspartame

(C) Saccharin

(D) Alitame

Ans. Given structure is wrong in the question.

Sol. One of the "CO" is replaced by SO_2 then Option (C) Saccharin is correct.

60. Which one of the following is a cationic detergent?

(A) Cetyltrimethylammonium bromide

(B) Sodium dodecylbenzene sulphonate

(C) Dodecylbenzene sulphonic acid

(D) Dodecylbenzene

Ans. (A)

Sol. Cationic detergent Cetyltrimethylammonium bromide