CHEMISTRY FULL PORTION CLASS 12th (10.01.2025) 45x4=180 MARKS

Solution

01. Answer **(2)**

In positive deviation from Raoult's Law

A – B interaction < A – A & B – B interactions

∴ Vapour pressure increase, Boiling point decrease. $\Delta H_{mix} > 0$, $\Delta V_{mix} > 0$

02. Answer **(4)**

Maximum freezing point for minimum no. of ions

03. Answer **(3)**

$NaCl \rightarrow \underbrace{Na^+ + Cl^-}_{i=2}$

$\pi = iCRT$

$\pi = 2 \times 0.1 \times 0.0821 \times 300$

$= 4.92$ atm

04. Answer **(2)**

In osmosis solvent molecules move from solvent to solution

05. Answer **(3)**

$P_s = P_A^o + \left(P_B^o - P_A^o\right)X_B$

$\Rightarrow 340 = 360 + (320 - 360)X_B$

$340 = 360 - 40X_B \Rightarrow 40X_B = 20 \Rightarrow X_B = \frac{1}{2}$

06. Answer **(1)**

$\log K_c = \frac{nE^o_{cell}}{0.0591}$

$\log 10^{10} = \frac{2 \times E^o_{cell}}{0.0591}$

$E^o_{cell} = \frac{10 \times 0.0591}{2} = 10 \times 0.0295$

$= 0.295$ V

07. Answer **(3)**

$\Delta G^o = -nFE^o$

$-50.6 \times 10^3 = -2 \times 96500 \times E^o$

$E^o = 0.26$ V

08. Answer **(2)**

$\Lambda^\infty_{HOAC} = \Lambda^\infty_{HCl} + \Lambda^\infty_{NaOAC} - \Lambda^\infty_{NaCl}$

$= 426.2 + 91 - 126.5 \quad ; \quad = 390.7$

09. Answer **(2)**

$Zn_{(s)} + 2Ag^+_{(0.01M)} \rightarrow Zn^{+2}_{(0.01M)} + 2Ag_{(s)}$

$Q = \frac{\left[Zn^{+2}\right]}{\left[Ag^+\right]^2} = \frac{0.01}{(0.01)^2} = 100$

10. Answer **(3)**

$Zn + Cu^{+2} \rightarrow Zn^{+2} + Cu$

$E = E^o - \frac{0.059}{2}\log\left\{\frac{\left[Zn^{+2}\right]}{\left[Cu^{+2}\right]}\right\}$

Lesser the value of $\frac{\left[Zn^{+2}\right]}{\left[Cu^{+2}\right]}$ greater will be the E_{cell}

11. Answer **(3)**

$k = \frac{0.693}{t_{1/2}} = \frac{0.693}{480} = 1.44 \times 10^{-3}\ s^{-1}$

12. Answer **(3)**

$\frac{1}{5}\frac{\Delta[Br^-]}{\Delta t} = \frac{1}{6}\frac{\Delta[H^+]}{\Delta t}$

13. Answer **(4)**

From (1) and (2) no change in rate with change in concentration of 'C' so the order with respect to 'C' is zero

from (1) and (4).

$\frac{1.25 \times 10^{-3}}{5 \times 10^{-3}} = \left(\frac{0.005}{0.01}\right)^x$

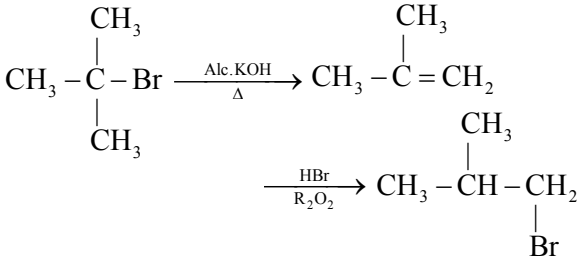
$\Rightarrow 0.25 = (0.5)^x \Rightarrow x = 2$

14. Answer **(4)**

$\overset{1}{CH_2} = \overset{2}{CH} - \overset{3}{CH_2} - Br$

3-bromoprop-1-ene

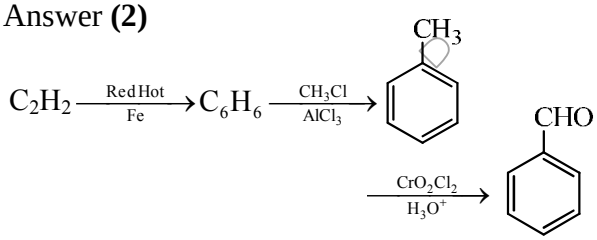
15. Answer **(1)**



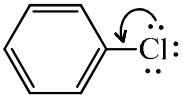
16. Answer **(2)**

Deficiency of vitamin B_6 causes convulsions

17. Answer **(2)**



18. Answer **(3)**



Haloarene less reactive towards substitution, due to conjugation.

19. Answer **(1)**

F – Xe – F

linear

20. Answer **(4)**

$(NH_4)_2Cr_2O_7 \xrightarrow{\Delta} N_2\uparrow + Cr_2O_3 + 4H_2O$

$Ba(N_3)_2 \xrightarrow{\Delta} 3N_2\uparrow + Ba$

$2Pb(NO_3)_2 \xrightarrow[673K]{\Delta} 4NO_2 + 2PbO + O_2$

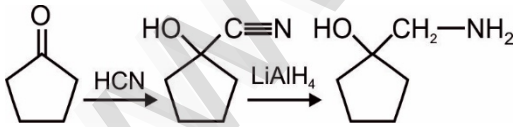
21. Answer **(1)**

$C_6H_{12}O_6 \xrightarrow{\text{Zymase}} 2C_2H_5OH + 2CO_2$

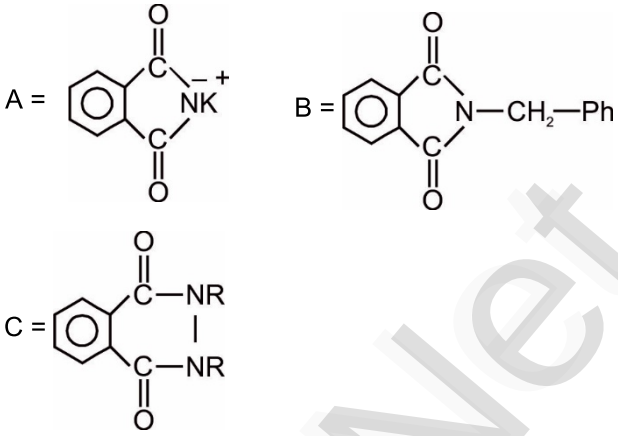
Glucose/Fructose

Last step during commercial preparation of alcohol from fermentation of sugar.

22. Answer **(1)**



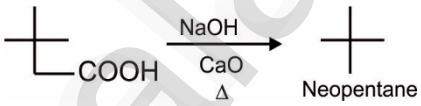
23. Answer **(3)**



24. Answer **(3)**

Weak oxidising agents like PCC, PDC etc. oxidise 1° alcohol to aldehyde.

25. Answer **(2)**



26. Answer **(1)**

$MnO_2 + KOH \xrightarrow{O_2} \underset{\text{Green}}{MnO_4^{2-}} \xrightarrow[\text{oxidation}]{\text{Electrolytic}} \underset{\text{Purple}}{MnO_4^-}$

27. Answer **(3)**

In all complexes number of unpaired electrons = 0

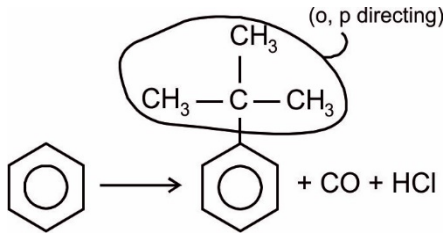
28. Answer **(4)**

$$\frac{P^\circ - P_s}{P^\circ} = \frac{n}{n+N} \simeq \frac{n}{N} \simeq \frac{w}{MW_{solute} \times N}$$

$\because$ Solution has same amount of solvent, so P_S value depends only on molecular mass of solute.

So, vapour pressure of solution $\propto MW_{solute}$

29. Answer **(4)**



30. Answer **(2)**

facial-isomer meridional-isomer

31. Answer **(1)**

NO is less stable.

32. Answer **(2)**

$\lambda_m = \frac{1.65}{0.15} \times 10^3 \text{ S cm}^2 \text{ mol}^{-1}$

$= 11 \times 10^3 \text{ S cm}^2 \text{ mol}^{-1}$

$= 11 \times 10^3 \times 10^{-4} \text{ S m}^2 \text{ mol}^{-1}$

$= 1.1 \text{ S m}^2 \text{ mol}^{-1}$

33. Answer **(1)**

34. Answer **(2)**

$\Delta T_f = iK_f m$

$0.2046 = (1 + \alpha)\ 1.86 \times 0.1 \Rightarrow \quad \alpha = 0.1$

$\therefore \quad [OH^-] = C\alpha = 0.1 \times 0.1 = 10^{-2}$ M

$pOH = -\log 10^{-2} = 2$

$pH = 14 - 2 = 12$

35. Answer **(3)**

Greater the size of ion, lesser the solvation and higher conductance.

36. Answer **(1)**

$$Y_A = \frac{P^\circ_A X_A}{P^\circ_A X_A + P^\circ_B X_B} = \frac{800 \times \frac{3}{5}}{800 \times \frac{3}{5} + 500 \times \frac{2}{5}}$$

$$= \frac{800 \times 3}{800 \times 3 + 500 \times 2} = 0.7$$

37. Answer **(4)**

$2H^+(aq.) + 2e^- \rightarrow H_2(g)$

$$E = -\frac{0.0591}{2} \log\left(\frac{p_{H_2}}{(H^+)^2}\right) = -\frac{0.0591}{2} \log\left(\frac{10}{10^{-4}}\right)$$

$$= -\frac{0.0591}{2} \times 5 = -0.15 \text{ V}$$

38. Answer **(4)**

In first row of transition elements Co has most positive $E^\circ_{M^{3+}/M^{2+}}$ value.

39. Answer **(3)**

Except Mn^{2+} all given ions are having blue colour solution.

40. Answer **(2)**

$Er^{3+} : 4f^{11}$

41. Answer **(3)**

42. Answer **(2)**

43. Answer **(3)**

44. Answer **(4)**

45. Answer **(2)**