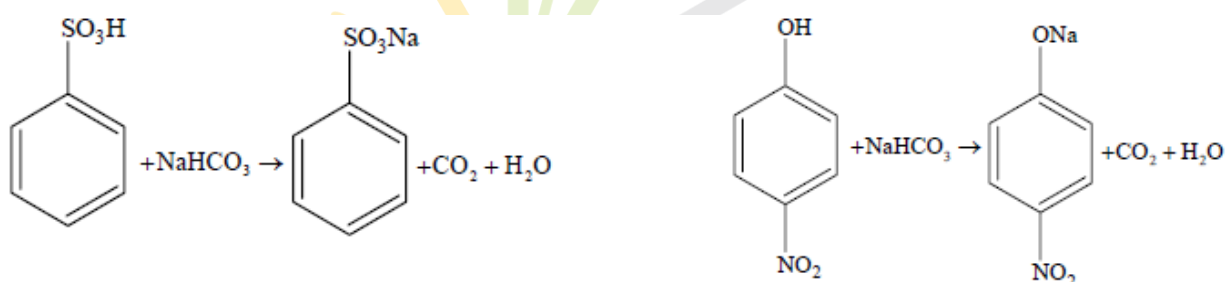# JEE MAIN-2006

CHEMISTRY

1. **Sol. (A)**

   Due to formation of chelated complex, the reaction moves in forward direction.

2. **Sol. (A)**

   Due to formation of tetraammine zinc (II) complex; $Zn^{+2} + NH_4OH \rightarrow \left[Zn(NH_3)_4 \right]^{+2}$

3. **Sol. (D)**

4. **Sol. (A)**

5. **Sol. (C)**

6. **Sol. (A)**

   $N\overset{+}{O}Cl^- \rightarrow$ **Markonikov's Addition**

7. **Sol. (C)**

8. **Sol. (A)**

9. **Sol. (D)**

   Isocyanide test/Carbylamine reaction

10. **Sol. (D)**

$$Cu^{2+} + 2CN^- \rightarrow Cu(CN)_2$$

$$2Cu(CN)_2 + 2CuCN + (CN)_2$$
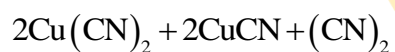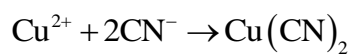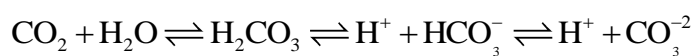
11. **Sol. (B)**

$$\Delta S_{(A \rightarrow B)} = \Delta S_{(A \rightarrow C)} + \Delta S_{(C \rightarrow D)} - \Delta S_{(B \rightarrow D)} = 50 + 30 - 20$$

12. **Sol. (B)**

13. **Sol. (A)**

    Due to synergic bond formation between metal and CO, the bond order of CO decreases

14. **Sol. (A)**

$$CO_2 + H_2O \rightleftharpoons H_2CO_3 \rightleftharpoons H^+ + HCO_3^- \rightleftharpoons H^+ + CO_3^{-2}$$
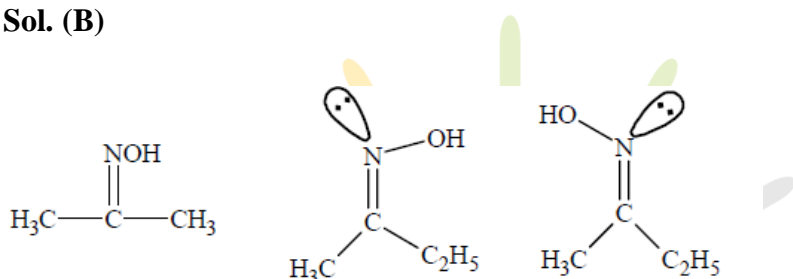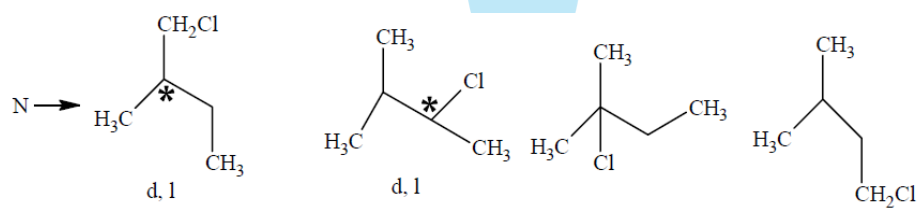
15. **Sol. (C)**

16. **Sol. (C)**

It is cumene hydroperoxide rearrangement reaction.

17. **Sol. (B)**

18. **Sol. (B)**

19. **Sol. (B)**

$M \rightarrow d, 1$ cannot be separated by fractional distillation.

20. **Sol. (A)**

Test of Mg^{+2} ion

$$Mg^{+2} + NH_4OH + Na_4HPO_4 \rightarrow Mg(Mg)PO_4$$

3

21. **Sol. (D)**

22. **Sol. (D)**

23. **Sol. (B)**

24. **Sol. (A)**

25. **Sol. (C)**

26. **Sol. (A)**

27. **Sol. (C)**

28. **Sol. (B)**

29. **Sol. (A)**

30. **Sol. (B)**

$$E^{\circ}_{Cell} = \frac{RT}{nF} \ln K$$

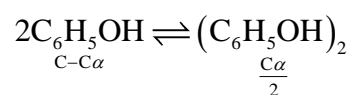$$(0.8 - 0.05) = \frac{1}{2} \times \frac{0.0592}{2.303} \ln K$$

$$\ln K = \frac{(0.8 - 0.05) \times 2 \times 2.303}{0.0592} = 58.38$$

4

31.   **Sol. (A)**

On increasing concentration of NH_3, the concentration of H^+ ion decreases. Therefore, E_{red} increases.

32.   **Sol. (D)**

33.   **Sol.**

$$\underset{C-C\alpha}{2C_6H_5OH} \rightleftharpoons \underset{\frac{C\alpha}{2}}{(C_6H_5OH)_2}$$

$$7 = 14 \times 0.8\left(\frac{2-\alpha}{2}\right)$$

$$\alpha = 0.75 = 75\%$$

34.   **Sol.**

$$\Delta H = \Delta U + \Delta(PV)$$

$$\Delta H = \Delta U + V\Delta P$$

$$\Delta U = \Delta H - V\Delta P = -60 + 1 \times 30 \times 0.1$$

$$= -557$$

Absolute value $= 557\,kJ$

35.　**Sol.**

The solubility of $AgBr$ in presence of 10^{-7} molar $AgNO_3$ is $3\times10^{-7}M$.

Therefore $\left[Br^-\right]=3\times10^{-4}m^3, \left[Ag^+\right]=4\times10^{-4}m^3$ and $\left[NO_3^-\right]=10^{-4}m^3$

Therefore $k_{total}=k_{Br^-}+k_{Ag^+}+k_{NO_3^-}=55\,Sm^{-1}$

36.　**Sol.**

$$\rho=\frac{ZA}{NV}$$

$$Z=\frac{\rho NV}{A}=\frac{2\times6\times10^{23}\times\left(5\times10^{-8}\right)^3}{75}$$

$$n=2$$

$$r=\frac{\sqrt{3}}{4}a=\frac{\sqrt{3}}{4}\times2.165\,\overset{\circ}{A}=216.5\,pm$$

Note: Answer may be $216\,pm$ or $217\,pm$.

37.　**Sol.**

A – P,R; B – P,R; C – Q; D – S

38.　**Sol.**

A – Q; B – R; C – P; D – Q,R

39.　**Sol.**

A– R; B – Q; C – P; D – S

40.　**Sol.**

A – Q; B – Q; C – R,S; D – P,S

6