

HSE March 2020
Chemistry Answer Key.

1. (C) Face Centred cubic 2. (b) Kohlrausch law 3. (a) Silver Sol
4. (b) Phosphine 5. (a) HCOOH 6. Phosgene
7. Sandmeyer reaction 8. ISoprene 9. Phenol
10. (a) p-type (b) n-type

Schottky	Frenkel
<ul style="list-style-type: none"> Density decreases Cation and anion have almost same size. 	<ul style="list-style-type: none"> Density no change Size of Cation is very smaller than anion

12. NaCl - 2
Al(NO₃)₃ - 4
K₂SO₄ - 3
Al₂(SO₄)₃ - 5

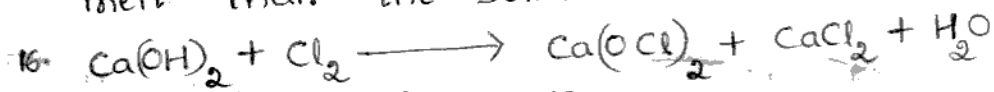
13. • Order = $\frac{3}{2} + \frac{1}{2} = 2$

• Molecularity = 2

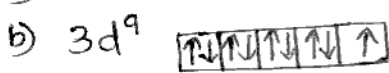
14. Bauxite - Leaching

• Zinc Sulphide - Froth Floation

15. Principle of Zone refining - Impurities are more soluble in the melt than the solid state of the metal.



17. a) Lanthanoid Contraction



$\therefore n=1$

$\mu = \sqrt{n(n+2)} = \sqrt{1(1+2)} = \sqrt{3}$

18. • Primary valence = Oxidation state = Zero

• Secondary valence - Coordination number = 4

19. Aryl halide • Carbon has sp^2 hybridisation
• Due to Resonance there is Partial double bond between Carbon and halogen.

20. In Ethanol hydrogen bond formation takes place. But in Methox methane no hydrogen bond.

21. Tollen's test - Propanal produces silver mirror with TR

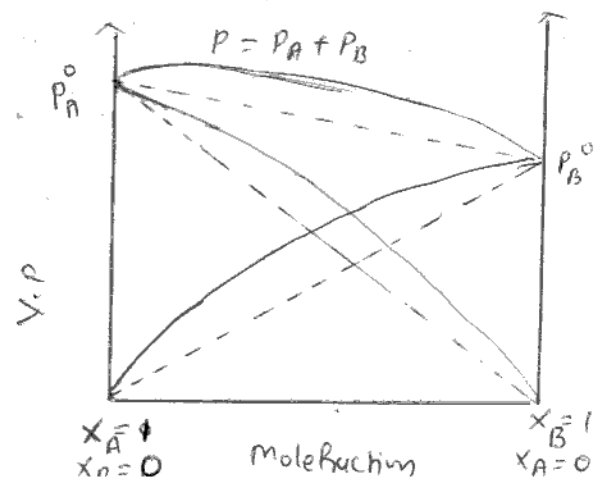
22. Analgesics - Reduce pain • Antibiotics - Kills/Inhibit the growth of microorganisms.

23. a) No.

b) Positive deviation.

24. a) $k = A e^{-\frac{E_a}{RT}}$

b) $\log\left(\frac{k_2}{k_1}\right) = \frac{E_a}{2.303R} \left[\frac{T_2 - T_1}{T_1 \times T_2} \right]$

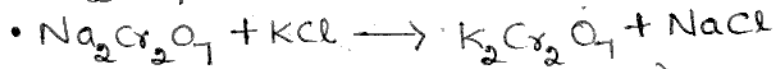
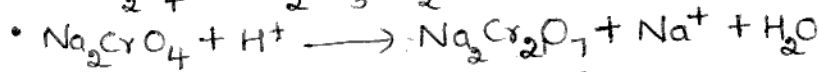
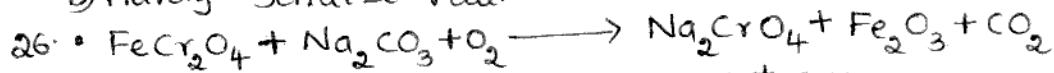


$$\log \frac{2k_1}{k_1} = \frac{E_a}{2.303 \times 8.314} \left[\frac{310-300}{310 \times 300} \right] \Rightarrow \log 2 = \frac{E_a}{19.147} \left[\frac{10}{93000} \right]$$

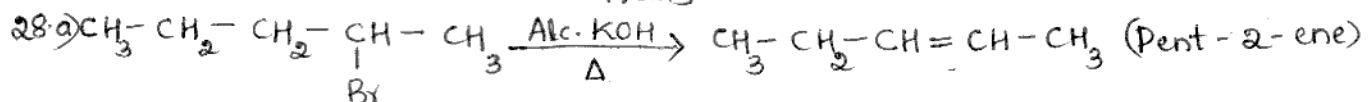
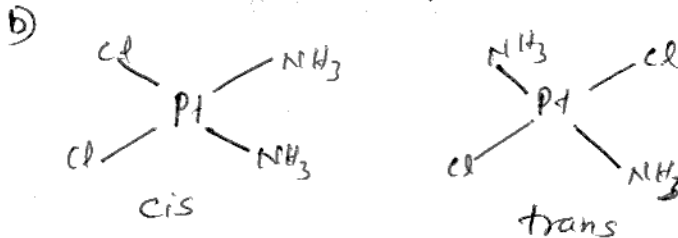
$$E_a = 53598.19 \text{ J}$$

25. a) Electrophoresis - Movement of colloidal particles under applied electric Potential.

b) Hardy-Schulze rule.



27. a) Diaminedichlorido platinum (II)



b) Saytzev rule.

29. a) $\text{CH}_3-\text{CH}_2-\text{NC}$ b) Hoffmann Bromamide degradation c) $\text{C}_6\text{H}_5\text{NH}_2$ (Aniline)

30. a) Heating of rubber with Sulphur.

b) Addition - PVC, Teflon • Condensation - Nylon 6,6, terylene.

31. a) Globular protein - Coiling of polypeptide chain giving spherical shape
• Fibrous protein - Polypeptide chains run parallel and giving thread like structure.

b) Vitamin - A

32. a) Anode - Zn, Cathode - Cu

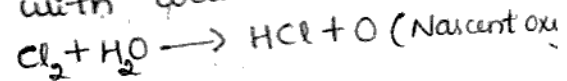
b) $\Delta G^\circ = -nF E^\circ_{\text{cell}}$
 $= -2 \times 96500 \times 1.1$
 $= -212300 \text{ J}$

c) $E_{\text{cell}} = E^\circ_{\text{cell}} - \frac{0.059}{n} \log \frac{[\text{Zn}^{2+}]}{[\text{Cu}^{2+}]}$

33. a) N_2 has triple bond between them.

b) PCl_3 react with moisture giving fumes of HCl

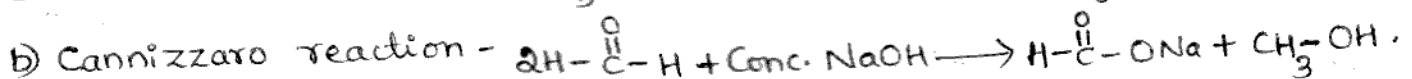
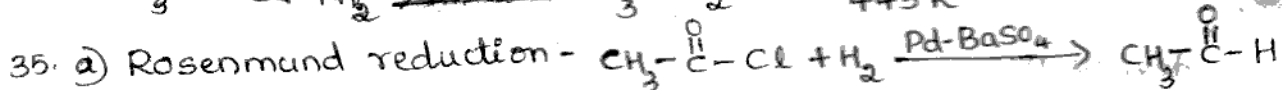
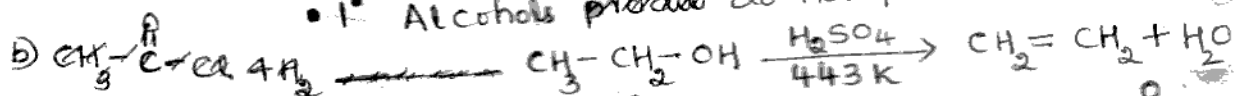
c) Cl_2 produces Nascent oxygen with water.



34. a) Lucas test - • 3° Alcohols produce turbidity immediately.

• 2° Alcohols produce turbidity after 5 minutes

• 1° Alcohols produce do not produce turbidity.



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