

CHEMISTRY

31. (1)

32. (3)

33. (3)

Silicon exists as network solid (covalent solid)

34. (1)

 MnO_2 = Antiferromagnetic TiO_2 = Diamagnetic VO_2 = Paramagnetic CrO_2 = Ferromagnetic

35. (1)

$$\frac{V_1}{V_2} = \frac{T_1}{T_2} \therefore V_2 = \frac{T_2}{T_1} V_1$$

$$= \frac{546^\circ \text{K}}{273^\circ \text{K}} \times 0.2 \text{ L} = 0.4 \text{ L.}$$

36. (1)

37. (1)

$$T_1 = 273^\circ \text{C} = 273 + 273^\circ \text{K} = 546^\circ \text{K}$$

$$T_2 = 0^\circ \text{C} = 273 + 0^\circ \text{C} = 273^\circ \text{K}$$

$$P_1 = 1 ; P_2 = ?$$

According to Gay-Lussac's law

$$\frac{P_1}{T_1} = \frac{P_2}{T_2} \therefore P_2 = \frac{P_1 T_2}{T_1} = \frac{1 \times 273^\circ \text{K}}{546^\circ \text{K}} \text{ atm;}$$

$$\frac{1}{2} \text{ atm.}$$

38. (4)

Because both NO and C_2H_6 have same molecular weights [$M_{\text{NO}} = M_{\text{C}_2\text{H}_6} = 30$] and rate of diffusion \propto molecular weight

39. (2)

$d \propto \frac{P}{T}$ the value of $\frac{P}{T}$ is maximum for (2)

40. (1)

$$V_{\text{rms}} = \sqrt{\frac{3RT}{M}}, V_{\text{av}} = \sqrt{\frac{8RT}{\pi M}};$$

$$\frac{V_{\text{rms}}}{V_{\text{av}}} = \sqrt{\frac{3\pi}{8}} = \sqrt{\frac{66}{56}} \Rightarrow \frac{1.086}{1}$$