

1.D	2.B	3.B	4.C	5.D	6.B	7.B	8.C	9.D	10.B	11.B	12.A
13.C	14.D	15.A	16.B	17.B	18.C	19.B	20.B	21.A	22.B	23.A	24.A
25.A	26.C	27.B	28.D	29.B	30.C	31.B	32.D	33.D	34.B	35.C	36.D
37.B	38.D	39.D	40.B	41.C	42.C	43.C	44.D	45.C	46.B	47.B	48.C
49. B	50. B	51.B	52.B	53.A	54.C	55.B	56.A	57.C	58.B	59.B	60.B
61.C	62.A	63.D	64.B	65.B	66.B	67.A	68.A	69.A	70.A	71.D	72.C
73.C	74.D	75.B	76.A	77.C	78.A	79.D	80.B	81.A	82.A	83.A	84.C
85.C	86.A	87.B	88.D	89.C	90.A	91.D	92.D	93.C	94.D	95.C	96.D
97.C	98.A	99.B	100.A	101.A	102.C	103.A	104.B	105.C	106.C	107.C	108.A
109.C	110.A	111.D	112.D	113.A	114.D	115.A	116.A	117.B	118.C	119.B	120.A
121.C	122.D	123.A	124.D	125.A	126.A	127.B	128.A	129.C	130.C	131.D	132.A
133.D	134.C	135.D	136.A	137.A	138.B	139.C	140.A	141.C	142.C	143.A	144.D
145.C	146.D	147.C	148.D	149.D	150.A	151.C	152.D	153.A	154.D	155.D	156.C
157.A	158.A	159.C	160.B	161.C	162.B	163.B	164.D	165.C	166.D	167.D	168.B
169.C	170.D	171.C	172.B	173.C	174.A	175.A	176.C	177.D	178.D	179.C	180.D

CHEMISTRY

1. D

Sol. N_2^+ is paramagnetic

2. B 3. B 4. C

5. D

Sol. Similarity between Li and Mg is called diagonal similarity.

Li^+ and Mg^{2+} have similar ratio of charge to size (ϕ).

6. B 7. B 8. C

9. D

Sol. More the dipole moment more is the critical temperature.

10. B 11. B 12. A

13. C

Sol. $\mu = e \times d$

$$\frac{1.2 \times 10^{-18}}{10^{-8}} = e$$

$$1.2 \times 10^{-10} = \text{charge}$$

$$\text{Fraction of charge} = \frac{1.2 \times 10^{-10}}{4.8 \times 10^{-10}} = \frac{1}{4}$$

14. D 15. A 16. B

17. B

Sol. O_2^+ has one unpaired electron & hence is paramagnetic. Its bond order is 2.5, i.e., greater than that of O_2

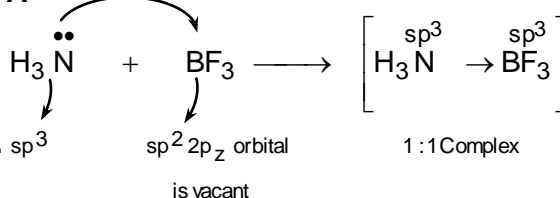
18. C

Sol. BrO_3^- (sp^3 hybridization of Br) and XeO_3 (sp^3 hybridization of Xe atom) have pyramidal shape. Br atom and Xe and each has one lone pair of electrons.

19. B 20. B 21. A

22. B 23. A

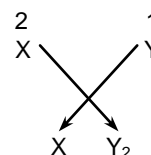
24. A



25. A

Sol. Element 'X' is a metal with valency 2, as it has tendency to lose 2 electrons.

Element 'Y' is a non metal with valency 1 as it has strong tendency to accept one electron to complete its octet. Formula of the compound formed between 'X' and 'Y' is:



26. C

27. B

Sol. For equal masses 'w',

$$n_{\text{CH}_4} = \frac{w}{16}; \quad n_{\text{O}_2} = \frac{w}{32};$$

$$n_{\text{total}} = \frac{w}{16} + \frac{w}{32} = \frac{3w}{32}$$

$$P_{\text{O}_2} = \chi_{\text{O}_2} \times P_{\text{total}} = \frac{\frac{w}{32}}{\frac{3w}{32}} \times P_{\text{total}} = \frac{1}{3} \times P_{\text{total}}$$

28. D

Sol. I.E.₃ > I.E.₂ > I.E.₁

29. B

Sol. PV = nRT

$$P = \frac{\left(\frac{4}{6} + \frac{4}{28} + \frac{4}{32}\right) \times 0.08 \times 300}{1} = 12.43 \text{ atm}$$

30. C

Sol. Container I : P₂V₂ = P₁V₁

$$P_2 = \frac{6 \times 10}{30} = 2 \text{ atm}$$

$$\text{Container H : } P_2 = \frac{10 \times 20}{30} = 6.67 \text{ atm}$$

$$\text{Total pressure} = 2 + 6.67 = 8.67 \text{ atm}$$

31. B

Sol. It is T₁ > T₂ > T₃

32. D

Sol. 760 + 40 = 800 mm Hg

33. D 34. B 35. C 36. D

37. B

Sol. P_{correction} = $\frac{an^2}{V^2}$ Unit of a = atm litre² mol⁻²

$$V_{\text{correction}} = nb \quad \text{Unit of b} = \text{litre mol}^{-1}$$

$$\text{Unit of } \left(\frac{a}{b}\right) = \frac{\text{atm litre}^2 \text{ mol}^{-2}}{\text{litre mol}^{-1}} = \text{atm litre mol}^{-1}$$

38. D

Sol. Br⁻ > Cl⁻ > Cl > Na⁺ > Li⁺
4p⁶ 3p⁶ 3p⁵ 2p⁶ 1s²

39. D

Sol. $\frac{600}{300} = \frac{V_2}{320}$

$$V_2 = 640 \text{ ml}$$

$$V_2 - V_1 = 40 \text{ ml}$$

40. B

Sol. P = $\frac{7}{28} \times \frac{0.082 \times 300}{3} = 2.05 \text{ atm}$

41. C

Sol. P₁V₁ = nRT₁ ... (i)

$$(3P_1)V_2 = nR\left(\frac{T_1}{2}\right) \quad \dots \text{(ii)}$$

$$\frac{V_1}{3V_2} = 2$$

$$V_2 = \frac{1}{6}V_1$$

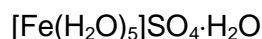
42. C

43. C

Sol. r ∝ $\frac{1}{\sqrt{m}}$; NH₃ will diffuse faster than HCl hence, fumes of NH₄Cl will be formed near C.

44. D

Sol. 1



45. C