ANSWERS

I. Multiple Choice Questions (Type-I)

1. (ii)	2. (iii)	3. (ii)	4. (ii)	5. (ii)	6. (iv)
7. (i)	8. (iii)	9. (iii)	10. (iii)	11. (ii)	12. (iv)
13. (ii)	14. (i)	15. (ii)	16. (iv)	17. (ii)	18. (i)
19. (iv)	20. (ii)	21. (i)	22. (ii)		

II. Multiple Choice Questions (Type-II)

23. (i), (ii)	24. (i), (iv)	25. (i), (ii)
26. (iii), (iv)	27. (iii), (iv)	28. (i), (iv)
29. (iii), (iv)	30. (i), (ii)	

III. Short Answer Type

32. (i) According to molecular orbital theory electronic configurations of O_2^+ and O_2^- species are as follows :

O_2^+ : $(\sigma 1s)^2\ (\overset{*}{\sigma} 1s^2)(\sigma 2s)^2\ (\overset{*}{\sigma} 2s^2)\ (\sigma 2p_z)^2\ (\pi 2p_x^2, \pi 2p_y^2)\ (\pi^* 2p_x^1)$

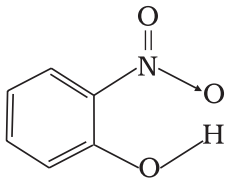
O_2^- : $(\sigma 1s)^2\ (\overset{*}{\sigma} 1s^2)(\sigma 2s)^2 (\overset{*}{\sigma} 2s^2)\ (\sigma 2p_z)^2\ (\pi 2p_x^2, \pi 2p_y^2)\ (\pi^* 2p_x^2, \pi^* 2p_y^1)$

$$\text{Bond order of } O_2^+ = \frac{10-5}{2} = \frac{5}{2} = 2.5$$

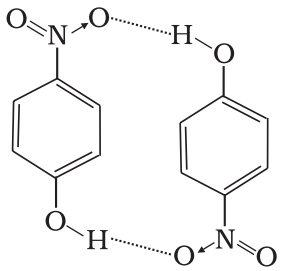
$$\text{Bond order of } O_2^- = \frac{10-7}{2} = \frac{3}{2} = 1.5$$

Higher bond order of O_2^+ shows that it is more stable than O_2^-. Both the species have unpaired electrons. So both are paramagnetic in nature.

34. (a) Compound (I) will form intramolecular hydrogen bond because NO_2 and OH group are close together in comparison to that in compound (II).



(I)



(II)

(b) Compound (II) will have higher melting point because it forms intermolecular hydrogen bonds. Thus, more and more molecules are joined together through hydrogen bond formation.

(c) Due to intramolecular hydrogen bonding compound (I) will not be able to form hydrogen bonds with water thus will be less soluble in it while compound (II) can form hydrogen bond with water more easily and will be soluble in water.

37. [**Hint :** Dimethyl ether will have larger bond angle. There will be more repulsion between bond pairs of CH_3 groups attached in ether than between bond pairs of hydrogen atoms attached to oxygen in water. The carbon of CH_3 in ether is attached to three hydrogen atoms through σ bonds and electron pairs of these bonds add to the electronic charge density on carbon atom. Hence, repulsion between two —CH_3 groups will be more than that between two hydrogen atoms.]

IV. Matching Type

52. (i) → (c) (ii) → (a) (iii) → (e) (iv) → (d)

53. (i) → (e) (ii) → (a) (iii) → (b) (iv) → (c)

54. (i) → (c) (ii) → (d) (iii) → (a) (iv) → (b)

55. (i) → (d) (ii) → (e) (iii) → (b) (iv) → (a)

56. (i) → (c) (ii) → (a) (iii) → (b)

V. Assertion and Reason Type

57. (i) 58. (i) 59. (iv)

65. (i) 66. (ii) 67. (ii) 68. (iii)