## Q. 38 Write Lewis structure of the following compounds and show formal charge on each atom.

Ans. The Lewis structure of the following compounds and formal charge on each atom are as

(i) HNO<sub>3</sub>

$$H = \ddot{O} = N$$
  $\ddot{O} : (2)$   $\dot{O} : (3)$ 

Formal charge on an atom in a Lewis structure

= [total number of valence electrons in free atom]

- [total number of non-bonding (lone pairs) electrons]  $-\frac{1}{2}$  [total number of bonding or shared electrons]

Formal charge on  $H = 1 - 0 - \frac{1}{2} \times 2 = 0$ 

Formal charge on  $N = 5 - 0 - \frac{1}{2} \times 8 = 1$ 

Formal charge on O(1) =  $6 - 4 - \frac{1}{2} \times 4 = 0$ 

Formal charge on O(2) =  $6 - 4 - \frac{1}{2} \times 4 = 0$ 

Formal charge on O(3) =  $6 - 6 - \frac{1}{2} \times 2 = -1$ 

(ii) NO<sub>2</sub>



Formal charge on O(1) =  $6 - 4 - \frac{1}{2} \times 4 = 0$ 

Formal charge on N =  $5 - 1 - \frac{1}{2} \times 6 = +1$ 

Formal charge on O(2) =  $6 - 6 - \frac{1}{2} \times 2 = -1$ 

(iii) H2SO4

Formal charge on H(1) or H(2) =  $1 - 0 - \frac{1}{2} \times 2 = 0$ 

Formal charge on O(1) or O(3) =  $6 - 4 - \frac{1}{2} \times 4 = 0$ 

Formal charge on O (2) or O (4) =  $6 - 6 - \frac{1}{2} \times 2 = -1$ 

Formal charge on  $S = 6 - 0 - \frac{1}{2} \times 8 = +2$