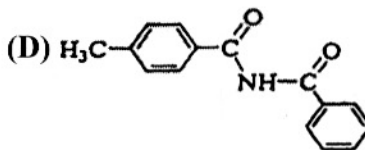
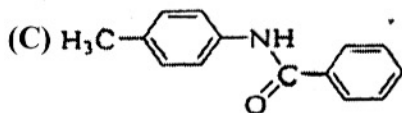
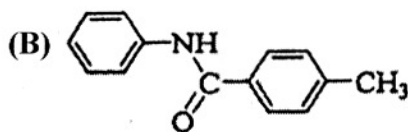
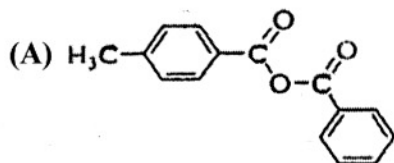
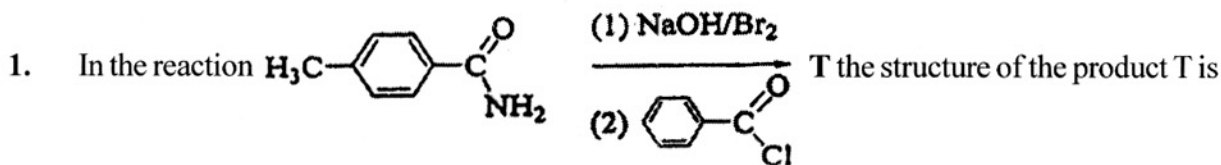


## Part I

## Section-I

## Straight Objective Type

This section contains 6 multiple choice questions numbered 1 to 4. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.



Ans: (C)

2. Assuming that Hund's rule is violated, the bond order and magnetic nature of the diatomic molecule  $B_2$  is

(A) 1 and diamagnetic

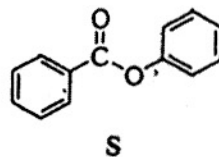
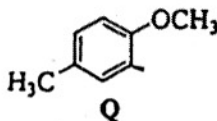
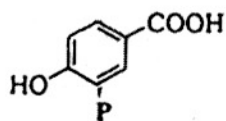
(B) 0 and diamagnetic

(C) 1 and paramagnetic

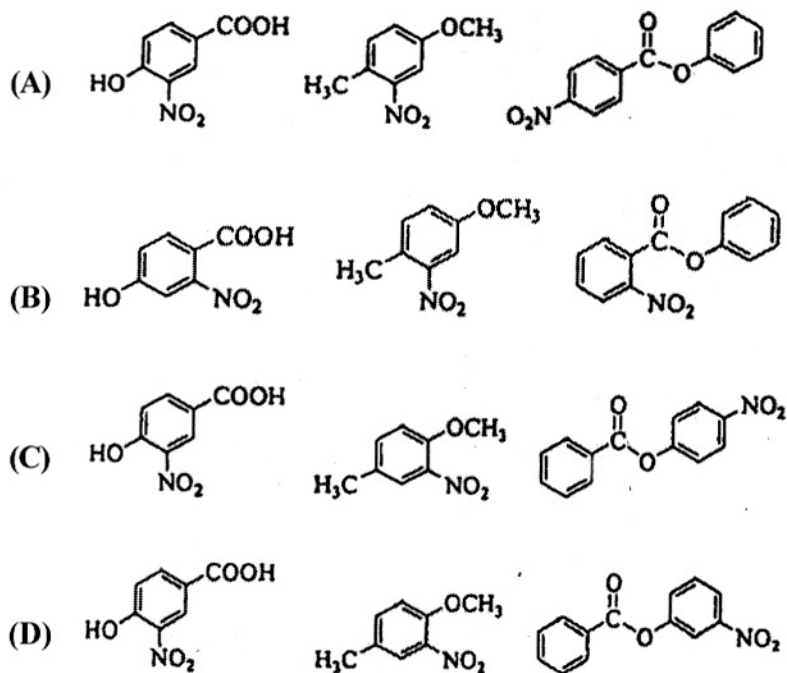
(D) 0 and paramagnetic

Ans: (A)

3. The compounds P, Q and S



where separately subjected to nitration using  $HNO_3 / H_2SO_4$  mixture. The major product formed in each case respectively, is



Ans: (C)

4. The species having pyramidal shape is

- (A)  $\text{SO}_3$                       (B)  $\text{BrF}_3$                       (C)  $\text{SiO}_3^{2-}$                       (D)  $\text{OSF}_2$

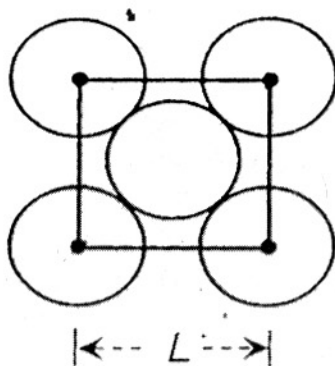
Ans: (D)

5. The complex showing a spin-only magnetic moment of 2.82 B.M. is

- (A)  $\text{Ni}(\text{CO})_4$                       (B)  $[\text{NiCl}_4]^{2-}$                       (C)  $\text{Ni}(\text{PPh}_3)_4$                       (D)  $[\text{Ni}(\text{CN})_4]^{2-}$

Ans: (B)

6. The packing efficiency of the two-dimensional square unit cell shown below is



- (A) 39.27%                      (B) 68.02%                      (C) 74.05%                      (D) 78.54%

Ans: (D)