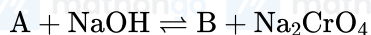


## Q1. 21 January Shift 1

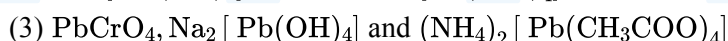
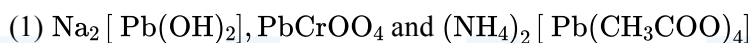
Consider the following reactions.



(Hot solution)



In the above reactions, A, B and X are respectively.



## Q2. 21 January Shift 1

Given below are two statements :

**Statement I :** The number of pairs among  $[\text{SiO}_2, \text{CO}_2]$ ,  $[\text{SnO}, \text{SnO}_2]$ ,  $[\text{PbO}, \text{PbO}_2]$  and  $[\text{GeO}, \text{GeO}_2]$ , which contain oxides that are both amphoteric is 2.

**Statement II:**  $\text{BF}_3$  is an electron deficient molecule, can act as a Lewis acid, forms adduct with  $\text{NH}_3$  and has a trigonal planar geometry.

In the light of the above statements, choose the correct answer from the options given below :

- (1) Statement I is true but Statement II is false      (2) Both Statement I and Statement II are true  
(3) Both Statement I and Statement II are false      (4) Statement I is false but Statement II is true

## Q3. 22 January Shift 2

Given below are two statements :

**Statement I:** Elements 'X' and 'Y' are the most and least electronegative elements, respectively among N, As, Sb and P. The nature of the oxides  $\text{X}_2\text{O}_3$  and  $\text{Y}_2\text{O}_3$  is acidic and amphoteric, respectively.

**Statement II :**  $\text{BCl}_3$  is covalent in nature and gets hydrolysed in water. It produces  $[\text{B}(\text{OH})_4]^-$  and  $[\text{B}(\text{H}_2\text{O})_6]^{3+}$  in aqueous medium.

In the light of the above statements, choose the correct answer from the options given below :

- (1) Both Statement I and Statement II are false      (2) Both Statement I and Statement II are true  
(3) Statement I is true but Statement II is false      (4) Statement I is false but Statement II is true

**Q4. 23 January Shift 1**

The correct statements from the following are :

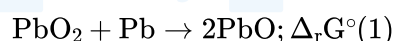
- A. Ionic radii of trivalent cations of group 13 elements decreases down the group.
- B. Electronegativity of group 13 elements decreases down the group.
- C. Among the group 13 elements, Boron has highest first ionisation enthalpy.
- D. The trichloride and triiodide of group 13 elements are covalent in nature.

Choose the correct answer from the options given below :

- (1) C and D Only                      (2) A and D Only                      (3) A and C Only                      (4) B and D Only

**Q5. 23 January Shift 2**

It is noticed that  $\text{Pb}^{2+}$  is more stable than  $\text{Pb}^{4+}$  but  $\text{Sn}^{2+}$  is less stable than  $\text{Sn}^{4+}$ . Observe the following reactions.

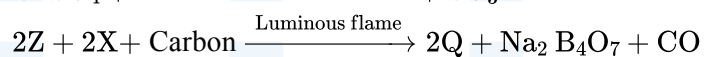
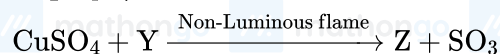
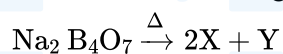


Identify the correct set from the following

- (1)  $\Delta_r G^\circ(1) < 0; \Delta_r G^\circ(2) < 0$                       (2)  $\Delta_r G^\circ(1) > 0; \Delta_r G^\circ(2) > 0$   
(3)  $\Delta_r G^\circ(1) < 0; \Delta_r G^\circ(2) > 0$                       (4)  $\Delta_r G^\circ(1) > 0; \Delta_r G^\circ(2) < 0$

**Q6. 28 January Shift 2**

Consider the following reactions



The oxidation states of Cu in Z and Q, respectively are :

- (1) +1 and +1                      (2) +2 and +2                      (3) +1 and +2                      (4) +2 and +1

**ANSWER KEYS**

1. (3)                      2. (2)                      3. (3)                      4. (1)                      5. (3)                      6. (4)