p-BLOCK ELEMENTS

Q.1 Nitrogen (I) oxide is produced by-
(i) Thermal decomposition of ammonium nitrate
(ii) Disproportionation of N_2O_4
(iii) Thermal decomposition of ammonium nitrite
(iv) Interaction of hydroxyl amine with nitrous acid

(A) i, iv (B) ii, iv (C) i, ii (D) iii,iv

Q.2 Carborundum is obtained when silica is heated at high temperature with-

(A) Carbon (B) Carbon monoxide
(C) Carbon dioxide (D) Calcium carbonate

Q.3 Which of the following does not give NO_2 on heating ?

(A) KNO_3 (B) $Pb(NO_3)_2$ (C) $Cu(NO_3)_2$ (D) $AgNO_3$

Q.4 The bonds present in N_2O_5 are-

(A) Only ionic (B) Covalent and coordinate
(C) Only covalent (D) Covalent ionic

Q.5 Concentrated HNO_3 reacts with iodine to give-

(A) HI (B) HOI (C) $HOIO_2$ (D) $HOIO_3$

Q.6 Nitrogen is liberated by the thermal decomposition of only-

(A) NH_4NO_2 (B) NaN_3 (C) $(NH_4)_2Cr_2O_7$ (D) All the three

Q.7 Which one of the following oxides is neutral ?

(A) CO (B) SnO_2 (C) ZnO (D) SiO_2

Q.8 The correct order of increasing C – O bond length of CO, CO_3^{2-}, CO_2 is-

(A) $CO_3^{2-} < CO_2 < CO$ (B) $CO_2 < CO_3^{2-} < CO$
(C) $CO < CO_3^{2-} < CO_2$ (D) $CO < CO_2 < CO_3^{2-}$

Q.9 [X] + H_2SO_4 ??? [Y] a colourless gas with irritating smeel
[Y] + $K_2Cr_2O_7$ + H_2SO_4 ??? green solution. [X] and [Y] are

(A) SO_3^{2-}, SO_2 (B) Cl^-, HCl (C) S^{2-}, H_2S (D) CO_3^{2-}, CO_2

Q.10 H_3BO_3 is :

(A) Monobasic and weak Lewis acid
(B) Monobasic and weak Bronsted acid
(C) Monobasic and strong Lewis acid
(D) Tribasic and weak Bronsted acid

ANSWER KEY

Q.No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	A	A	A	B	C	D	A	D	A	A

SOLUTIONS (p-BLOCK ELEMENTS)

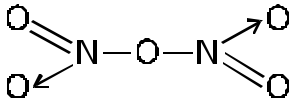
Ans.1 NH_4NH_3 (aq) $\xrightarrow{?}$ $N_2O + 2H_2O$

$NH_2OH + HNO_2 \xrightarrow{?} N_2O + 2H_2O$

Ans.2 $SiO_2 + 3C \xrightarrow{\text{Heat (Electric furnace)}} SiC + 2CO$

Ans.3 $2KNO_3 \xrightarrow{?} 2KNO_2 + O_2$.

Ans.4



Ans.5 $[2HNO_3 \xrightarrow{?} H_2O + 2NO_3 + [O]] \times 5$

$I_2 + 5[O] \xrightarrow{?} I_2O_5$

$I_2O_5 + H_2O \xrightarrow{?} 2HIO_3$

$10HNO_3 + I_2 \xrightarrow{?} 4H_2O + 10NO_2 + 2HIO_3$

Ans.6 All the three compounds liberate nitrogen on heating

$NH_4NO_2 \xrightarrow{?} N_2 + 2H_2O$

$2NaN_3 \xrightarrow{574K} 2Na + 3N_2$

$(NH_4)_2Cr_2O_7 \xrightarrow{?} Cr_2O_3 + N_2 + 4H_2O$

Ans.7 CO is a neutral oxide of C. SnO_2 and ZnO are amphoteric while SiO_2 is acidic in nature.

Ans.8 CO contains carbon-oxygen triple bond. CO_2 contains carbon-oxygen double bonds and CO_3^{2-} contains carbon-oxygen bond which is a resonance hybride of single and double bond. Therefore, C–O bond length increases in order of CO < CO_2 < CO_3^{2-}.

Ans.9 The pair is SO_3^{2-} and SO_2.

$SO_3^{2-} + H_2SO_4 \xrightarrow{?} SO_2 + H_2O + SO_4^{2-}$

(x) (y)

$3SO_2 + K_2Cr_2O_7 + H_2SO_7 \xrightarrow{?} Cr_2(SO_4)_3 + K_2SO_4 + H_2O$

(y) (Green colour)

Ans.10 Boric acid acts as a weak monobasic acid by accepting a lone pair of electrons from —OH ion, thereby, acting as a Lewis acid.