The p-Block Elements

1. **Assertion (A):** Borazine is more reactive than benzene.

Reason (R): Borazine is isostructural with benzene.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

2. **Assertion (A):** In Diborane containing eight B–H bonds only four B–H bonds are on the plane.

Reason (R): Boron in B_2H_6 is sp^2 hybridised.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

3. **Assertion (A):** All the oxides of born family with the general formula M_2O_3 are basic.

Reason (R): From B_2O_3 to Tl_2O_3 basic character decreases.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

4. **Assertion (A):** When borax is strongly heated it forms transparent glassy bead.

Reason (R): Borax is the other name for sodium tetraborate decahydrate.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

5. **Assertion (A):** CBr_4 is thermally more stable than Cl_4.

Reason (R): C–Br bond energy is more than C–I.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

6. **Assertion (A):** Boric acid is weak monobasic acid.

Reason (R): Boric acid give one H^+ ion.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

7. **Assertion (A):** Al forms $[AlF_6]^{3-}$.

Reason (R): It is octahedral complex.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

8. **Assertion (A):** Anhydride of carbonic acid is CO_2.

Reason (R): Carbonic acid is dibasic.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

9. **Assertion (A):** CaC_2 is interstitial carbide.

Reason (R): Calcium ions are present in the Interstices.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

10. **Assertion (A):** Fullerene is the purest allotrope of carbon.

Reason (R): They have smooth structure without dangling bonds.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

11. **Assertion (A):** $GeCl_4$ is easily hydrolysed by water.

Reason (R): Central atom can accommodate lone pair of e^- from oxygen atom of water molecules in $GeCl_4$.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

12. **Assertion (A):** Carbon has maximum tendency of catenation among group 14.

Reason (R): C–C bond strength is very strong.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

13. **Assertion (A):** Oxides of carbon in higher oxidation state is more acidic than in lower oxidation state.

Reason (R): Both CO_2 and CO can exist.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

14. **Assertion (A):** Heavier elements of 14^{th} group do not form $p\pi - p\pi$ bonds.

Reason (R): Atomic orbital of heavier elements are too large and do not have effective overlapping.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

15. **Assertion (A):** Carbon shows anomalous behavior in group-14.

Reason (R): Carbon has maximum covalency of 4.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

16. **Assertion (A):** H_2O is the hydride of chalcogen family which is liquid.

Reason (R): Acidic nature of hydrides of chalcogen family increases down the group.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

17. **Assertion (A):** PF_5 and IF_5 have similar shapes.

Reason (R): All the bond lengths are equal in PF_5.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

18. **Assertion (A):** Atomic size of F is smaller than that of Cl.

Reason (R): F–F bond is stronger than Cl–Cl bond.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

19. **Assertion (A):** P_4 is more reactive than N_2.

Reason (R): P–P bonds are relatively weaker than N≡N bond.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

20. **Assertion (A):** Noble gases have highest ionization energies in their respective periods.

Reason (R): The outermost sub-shell of noble gases in which electron enters in completely filled.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

21. **Assertion (A):** The bond angle of NH_3 is greater than BiH_3.

Reason (R): 'Bi' is metal while 'N' is non-metal.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

22. **Assertion (A):** 'XeF_6' on the reaction with 'RbF' gives $Rb^+[XeF_7]^-$.

Reason (R): XeF_6 is non-reactive.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

23. **Assertion (A):** Tailing of Hg caused by ozone is due to formation of HgO.

Reason (R): In the presence of O_3, Hg does not loses its meniscus.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

24. **Assertion (A):** The valency and oxidation number of Sulphur in S_8 respectively are 2 and 0.

Reason (R): S_8 Rhombic is the most stable allotropic form of Sulphur.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

25. **Assertion (A):** Dissolution of concentrated H_2SO_4 in water is highly exothermic process.

Reason (R): Sulphuric acid is always diluted by adding acid to water slowly.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

26. **Assertion (A):** N_2 is more stable than O_2.

Reason (R): Bond order of N_2 is 3.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

27. **Assertion (A):** PH_5 is not possible.

Reason (R): –5 oxidation state of phosphorus is not possible.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

28. **Assertion (A):** NH_3 is more polar than NF_3.

Reason (R): NF_3 cannot be hydrolysed.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

29. **Assertion (A):** O_3 is better oxidizing agent than H_2O_2.

Reason (R): O_3 converts Ag to Ag_2O.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

30. **Assertion (A):** $Na_2S_2O_3$ on reaction with I_2 gives $Na_2S_4O_6$.

Reason (R): This reaction involves colour and electronic change Both.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

31. **Assertion (A):** Cl_2 on reaction with NaOH (Cold and dilute) gives $NaClO_3$.

Reason (R): Cl_2 get oxidized only in this reaction.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

32. **Assertion (A):** $2F^- + Cl_2 \longrightarrow 2Cl^- + F_2$ is a reaction having ΔG = –ve.

Reason (R): Cl_2 is better oxidizing agent than F_2.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

33. **Assertion (A):** H_3PO_4 is less acidic than H_3PO_3.

Reason (R): Oxidation state of phosphorus in H_3PO_4 < H_3PO_3.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

34. **Assertion (A):** CN^- is pseudohalide.

Reason (R): $(CN)_2$ is pseudohalogen.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

35. **Assertion (A):** Xe is the only element of group 18 which from compounds.

Reason (R): Xe does not form clatherates.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

36. **Assertion (A):** Boron is Metalloid.

Reason (R): Boron shows metallic nature.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

37. **Assertion (A):** The use of aluminum and its compounds for domestic purposes is now reduced considerably.

Reason (R): The highly toxic nature of aluminum is the responsible factor.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

38. **Assertion (A):** Pb^{4+} compounds are stronger oxidizing agents than Sn^{4+} compound.

Reason (R): The higher oxidation states for the group 14 elements are more stable for the heavier members of the group due to 'inert pair effect'.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

39. **Assertion (A):** PbI_4 of lead does not exist.

Reason (R): Pb–I bond initially formed during the reaction does not release enough energy to unpair $6s^2$ electrons.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

40. **Assertion (A):** Graphite is thermodynamically most stable allotrope of carbon.

Reason (R): $\Delta_f H^{\ominus}$ of graphite is taken as zero.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

41. **Assertion (A):** Dinitrogen is inert at room temperature.

Reason (R): Dinitrogen directly combines with lithium to form ionic nitrides.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

42. **Assertion (A):** N_2 is less reactive than P_4.

Reason (R): Nitrogen has more electron gain enthalpy than phosphorus.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

43. **Assertion (A):** When a metal is treated with conc. HNO_3 it generally yields a nitrate, NO_2 and H_2O.

Reason (R): Conc. HNO_3 reacts with metal and first produces a metal nitrate and nascent hydrogen. The nascent hydrogen then further reduces HNO_3 to NO_2.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

44. **Assertion (A):** White phosphorus is more reactive than red phosphorus.

Reason (R): Red phosphorus consists of P_4 tetrahedral units linked to one another to form linear chains.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

45. **Assertion (A):** Bond angle of H_2S is smaller than H_2O.

Reason (R): Electronegativity of the central atom increases, bond angle decreases.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

46. **Assertion (A):** Both rhombic and monoclinic Sulphur exist as S_8 but oxygen exists as O_2.

Reason (R): Oxygen forms $p\pi-p\pi$ multiple bond due to small size and small bond length but $p\pi-p\pi$ bonding is not possible in Sulphur.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

47. **Assertion (A):** SF_6 cannot be Hydrolyzed but SF_4 can be.

Reason (R): Six F atoms in SF_6 prevent the attack of H_2O on Sulphur atom of SF_6.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

48. **Assertion (A):** $AlCl_3$ forms a dimer in aqueous medium

Reason (R): In aqueous medium Al^{3+} is octa hedrally hydrated

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

49. **Assertion (A):** H_3BO_3 is a weak monobasic acid

Reason (R): H_3BO_3 dissociates as

$$H_3BO_3 \rightleftharpoons \overset{+}{H} + H_2BO_3^-$$

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

50. **Assertion (A):** Aq. Solution of borax has pH < 7

Reason (R): H_3BO_3 is a weak acid with Ka = 10^{-9}

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

51. **Assertion (A):** Diamond is covalent yet it has high mp

Reason (R): Diamond has 3-d network involving strong C–C bonds

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

52. **Assertion (A):** In silicates like SiO_2, Si, is sp^3 hybridised

Reason (R): SiO_2 is a linear molecule

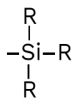
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

53. **Assertion (A):** R_3SiCl in used to control chain length in silicone polymers

Reason (R): Introduction of  group in silicone polymers prevent it from increasing chain length

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

54. **Assertion (A):** fullerenes are quite pure allotrope of C

Reason (R): fullerenes do not have any dangling bonds.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

55. **Assertion (A):** $(SiF_6)^{2-}$ exist but $(SiCl_2)^{2-}$ do not

Reason (R): Si can't show covalency greater from 4

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

56. **Assertion (A):** Conc. HNO_3 Can be transported in Al-container

Reason (R): Al dissolves in presence of HNO_3

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

57. **Assertion (A):** BF_4^- has longer B–F bond length than BF_3

Reason (R): BF_3 Show shortening in bond length due to back bonding effect

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

58. **Assertion (A):** N_2 is less reactive than P_4

Reason (R): N has more e^- gain enthalpy than P

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

59. **Assertion (A):** HNO_3 makes iron passive

Reason (R): HNO_3 makes a protective layer of ferric nitrate

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

60. **Assertion (A):** HI can't be prepared by reaction of KI with Conc. H_2SO_4

Reason (R): HI has lowest HX bond strength among halogen acids

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

61. **Assertion (A):** Both rhombic and Monoclinic sulphur exist as S_8 but oxygen exist as O_2

Reason (R): Oxygen forms $p\pi$ $p\pi$ multiple bond due to small size but $p\pi$ $p\pi$ bonding is not possible in sulphur

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

62. **Assertion (A):** NaCl react with Conc. H_2SO_4 to give colourless fumes with pungent smell. But on adding MnO_2 the fumes become greenish yellow.

Reason (R): MnO_2 oxdises HCl to Cl_2 gas which is greenish yellow.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

63. **Assertion (A):** SF_6 can be hydrolysed but not SF_4

Reason (R): In SF_6 attack of H_2O isn't possible due to steric factors

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

64. **Assertion (A):** Pb_3O_4 is a basic oxide

Reason (R): Pb_3O_4 IS mixed oxide of 2PbO & PbO_2

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

65. **Assertion (A):** Oxidising power of halogen is in order $F_2 > Cl_2 > Br_2 > I_2$

Reason (R): Bond strength of halogens is $F_2 < Cl_2 < Br_2 < I_2$

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

66. **Assertion (A):** Xe, like O_2, forms $Xe^+[PtF_6]^-$

Reason (R): IP of Xe is nearly equal to atomic O

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

67. **Assertion (A):** Barium azide, when heated, gives very pure N_2

Reason (R): No redox reaction occurs during above change

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

68. **Assertion (A):** N_2O_5 is not possible due to

Reason (R): incapability of N to show pentavalency Max. covalency of N can be 4

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

69. **Assertion (A):** H_3PO_3 can form three series of salt

Reason (R): H_3PO_3 is a dibasic acid

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

70. **Assertion (A):** H_3PO_2 is better reducing agent than H_3PO_3

Reason (R): H_3PO_2 has greater no of P-H bonds compared to H_3PO_3

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

71. **Assertion (A):** ClF_3 exist but FCl_3 does not

Reason (R): F is II period elements & it has no vacant d orbital to allow expansion of octet

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

72. **Assertion (A):** SF_6 is known but not SCl_6

Reason (R): F has higher e^- gain enthalpy than Cl

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

73. **Assertion (A):** NH_4NO_3, on heating gives NH_3

Reason (R): NO_3^- is an oxidising anion

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

74. **Assertion (A):** $(NH_4)_2\ Cr_2O_7$, on heating doesn't form any residue

Reason (R): In $Cr_2O_7^{2-}$ there are six equivalent Cr-O bonds

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

75. **Assertion (A):** SO_2 can turn lime water milky & on passing in excess, milkiness disappears

Reason (R): SO_2 is an example of reducing gas

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

76. **Assertion (A):** P_4 on reaction with NaOH in inert atmosphere oxidise into P_4O_{10}

Reason (R): P_4 has angle strain due to 60° bond angle in P_4

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

77. **Assertion (A):** O_3 is thermodynamically less stable than O_2

Reason (R): ΔS = –ve when O_3 changes to O_2

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

78. **Assertion (A):** Inert gases can be separated using activated charcoal

Reason (R): Lighter inert gases have greater adsorption on charcoal surface compared with heavier gases

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

79. **Assertion (A):** $PCl_5(s)$ is an example of molecular solid

Reason (R): $PCl_5(s)$ exist as $(PCl_4)^+(PCl_6)^-$

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

80. **Assertion (A):** Conc. Sulphuric acid can be used to prepare HCl on reaction with NaCl

Reason (R): Conc. H_2SO_4 is a moderately strong reducing agent

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

81. **Assertion (A):** NH_3 has lesser volatility then PH_3 despite of higher molecular mass of PH_3

Reason (R): N in NH_3 is sp^3 hybridised & NH_3 has pyramidal structure

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

82. **Assertion (A):** Bond length B-F in BF_3 increases in presence of Lewis base.

Reason (R): BF_3 can not exhibit back bonding.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

83. **Assertion (A):** BF_3 is a weaker Lewis acid than BCl_3

Reason (R): In BF_3 molecule, back bonding $(P_\pi - P_\pi)$ is stronger than BCl_3

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

84. **Assertion (A):** Ti^{3+} acts as an oxidizing agent.

Reason (R): Due to inert pair effect, Ti^+ is more stable than Ti^{3+}.

(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)

(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)

(3) (A) is true but (R) is false

(4) Both (A) and (R) are false

ANSWER KEY																				
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Ans.	2	3	4	2	1	3	2	2	4	1	1	1	2	1	2	2	4	3	1	1
Que.	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
Ans.	2	3	4	2	2	1	1	2	2	2	4	4	3	2	4	3	1	3	1	1
Que.	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**
Ans.	3	3	1	2	3	1	1	4	3	4	1	3	1	1	3	3	1	3	3	3
Que.	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**	**76**	**77**	**78**	**79**	**80**
Ans.	1	1	4	4	3	3	3	4	4	1	1	3	4	4	2	4	3	3	4	3
Que.	**81**	**82**	**83**	**84**																
Ans.	2	3	1	1																