

EXERCISE - I (Conceptual Questions)

Build Up Your Understanding

IMPORTANT CONCEPTS

1. The geometry of the following molecules with respect to central atom is respectively $N(SiH_3)_3$, Me_3N , $(SiH_3)_3P$
 (1) planar, pyramidal, planar
 (2) planar, pyramidal, pyramidal
 (3) pyramidal, pyramidal, pyramidal
 (4) pyramidal, planar, pyramidal

CPB001

2. In which of the following compounds, observed bond angle is found to be greater than expected, but not due to back bonding
 (1) $N(SiH_3)_3$ (2) $O(CH_3)_2$
 (3) $O(SiH_3)_2$ (4) All of these

CPB002

3. The product formed in the reaction, $BCl_3 + H_2O \longrightarrow$ Product is -
 (1) $H_3BO_3 + HCl$ (2) $B_2O_3 + HOCl$
 (3) $B_2H_6 + HCl$ (4) No reaction

CPB003

4. The hybridization of boron in diborane is -
 (1) sp (2) sp^2 (3) sp^3 (4) sp^3d^2

CPB004

5. Which is partially hydrolysed :
 (1) PCl_3 (2) NCl_3 (3) $AsCl_3$ (4) $SbCl_3$

CPB005

6. Which of the following halides cannot be hydrolysed?
 (i) TeF_6 (ii) SF_6 (iii) NCl_3 (iv) NF_3
 Choose the correct code
 (1) iii and iv (2) i, ii and iii
 (3) i, ii and iv (4) ii and iv

CPB006

7. In which of the following dimer empty atomic orbital of central atom of monomer does not involve in hybridisation?
 (1) Ga_2H_6 (2) Al_2Br_6 (3) Be_2H_4 (4) Cl_2O_6

CPB007

8. Which of the following molecule is having complete octet
 (1) $BeCl_2$ (dimer) (2) BeH_2 (dimer)
 (3) BeH_2 (s) (4) $BeCl_2$ (s)

CPB008

9. Which one of the following oxy acid of fluorine exists?

(1) $HO\dot{F}$ (2) HFO_3
 (3) HFO_4 (4) HFO_2

CPB009

10. Which of the following statements is correct
 (1) All form $HOXO_3$ type oxy acid
 (2) Only chlorine and bromine form oxyacids
 (3) All halogens form oxyacids
 (4) Only iodine forms oxyacid

CPB010

11. $2P \xrightarrow{-H_2O} Q \xrightarrow{-[O]} R$

If P is phosphoric acid then according to given information the incorrect statement is

- (1) Q is pyro form and R is hypo form of given present oxy acid P
 (2) Number of H-atoms present in each given oxy acid is equal to its basicity
 (3) In P, Q, R oxy acids, oxidation state of central atom remains same
 (4) All given oxy acids have $p\pi-d\pi$ bond(s) in their structure

CPB011

12. Silicate having one monovalent corner oxygen atom in each tetrahedron unit is

- (1) Sheet silicate
 (2) Cyclic silicate
 (3) Single chain silicate
 (4) Double chain silicate

CPB012

13. The silicate anion in the mineral kinoite is a chain of three SiO_4^{4-} tetrahedra, that share corners with adjacent tetrahedra. The charge of the silicate anion is

(1) -4 (2) -8 (3) -6 (4) -2

CPB013

14. Which of the following is an organo silicon polymer?

(1) Silica (2) Silicones
 (3) Silicon carbide (4) Silicic acid

CPB014

15. Which reacts rapidly with oxygen in the air at ordinary temperature :

- (1) White P (2) Red P
(3) N₂ (4) C

CPB015

16. Red and yellow phosphorus are :

- (1) Allotropes (2) Isobars
(3) Isomers (4) Isotopes

CPB016

17. Which compound does not exist ?

- (1) TiCl₃ (2) TiI₃
(3) BiF₅ (4) PbI₄

CPB017

18. Graphite conducts electricity because of the -

- (1) Highly polarized nature of π -electrons.
(2) Highly delocalized nature of π -electrons
(3) Highly localized nature of π -electrons
(4) None of these

CPB018

BORON AND CARBON FAMILY

19. Alane is chemically -

- (1) AlH₃ (2) (AlH₃)_n (3) LiAlH₄ (4) None

CPB019

20. Aluminium is not acted upon by pure water as-

- (1) Impurities in water are essential for the reaction to occur
(2) It is light metal
(3) It is protected by a film of aluminium oxide
(4) It is not a reactive metal

CPB020

21. The borax bead test is based upon the formation of

- (1) Boron oxide (2) Boric acid
(3) Meta borates (4) Elemental boron

CPB021

22. Boric acid polymerizes due to -

- (1) The presence of hydrogen bonds
(2) Its acidic nature
(3) Its geometry
(4) Its monobasic nature

CPB022

23. Alum is found to contain hydrated monovalent cation $[M(H_2O)_6]^+$, trivalent cation $[M'(H_2O)_6]^{+3}$ and SO_4^{2-} in the ratio of :

- (1) 1 : 1 : 1 (2) 1 : 1 : 2
(3) 1 : 2 : 2 (4) 1 : 2 : 3

CPB023

24. Borax Na₂B₄O₇ · 10H₂O is actually :-

- (1) Na₂[B₄O₅(OH)₄] · 8H₂O
(2) Na₂[B₄O₄(OH)₆] · 7H₂O
(3) Na₂[B₄O₃(OH)₈] · 6H₂O
(4) Na₂[B₄O₂(OH)₁₀] · 5H₂O

CPB024

25. Potash alum is a double salt made up of two salts:

- (1) Salt of a (SA + WB) + Salt of a (WA + WB)
(2) Salt of a (SA + SB) + Salt of a (SA + WB)
(3) Salt of a (SA + SB) + Salt of a (WA + WB)
(4) Salt of a (SA + WB) + Salt of a (WA + WB)

CPB025

26. From B₂H₆ all the following can be prepared except :

- (1) H₃BO₃ (2) B₂(CH₃)₄H₂
(3) B₂(CH₃)₆ (4) NaBH₄

CPB026

27. The hydrides of group 14 elements are :

- (1) Ionic (2) Oxidising
(3) Covalent (4) None of these

CPB027

28. Which gas is responsible for green house effect :

- (1) CO₂ (2) SO₂ (3) CO (4) SO₃

CPB028

29. Artificial gem used for cutting glass is :

- (1) Graphite (2) Diamond
(3) SiC (4) CaCN₂

CPB029

30. Borax and Boric acid are used in manufacturing of-

- (1) Pyrex (2) Glass-wool
(3) Fibre glass (4) All of these

CPB030

31. Orthoboric acid acts as -

- (1) Antiseptic (2) Antipyretic
(3) Antibiotic (4) None

CPB031

32. Crucibles made by which material is inert to dilute acids and alkalis.
 (1) Graphite (2) Aluminum
 (3) Boron (4) Iron
CPB032
33. Alum is not used as -
 (1) As a mordant in dyeing
 (2) As an insecticide
 (3) In the purification of water
 (4) In the tanning of leather
CPB033
34. Correct order of IP of Gr 13
 (1) $B > Al > Ga > In > Tl$
 (2) $B > Al < Ga > In > Tl$
 (3) $B > Al < Ga > In < Tl$
 (4) $B > Al < Ga < In > Tl$
CPB035
35. $Al + NaOH + H_2O \rightarrow$ product in aqueous state is
 (1) $[Al(H_2O)_6]^{+3}$ (2) $[Al(H_2O)_4]^{3+}$
 (3) $[Al(OH)_4]^{-1}$ (4) $Al(OH)_3$
CPB036
36. In Borax bead test, bead of cobalt is-
 (1) $Co(BO_2)_2$, Pink (2) $Co(BO_2)_2$, Blue
 (3) $Co(BO_3)_2$, Pink (4) $Co(BO_3)_2$, Blue
CPB037
37. Wrong statement is
 (1) Boric acid is weak monobasic acid
 (2) Boric acid is a protic acid
 (3) Boric acid is a lewis acid
 (4) Boric acid on heating finally form B_2O_3
CPB038
38. Correct IE order is -
 (1) $C > Si > Ge > Sn > Pb$
 (2) $C < Si < Ge < Sn > Pb$
 (3) $C > Si > Ge > Sn < Pb$
 (4) $C < Si < Ge < Sn < Pb$
CPB039
39. Which stability order is incorrect
 (1) $Pb^{+2} > Pb^{+4}$ (2) $Sn^{+2} > Sn^{+4}$
 (3) $Sn^{+2} < Pb^{+2}$ (4) $Sn^{+4} > Pb^{+4}$
CPB040
40. Nature of GeO_2 is
 (1) Acidic (2) Basic
 (3) Amphoteric (4) Neutral
CPB041
41. Which does not have dangling bond
 (1) Diamond (2) Graphite
 (3) Fullerene (4) All of these
CPB042
42. Match the column
 A. Dry ice i. Soft drinks
 B. CO_2 gas ii. Used as refrigerant for icecream
 C. Silicones iii. Used in softening of water
 D. Zeolite iv. Used for making water proof jackets

	A	B	C	D
(1)	ii	i	iv	iii
(2)	ii	iii	iv	i
(3)	iii	i	ii	iv
(4)	iv	i	ii	iii

CPB043
43. Silicones are-
 (1) $RSiO$ - repeating unit polymer
 (2) R_2SiO_2 - repeating unit polymer
 (3) R_2SiO - repeating unit polymer
 (4) $RSiO_2$ - repeating unit polymer
CPB044
44. In which silicate two oxygen atoms are shared (per unit)
 (1) Pyrosilicate (2) Orthosilicate
 (3) Chain silicate (4) None of these
CPB045
45. Catenation property is mainly exhibited by carbon in its family but it is not shown by its member
 (1) Si (2) Ge (3) Sn (4) Pb
CPB046
46. Which among the following statements is incorrect regarding graphite ?
 (1) Each carbon atom is sp^2 hybridised
 (2) Fourth electron on each carbon atom forms a π bond.
 (3) Layers are held by weak van der Waals forces
 (4) Thermodynamically less stable than diamond
CPB047
47. Synthesis gas is -
 (1) $CO + H_2$ (2) $CO_2 + H_2O$
 (3) $CO + N_2$ (4) None
CPB048

NITROGEN FAMILY

48. P_4O_{10} is used extensively as a :

- (1) Dehydrating agent
- (2) Catalytic agent
- (3) Reducing agent
- (4) Preservative

CPB049

49. PH_3 produces smoky rings when it comes in contact with air. This is because :

- (1) It is inflammable
- (2) It combines with water vapours
- (3) It combines with nitrogen
- (4) It contains impurity of P_2H_4

CPB050

50. Which of the following is the correct statement for PH_3

- (1) It is less basic than NH_3
- (2) It is less poisonous than NH_3
- (3) Bond angle of $PH_3 > NH_3$
- (4) It does not show reducing properties

CPB051

51. Concentrated nitric acid reacts with iodine to give:-

- (1) HI
- (2) HOI
- (3) $HOIO_2$
- (4) $HOIO_3$

CPB052

52. Which of the following statement is true about white phosphorous & red phosphorous?

- (1) Both are soluble in CS_2
- (2) Both are poisonous
- (3) Both can be oxidised by air
- (4) Both glow in dark

CPB053

53. A gas which is used as anaesthetic in dental surgery is :

- (1) N_2
- (2) CO
- (3) N_2O
- (4) NH_3

CPB054

54. On heating, ammonium dichromate and barium azide separately, we get :-

- (1) N_2 from ammonium dichromate and NO from barium azide
- (2) N_2O from ammonium dichromate and NO_2 from barium azide
- (3) N_2O from ammonium dichromate and NO from barium azide
- (4) N_2 in both cases

CPB055

55. NO_2 is formed when

- (1) Cu reacts with conc. HNO_3
- (2) Zn reacts with conc. HNO_3
- (3) $Pb(NO_3)_2$ is heated
- (4) All

CPB056

56. Which of the following does not produce NO_2 gas with conc. HNO_3 ?

- (1) Cu
- (2) I_2
- (3) Ag
- (4) Au

CPB057

57. Which gas is used to create inert atmosphere in industrial process.

- (1) NH_3
- (2) N_2
- (3) O_2
- (4) CO

CPB058

58. Liquid nitrogen is used as a refrigerant to preserve-

- (1) Biological material
- (2) Food items
- (3) In cryosurgery
- (4) All of the above

CPB059

59. Nitrogenous fertilisers are

- (1) Ammonium nitrate
- (2) Urea
- (3) Ammonium phosphate
- (4) All of the above

CPB060

60. Which compound is used in the pickling of stainless steel -

- (1) Sulphuric acid
- (2) Nitric acid
- (3) Phosphine gas
- (4) Phosphorous

CPB061

61. The gas which is used in Holme's signals-

- (1) SO_2
- (2) PH_3
- (3) SO_3
- (4) NH_3

CPB062

62. Phosphine gas is used in -
 (1) Smoke screen (2) Home screen
 (3) Inert atmosphere (4) As a fuel

CPB063

63. Quartz is a crystalline variety of
 (1) Silicon (2) SiC
 (3) SiO₂ (4) Na₂SiO₃

CPB064

64. Aluminium vessel should not be washed with material containing washing soda because-
 (1) Washing soda is easily decomposed
 (2) Washing soda is expensive
 (3) Washing soda reacts with Aluminium to forms soluble aluminate
 (4) Washing soda reacts with Aluminium to forms insoluble aluminium oxide

CPB065

65. Haber's process is used in manufacturing of -
 (1) Ammonia (2) Sodium azide
 (3) Phosphine (4) None

CPB066

66. NH₃ act as a -
 (1) Lewis acid (2) Lewis base
 (3) Amphoteric (4) None

CPB067

67. Which of the following group of p-block elements used to form fertilizers.
 (1) Carbon family (2) Halogen family
 (3) Nitrogen family (4) Oxygen family

CPB068

68. Which does not show Allotropy
 (1) N (2) P (3) Sb (4) Bi

CPB069

69. In which compound covalency of N is 4.
 (1) N₂O₅ (2) N₂O₄
 (3) N₂O₃ (4) All of these

CPB070

70. Impurities responsible for inflammable nature of PH₃ is/are -
 (1) P₂H₄ (2) P₄ vapours
 (3) Both (4) None

CPB071

71. PCl₃ can be obtained by reaction of
 (1) P₄ + SOCl₂ → (2) P₄ + SO₂Cl₂ →
 (3) Both (4) None

CPB072

72. Which oxy acid of phosphorous has two P-H bond-

A. Phosphonic acid
 B. Phosphinic acid
 C. Pyrophosphorous acid
 D. Polymetaphosphoric acid

(1) A,D (2) B,C (3) A,C,D (4) A,C

CPB073

73. Which acid can reduce AgNO₃ into metallic silver

(1) Hypophosphorous acid
 (2) Orthophosphoric acid
 (3) Pyrophosphoric acid
 (4) Hypophosphoric acid

CPB074

74. What is the Ratio of number of P-P bond in hypophosphoric acid, number of P-H bond in Pyrophosphorous acid and number of P-OH bond in cyclotrimetaphosphoric acid respectively?

(1) 2 : 1 : 3 (2) 1 : 2 : 3
 (3) 2 : 2 : 1 (4) 1 : 2 : 2

CPB075

OXYGEN FAMILY

75. SO₂ can acts as -

(1) Reducing agent (2) Oxidising agent
 (3) Bleaching agent (4) All

CPB076

76. Ozone acts as

(1) Oxidising agent (2) Disinfectant
 (3) Bleaching agent (4) All

CPB077

77. A black sulphide when treated with ozone becomes white. The white compound is :

(1) ZnSO₄ (2) CaSO₄
 (3) BaSO₄ (4) PbSO₄

CPB078

78. H₂S gas changes a filter paper dipped in lead acetate solution into :

(1) Black (2) Red
 (3) Green (4) Yellow

CPB079

79. The number of S-S bonds in sulphur trioxide trimer (S_3O_9) is :
 (1) Three (2) Two
 (3) One (4) Zero
CPB080
80. Dry bleaching is done by :
 (1) Cl_2 (2) SO_2
 (3) O_3 (4) None
CPB081
81. When KBr is treated with conc. H_2SO_4 reddish brown gas is evolved. The gas is :
 (1) Br_2 (2) $HOBr$
 (3) NO_2 (4) H_2O_2
CPB082
82. On addition of conc. H_2SO_4 to a chloride salt, colourless fumes are evolved but in case of iodide salt, violet fumes come out. This is because:-
 (1) H_2SO_4 reduces HI to I_2
 (2) HI is of violet colour
 (3) HI gets oxidised to I_2
 (4) HI changes to HIO_3
CPB083
83. Which of the following is responsible for turning starch-iodide paper blue when it is brought in contact with O_3 ?
 (1) Liberation of iodine
 (2) Liberation of oxygen
 (3) Formation of alkali
 (4) Reaction of ozone with litmus paper.
CPB084
84. Which one of the following property is not correct for ozone ?
 (1) It oxidises lead sulphide
 (2) It oxidises potassium iodide
 (3) It oxidises mercury
 (4) It cannot act as bleaching agent in dry state.
CPB085
85. By which of the following SO_2 is formed ?
 (1) Reaction of dilute H_2SO_4 with Zn.
 (2) Heating $Fe_2(SO_4)_3$.
 (3) Reaction of concentrated H_2SO_4 with Cu.
 (4) Heating of Cs_2SO_4 .
CPB086
86. Pick out the statement that is wrong :-
 (1) Oxygen is paramagnetic in all the three states of matter
 (2) Ozone is diamagnetic
 (3) Ozone is a linear molecule
 (4) The O-O bonds in ozone have considerable double bond character
CPB087
87. SO_2 is used as :
 (1) Bleaching agent
 (2) Preservative
 (3) Refining petroleum and Sugar
 (4) All of the above
CPB088
88. Sulphuric acid is used in :
 (1) Detergent industry
 (2) Storage battery
 (3) Manufacture of nitrocellulose product
 (4) All the above
CPB089
89. Which 16th group element have only positive oxidation state only
 (1) S (2) Se (3) Te (4) Po
CPB090
90. The oxidation state of central atom in the anion of compound NaH_2PO_2 will be :
 (1) +3 (2) +5 (3) +1 (4) -3
CPB091
91. Pure ozone is :
 (1) Pale blue gas (2) Dark-blue liquid
 (3) Violet-black solid (4) All
CPB092
92. Identify the incorrect statement
 (1) Ozone absorb U.V. rays from sun.
 (2) Depletion of ozone layer is due to C.F.C
 (3) Ozone absorb infra-red radiations
 (4) Oxides of nitrogen in the atmosphere can cause depletion of ozone layer.
CPB093
93. Arrange the following in decreasing order of their boiling Point ?
 I. H_2O II. H_2S
 III. H_2Se IV. H_2Te
 (1) IV > III > II > I (2) II > III > IV > I
 (3) I > IV > III > II (4) I > II > III > IV
CPB094

94. Large difference in melting and boiling point between O and S is due to -
 (1) Non-metallic nature
 (2) Difference in electronegativity is high
 (3) Atomicity
 (4) Very small size

CPB095

95. Which hydride does not shows reducing property
 (1) H_2Te (2) H_2Se (3) H_2S (4) H_2O

CPB096

96. True statement regarding halides of group 16 is-
 (1) Hexafluorides are the only stable halides
 (2) All hexafluorides are gaseous in nature.
 (3) All hexafluorides shows octahedral structure
 (4) All of these

CPB097

97. Industrially O_2 can be obtained by-
 (1) Thermal decomposition of Ag_2O .
 (2) Heating KClO_3 .
 (3) From H_2O_2
 (4) From liquification and fractional distillation of air.

CPB098

98. Dioxygen does not reacts with
 (1) Pt (2) Au
 (3) He (4) All of these

CPB099

99. Incorrect about S- allotrope-
 (1) At room temperature S-monoclinic is more stable
 (2) Both rhombic and monoclinic have S_8 molecules
 (3) S_8 ring of both is crown shape
 (4) S_2 is paramagnetic like O_2

CPB100

100. Oleum is know as -
 (1) $\text{H}_2\text{S}_2\text{O}_7$ (2) $\text{SO}_3 + \text{H}_2\text{SO}_4$
 (3) Both (1) and (2) (4) $\text{H}_2\text{S}_2\text{O}_8$

CPB101

101. Which gas is used in oxyacetylene welding ?
 (1) Oxygen (2) Phosphine
 (3) Carbon dioxide (4) None

CPB102

102. Sulphur show paramagnetic behavior in -
 (1) S_8 (2) S_2 (vapour)
 (3) S_6 (4) S_2 (Solid)

CPB103

103. Contact process is used for manufacturing of-
 (1) HNO_3 (2) H_2SO_4
 (3) $\text{H}_2\text{S}_2\text{O}_2$ (4) None

CPB104

HALOGEN FAMILY AND INERT GASES

104. Select the correct statement (s) from the following-
 (1) Fluorine displaces other halogens from the corresponding halides
 (2) Fluorine reacts slowly with halogens
 (3) Fluorine does not decompose water
 (4) Except fluorine, other halogens directly combine with carbon

CPB105

105. The halide which does not give a precipitate with AgNO_3 is-
 (1) F^- (2) Cl^- (3) Br^- (4) I^-

CPB106

106. Volatile nature of halogen is because :
 (1) Halogen molecules are bonded by strong forces
 (2) Halogen molecules are bonded by electrostatic forces
 (3) The forces existing between the discrete molecule are only weak vander Waals force.
 (4) Halogen molecules are more reactive

CPB107

107. Iodine gas turns starch iodide paper :
 (1) Blue (2) Red
 (3) Colourless (4) Yellow

CPB108

108. BrF_5 is a :
 (1) Interhalogen compound
 (2) Pseudohalogen compound
 (3) Both the above
 (4) None of the above

CPB109

109. Which of the following does not decolourise iodine?
 (1) Na_2SO_3 (2) $\text{Na}_2\text{S}_2\text{O}_3$
 (3) NaCl (4) NaOH

CPB110

- 110.** Which one of the following halogen liberates oxygen on reacting with H_2O
 (1) I_2 (2) Cl_2 (3) Br_2 (4) F_2
CPB111
- 111.** Helium is added to oxygen used by deep sea divers because :
 (1) It is less soluble in blood than nitrogen under high pressure
 (2) It is lighter than nitrogen
 (3) It is readily miscible with oxygen
 (4) It is less poisonous than nitrogen
CPB112
- 112.** Which of the following is not correct :
 (1) XeO_3 has four σ and four π bonds
 (2) The hybridization of Xe in XeF_4 is sp^3d^2
 (3) Among noble gases, the occurrence of argon is highest in air
 (4) Liquid helium is used as cryogenic liquid
CPB113
- 113.** XeF_2 reacts with SbF_5 to form :
 (1) $[XeF]^+ [SbF_6]^-$
 (2) $[XeF_3]^- [SbF_4]^-$
 (3) $Xe^- [PtF_6]^+$
 (4) XeF_4
CPB114
- 114.** The compound that cannot be formed by xenon is
 (1) XeO_3 (2) XeF_4
 (3) $XeCl_4$ (4) XeO_2F_2
CPB115
- 115.** SbF_5 reacts with XeF_4 to form an adduct. The shapes of cation and anion in the adduct are respectively
 (1) square planar, trigonal bipyramidal
 (2) T-shaped, octahedral
 (3) square pyramidal, octahedral
 (4) square planar, octahedral
CPB116
- 116.** Which of the following noble gas does not form clathrate compound?
 (1) Kr (2) Ne (3) Xe (4) Ar
CPB117
- 117.** An inorganic salt when heated with concentrated H_2SO_4 evolves a colourless pungent smelling gas but with concentrated H_2SO_4 and MnO_2 evolves a coloured pungent smelling gas which bleaches moist litmus paper. The coloured gas is :-
 (1) NO_2 (2) Cl_2 (3) Br_2 (4) I_2
CPB118
- 118.** Chlorine gas is not used in
 (1) Bleaching agent
 (2) Extraction of gold
 (3) Refining of sugar
 (4) Sterilising drinking water
CPB119
- 119.** Which is used for enrichment of ^{235}U
 (1) ClF (2) ICl_3 (3) ClF_3 (4) None
CPB120
- 120.** Which statement is true about Helium
 (1) Non-inflammable and heavy gas
 (2) Inflammable and light gas
 (3) Non-inflammable and light gas
 (4) All the above
CPB121
- 121.** Which noble gas is used in gas cooled nuclear reactors :
 (1) He (2) Ne (3) Ar (4) Xe
CPB122
- 122.** Which gas is used in discharge tube:
 (1) He (2) Ne (3) Ar (4) Xe
CPB123
- 123.** Which type of bulb are used in botanical garden and green houses :
 (1) Argon Bulb (2) Neon bulb
 (3) Both (4) None
CPB124
- 124.** Which gas is used to provide an inert atmosphere in high temperature metallurgical process :
 (1) Ne (2) N_2 (3) Ar (4) He
CPB125
- 125.** Argon is used in arc-welding because of its
 (1) Low reactivity with metal
 (2) Ability to lower the melting point of metal
 (3) High calorific value
 (4) Inflammability
CPB126

- 126.** Salt producing family is -
 (1) Nitrogen family (2) Carbon family
 (3) Halogen family (4) Inert gas
CPB127
- 127.** Deacon's process is used for manufacturing of
 (1) Cl_2 (2) F_2 (3) HCl (4) NaCl
CPB128
- 128.** Correct order of bond dissociation enthalpy is-
 (1) $\text{HF} > \text{HCl} > \text{HBr} > \text{HI}$
 (2) $\text{HF} > \text{HBr} > \text{HCl} > \text{HI}$
 (3) $\text{HI} > \text{HBr} > \text{HCl} > \text{HF}$
 (4) None
CPB129
- 129.** Which is used in estimation of CO -
 (1) ClO_2 (2) Br_2O
 (3) I_2O_5 (4) all of these
CPB130
- 130.** Catalyst used in Deacon's process is -
 (1) CuCl_2 (2) Cu_2Cl_2
 (3) Pt wire (4) Ni powder
CPB131
- 131.** Number of O-O bond in perchloric acid will be-
 (1) 4 (2) 3 (3) 2 (4) Zero
CPB132
- 132.** Which one of the following is not formed during hydrolysis of XeF_6 ?
 (1) XeOF_4 (2) XeOF_3
 (3) XeO_3 (4) XeO_2F_2
CPB133
- 133.** Compound of radon have not been isolated but only identified by radiotracer technique, compound is-
 (1) RnF_6 (2) RnF_4 (3) RnF_2 (4) RnF
CPB134
- 134.** First inert gas compound was -
 (1) $\text{Xe}[\text{PtF}_6]$ (2) KrPtF_6
 (3) XePtCl_6 (4) ArPtF_6
CPB135
- 135.** Which noble gas is not present in atmosphere.
 (1) He (2) Ne
 (3) Xe (4) Rn
CPB136

EXERCISE-I (Conceptual Questions)

ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	2	1	3	4	4	4	4	1	3	3	1	2	2	1
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	1	4	2	2	3	3	1	2	1	2	3	3	1	3	4
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	1	1	2	3	3	2	2	3	2	1	3	1	3	3	4
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	4	1	1	4	1	3	3	3	4	4	4	2	4	4	2
Question	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Answer	2	1	3	3	1	2	3	1	4	3	1	2	1	2	4
Question	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Answer	4	4	1	4	3	1	3	1	4	3	3	4	4	4	3
Question	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
Answer	4	3	3	3	4	4	4	4	1	3	1	2	2	1	1
Question	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Answer	3	1	1	3	4	1	1	1	3	2	2	2	3	3	3
Question	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135
Answer	1	2	2	3	1	3	1	1	3	1	4	2	3	1	4

EXERCISE - II (Previous Year Questions)

AIPMT/NEET

AIPMT 2015

1. Nitrogen dioxide and sulphur dioxide have some properties in common. Which property is shown by one of these compounds, but not by the other?
- (1) Is a reducing agent
 - (2) Is soluble in water
 - (3) Is used as a food-preservative
 - (4) Forms 'acid-rain'

CPB152

Re-AIPMT 2015

2. Strong reducing behaviour of H_3PO_2 is due to :
- (1) High oxidation state of phosphorus
 - (2) Presence of two $-\text{OH}$ groups and one $\text{P}-\text{H}$ bond
 - (3) Presence of one $-\text{OH}$ group and two $\text{P}-\text{H}$ bonds
 - (4) High electron gain enthalpy of phosphorus

CPB153

3. Which of the statements given below is incorrect?
- (1) ONF is isoelectronic with O_2N^-
 - (2) OF_2 is an oxide of fluorine
 - (3) Cl_2O_7 is an anhydride of perchloric acid
 - (4) O_3 molecule is bent

CPB154

4. The stability of +1 oxidation state among Al , Ga , In and Tl increases in the sequence :
- (1) $\text{TI} < \text{In} < \text{Ga} < \text{Al}$
 - (2) $\text{In} < \text{TI} < \text{Ga} < \text{Al}$
 - (3) $\text{Ga} < \text{In} < \text{Al} < \text{TI}$
 - (4) $\text{Al} < \text{Ga} < \text{In} < \text{TI}$

CPB155

NEET-I 2016

5. Among the following, the correct order of acidity is
- (1) $\text{HClO}_3 < \text{HClO}_4 < \text{HClO}_2 < \text{HClO}$
 - (2) $\text{HClO} < \text{HClO}_2 < \text{HClO}_3 < \text{HClO}_4$
 - (3) $\text{HClO}_2 < \text{HClO} < \text{HClO}_3 < \text{HClO}_4$
 - (4) $\text{HClO}_4 < \text{HClO}_2 < \text{HClO} < \text{HClO}_3$

CPB156

6. When copper is heated with conc. HNO_3 it produces
- (1) $\text{Cu}(\text{NO}_3)_2$ and NO_2
 - (2) $\text{Cu}(\text{NO}_3)_2$ and NO
 - (3) $\text{Cu}(\text{NO}_3)_2$, NO and NO_2
 - (4) $\text{Cu}(\text{NO}_3)_2$ and N_2O

CPB157

7. Which is the **correct** statement for the given acids?
- (1) Phosphinic acid is a diprotic acid while phosphonic acid is a monoprotic acid
 - (2) Phosphinic acid is a monoprotic acid while phosphonic acid is a diprotic acid
 - (3) Both are triprotic acids
 - (4) Both are diprotic acids

CPB158

NEET-II 2016

8. Boric acid is an acid because its molecule
- (1) Accepts OH^- from water releasing proton
 - (2) Combines with proton from water molecule
 - (3) Contains replaceable H^+ ion
 - (4) Gives up a proton

CPB159

9. AlF_3 is soluble in HF only in presence of KF . It is due to the formation of
- (1) AlH_3
 - (2) $\text{K}[\text{AlF}_3\text{H}]$
 - (3) $\text{K}_3[\text{AlF}_3\text{H}_3]$
 - (4) $\text{K}_3[\text{AlF}_6]$

CPB160

NEET(UG) 2017

10. In which pair of ions both the species contain $\text{S}-\text{S}$ bond?
- (1) $\text{S}_4\text{O}_6^{2-}$, $\text{S}_2\text{O}_3^{2-}$
 - (2) $\text{S}_2\text{O}_7^{2-}$, $\text{S}_2\text{O}_8^{2-}$
 - (3) $\text{S}_4\text{O}_6^{2-}$, $\text{S}_2\text{O}_7^{2-}$
 - (4) $\text{S}_2\text{O}_7^{2-}$, $\text{S}_2\text{O}_3^{2-}$

CPB161

11. It is because of inability of ns^2 electrons of the valence shell to participate in bonding that:-
- (1) Sn^{2+} is oxidising while Pb^{4+} is reducing
 - (2) Sn^{2+} and Pb^{2+} are both oxidising and reducing
 - (3) Sn^{4+} is reducing while Pb^{4+} is oxidising
 - (4) Sn^{2+} is reducing while Pb^{4+} is oxidising

CPB162

NEET(UG) 2018

12. Which of the following statements is **not** true for halogens ?
- (1) All form monobasic oxyacids.
 - (2) All are oxidizing agents.
 - (3) All except fluorine show positive oxidation states.
 - (4) Chlorine has the highest electron - gain enthalpy.

CPB163

13. The correct order of N-compounds in its decreasing order of oxidation states is -
 (1) HNO_3 , NO, N_2 , NH_4Cl
 (2) HNO_3 , NO, NH_4Cl , N_2
 (3) HNO_3 , NH_4Cl , NO, N_2
 (4) NH_4Cl , N_2 , NO, HNO_3

CPB164

NEET(UG) 2019

14. Match the following :
 (a) Pure nitrogen (i) Chlorine
 (b) Haber process (ii) Sulphuric acid
 (c) Contact process (iii) Ammonia
 (d) Deacon's process (iv) Sodium azide or Barium azide
- Which of the following is the **correct** option ?
- | (a) | (b) | (c) | (d) |
|-----------|-------|-------|-------|
| (1) (i) | (ii) | (iii) | (iv) |
| (2) (ii) | (iv) | (i) | (iii) |
| (3) (iii) | (iv) | (ii) | (i) |
| (4) (iv) | (iii) | (ii) | (i) |
15. Which of the following is **incorrect** statement?
 (1) PbF_4 is covalent in nature
 (2) SiCl_4 is easily hydrolysed
 (3) GeX_4 (X = F, Cl, Br, I) is more stable than GeX_2
 (4) SnF_4 is ionic in nature

CPB165

CPB166

NEET(UG) 2019 (ODISHA)

16. The liquified gas that is used in dry cleaning along with a suitable detergent is :-
 (1) Water gas (2) Petroleum gas
 (3) NO_2 (4) CO_2
17. Which of the following compounds is used in cosmetic surgery?
 (1) Silica (2) Silicates
 (3) Silicones (4) Zeolites
18. A compound 'X' upon reaction with H_2O produces a colorless gas 'Y' with rotten fish smell. Gas 'Y' is absorbed in a solution of CuSO_4 to give Cu_3P_2 as one of the products. Predict the compound 'X'
 (1) Ca_3P_2 (2) NH_4Cl
 (3) As_2O_3 (4) $\text{Ca}_3(\text{PO}_4)_2$

CPB167

CPB168

CPB169

19. Which of the following oxoacids of phosphorus has strongest reducing property?
 (1) $\text{H}_4\text{P}_2\text{O}_7$ (2) H_3PO_3 (3) H_3PO_2 (4) H_3PO_4
20. Identify the correct formula of oleum from the following
 (1) $\text{H}_2\text{S}_2\text{O}_7$ (2) H_2SO_3 (3) H_2SO_4 (4) $\text{H}_2\text{S}_2\text{O}_8$

CPB170

CPB171

NEET(UG) 2020

21. Which of the following oxoacid of sulphur has -O-O- linkage ?
 (1) $\text{H}_2\text{S}_2\text{O}_7$, pyrosulphuric acid
 (2) H_2SO_3 , sulphurous acid
 (3) H_2SO_4 , sulphuric acid
 (4) $\text{H}_2\text{S}_2\text{O}_8$, peroxodisulphuric acid
22. Identify the **correct** statements from the following:
 (a) $\text{CO}_2(\text{g})$ is used as refrigerant for ice-cream and frozen food.
 (b) The structure of C_{60} contains twelve six carbon rings and twenty five carbon rings.
 (c) ZSM-5, a type of zeolite, is used to convert alcohols into gasoline.
 (d) CO is colorless and odourless gas.
 (1) (c) and (d) only
 (2) (a) and (b) and (c) only
 (3) (a) and (c) only
 (4) (b) and (c) only
23. Which of the following is **not** correct about carbon monoxide?
 (1) It is produced due to incomplete combustion
 (2) It forms carboxyhaemoglobin
 (3) It reduce oxygen carrying ability of blood
 (4) The carboxyhaemoglobin (haemoglobin bound to CO) is less stable than oxyhaemoglobin.

CPB172

CPB173

CPB174

NEET(UG) 2020(COVID-19)

24. Which one of the following reactions does not come under hydrolysis type reaction ?
 (1) $\text{SiCl}_4(\text{l}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow \text{SiO}_2(\text{s}) + 4\text{HCl}(\text{aq})$
 (2) $\text{Li}_3\text{N}(\text{s}) + 3\text{H}_2\text{O}(\text{l}) \rightarrow \text{NH}_3(\text{g}) + 3\text{LiOH}(\text{aq})$
 (3) $2\text{F}_2(\text{g}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow 4\text{HF}(\text{aq}) + \text{O}_2(\text{g})$
 (4) $\text{P}_4\text{O}_{10}(\text{s}) + 6\text{H}_2\text{O}(\text{l}) \rightarrow 4\text{H}_3\text{PO}_4(\text{aq})$

CPB175

NEET(UG) 2021

25. Noble gases are named because of their inertness towards reactivity. Identify an **incorrect** statement about them.
- (1) Noble gases are sparingly soluble in water.
 - (2) Noble gases have very high melting and boiling points.
 - (3) Noble gases have weak dispersion forces.
 - (4) Noble gases have large positive values of electron gain enthalpy.

CPB176

26. In which one of the following arrangements the given sequence is not strictly according to the properties indicated against it ?
- (1) $\text{HF} < \text{HCl} < \text{HBr} < \text{HI}$: Increasing acidic strength
 - (2) $\text{H}_2\text{O} < \text{H}_2\text{S} < \text{H}_2\text{Se} < \text{H}_2\text{Te}$: Increasing pK_a values
 - (3) $\text{NH}_3 < \text{PH}_3 < \text{AsH}_3 < \text{SbH}_3$: Increasing acidic character
 - (4) $\text{CO}_2 < \text{SiO}_2 < \text{SnO}_2 < \text{PbO}_2$: Increasing oxidizing power

CPB177

NEET(UG) 2022

27. Match List-I with List-II

List-I (Hydrides)	List-II (Nature)
----------------------	---------------------

- | | |
|----------------------------|-------------------------|
| (a) MgH_2 | (i) Electron precise |
| (b) GeH_4 | (ii) Electron deficient |
| (c) B_2H_6 | (iii) Electron rich |
| (d) HF | (iv) Ionic |

Choose the correct answer from the options given below :

- (1) (a)-(iii), (b) - (i), (c) - (ii), (d)- (iv)
- (2) (a)-(i), (b) - (ii), (c) - (iv), (d)- (iii)
- (3) (a)-(ii), (b) - (iii), (c) - (iv), (d)- (i)
- (4) (a) -(iv), (b) - (i), (c) - (ii), (d)- (iii)

CPB218

28. Choose the correct statement :

- (1) Diamond is covalent and graphite is ionic.
- (2) Diamond is sp^3 hybridised and graphite is sp^2 hybridized.
- (3) Both diamond and graphite are used as dry lubricants.
- (4) Diamond and graphite have two dimensional network.

CPB219

29. Which of the following statement is not correct about diborane ?

- (1) The four terminal B-H bonds are two centre two electron bonds.
- (2) The four terminal Hydrogen atoms and the two Boron atoms lie in one plane.
- (3) Both the Boron atoms are sp^2 hybridised
- (4) There are two 3-centre-2-electron bonds.

CPB220

NEET(UG) 2023

30. Match List-I with List-II :

List-I (Oxoacids of Sulphur)	List-II (Bonds)
---------------------------------	--------------------

- | | |
|---------------------------|--------------------------------------|
| A. Peroxodisulphuric acid | I. Two S-OH, Four S=O, One S-O-S |
| B. Sulphuric acid | II. Two S-OH, One S=O |
| C. Pyrosulphuric acid | III. Two S-OH, Four S=O, One S-O-O-S |
| D. Sulphurous acid | IV. Two S-OH, Two S=O |

Choose the **correct** answer from the options given below:

- (1) A-III, B-IV, C-I, D-II
- (2) A-I, B-III, C-IV, D-II
- (3) A-III, B-IV, C-II, D-I
- (4) A-I, B-III, C-II, D-IV

CPB221

NEET(UG) 2024

31. Among Group 16 elements, which one does **NOT** show -2 oxidation state ?

- | | |
|--------|--------|
| (1) O | (2) Se |
| (3) Te | (4) Po |

CPB222

32. Given below are certain cations. Using inorganic qualitative analysis, arrange them in increasing group number from 0 to VI.

- | | |
|---------------------|---------------------|
| A. Al^{3+} | B. Cu^{2+} |
| C. Ba^{2+} | D. Co^{2+} |
| E. Mg^{2+} | |

Choose the correct answer from the options given below:

- | | |
|-------------------|-------------------|
| (1) B, A, D, C, E | (2) B, C, A, D, E |
| (3) E, C, D, B, A | (4) E, A, B, C, D |

CPB223

33. During the preparation of Mohr's salt solution (Ferrous ammonium sulphate), Which of the following acid is added to prevent hydrolysis of Fe^{2+} ion?

- (1) dilute hydrochloric acid
- (2) concentrated sulphuric acid
- (3) dilute nitric acid
- (4) dilute sulphuric acid

CPB224

NEET(UG) 2024 (Re-examination)

34. Identify the **incorrect** statement from the following:

- (1) The acidic strength of HX ($\text{X} = \text{F}, \text{Cl}, \text{Br}$ and I) follows the order : $\text{HF} > \text{HCl} > \text{HBr} > \text{HI}$
- (2) Fluorine exhibits -1 oxidation state whereas other halogens exhibit $+1, +3, +5$ and $+7$ oxidation states also.
- (3) The enthalpy of dissociation of F_2 is smaller than that of Cl_2
- (4) Fluorine is stronger oxidising agent than chlorine.

CPB225

35. Identify the **incorrect** statement

- (1) PEt_3 and AsPh_3 as ligands can form $d\pi-d\pi$ bond with transition metals
- (2) The N-N single bond is as strong as the P-P single bond.
- (3) Nitrogen has unique ability to form $p\pi-p\pi$ multiple bonds with nitrogen, carbon and oxygen
- (4) Nitrogen cannot form $d\pi-p\pi$ bond as other heavier elements of its group.

CPB226

36. Match List-I with List-II :

List-I (Test/reagent)	List-II (Radical identified)
A. Lake Test	I. NO_3^-
B. Nessler's Reagent	II. Fe^{3+}
C. Potassium sulpho cyanide	III. Al^{3+}
D. Brown Ring Test	IV. NH_4^+

Choose the **correct** answer from the options given below :

- (1) A-IV, B-II, C-III, D-I
- (2) A-II, B-IV, C-III, D-I
- (3) A-II, B-III, C-IV, D-I
- (4) A-III, B-IV, C-II, D-I

CPB227

EXERCISE-II (Previous Year Questions)

ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	3	3	2	4	2	1	2	1	4	1	4	1	1	4	1
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	4	3	1	3	1	4	1	4	3	2	2	4	2	3	1
Question	31	32	33	34	35	36									
Answer	4	1	4	1	2	4									

EXERCISE – III (Analytical Questions)

Master Your Understanding

1. Given below are two statements :

Statement-I : BCl_3 is more stable than TlCl_3 .

Statement-II : Boric acid is a protic acid.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Statement-I and Statement-II are correct.
- (2) Statement-I is correct but Statement-II is incorrect.
- (3) Both Statement-I and II are incorrect.
- (4) Statement-I is incorrect but Statement-II is correct.

CPB178

2. Given below are two statements :

Statement-I : Lead is known but not to form an iodide PbI_4 .

Statement-II : Conc. HNO_3 can be transported in Al Container.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Statement-I and Statement-II are correct.
- (2) Statement-I is correct but Statement-II is incorrect.
- (3) Both Statement-I and II are incorrect.
- (4) Statement-I is incorrect but Statement-II is correct.

CPB179

3. Given below are two statements :

Statement-I : Aqueous solution of Borax is alkaline to litmus paper.

Statement-II : Diamond is thermodynamically more stable than graphite.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Statement-I and Statement-II are correct.
- (2) Statement-I is correct but Statement-II is incorrect.
- (3) Both Statement-I and II are incorrect.
- (4) Statement-I is incorrect but Statement-II is correct.

CPB180

4. Given below are two statements :

Statement-I : Chain length of Silicon polymer can be controlled by adding $(\text{CH}_3)_2\text{SiCl}_2$.

Statement-II : Silica gel is used as a drying agent.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Statement-I and Statement-II are correct.
- (2) Statement-I is correct but Statement-II is incorrect.
- (3) Both Statement-I and II are incorrect.
- (4) Statement-I is incorrect but Statement-II is correct.

CPB181

5. Given below are two statements :

Statement-I : Graphite has layered structure in which layers are held by Vander wall's force.

Statement-II : In fullerene there are six and five member ring.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Statement-I and Statement-II are correct.
- (2) Statement-I is correct but Statement-II is incorrect.
- (3) Both Statement-I and II are incorrect.
- (4) Statement-I is incorrect but Statement-II is correct.

CPB182

6. Given below are two statements :

Statement-I : In B_2H_6 bridge bonds are stronger than terminal bonds.

Statement-II : In Diborane all atoms can lie in the same plane.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Statement-I and Statement-II are correct.
- (2) Statement-I is correct but Statement-II is incorrect.
- (3) Both Statement-I and II are incorrect.
- (4) Statement-I is incorrect but Statement-II is correct.

CPB183

7. Given below are two statements :

Statement-I : First inert gas compound was $\text{Xe}[\text{PtF}_6]$ formed by Neil Bartlett.

Statement-II : Xenon fluorides are powerful fluorinating agent.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Statement-I and Statement-II are correct.
- (2) Statement-I is correct but Statement-II is incorrect.
- (3) Both Statement-I and II are incorrect.
- (4) Statement-I is incorrect but Statement-II is correct.

CPB184

8. Given below are two statements :

Statement-I : ClF_3 and BrF_3 are used for the production of UF_6 in the enrichment of U_{235} .

Statement-II : Inter halogen compound's are covalent molecules and are paramagnetic in nature.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Statement-I and Statement-II are correct.
- (2) Statement-I is correct but Statement-II is incorrect.
- (3) Both Statement-I and II are incorrect.
- (4) Statement-I is incorrect but Statement-II is correct.

CPB185

9. Given below are two statements :

Statement-I : With cold & dilute alkalies Cl_2 produces a mixture of chloride and chlorite.

Statement-II : Chlorine is a powerful bleaching agent and bleaching action is due to reduction.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Statement-I and Statement-II are correct.
- (2) Statement-I is correct but Statement-II is incorrect.
- (3) Both Statement-I and II are incorrect.
- (4) Statement-I is incorrect but Statement-II is correct.

CPB186

10. Given below are two statements :

Statement-I : NH_3 can be dried by concentrated. H_2SO_4 .

Statement-II : Decomposition of O_3 into O_2 result in the liberation of heat.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Statement-I and Statement-II are correct.
- (2) Statement-I is correct but Statement-II is incorrect.
- (3) Both Statement-I and II are incorrect.
- (4) Statement-I is incorrect but Statement-II is correct.

CPB187

11. Given below are two statements :

Statement-I : Oxy acids of phosphorous contain (P-H) bond act as a reducing agent.

Statement-II : H_3PO_4 gives disproportionation reaction on heating.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Statement-I and Statement-II are correct.
- (2) Statement-I is correct but Statement-II is incorrect.
- (3) Both Statement-I and II are incorrect.
- (4) Statement-I is incorrect but Statement-II is correct.

CPB188

12. Given below are two statements :

Statement-I : PCl_3 hydrolyses in the presence of moisture gives fumes of HCl .

Statement-II : White phosphorous has discrete units of P_4 molecules.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Statement-I and Statement-II are correct.
- (2) Statement-I is correct but Statement-II is incorrect.
- (3) Both Statement-I and II are incorrect.
- (4) Statement-I is incorrect but Statement-II is correct.

CPB189

13. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion : SF_6 cannot be hydrolysed but SF_4 can be.

Reason : Six F atoms in SF_6 prevent the attack of H_2O on S-atom of SF_6 .

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
- (2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
- (3) (A) is correct but (R) is not correct.
- (4) (A) is not correct but (R) is correct.

CPB190

14. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion : HI cannot be prepared by the reaction of KI with conc. H_2SO_4 .

Reason : HI has lowest H-X bond strength among halogen acids.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
- (2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
- (3) (A) is correct but (R) is not correct.
- (4) (A) is not correct but (R) is correct.

CPB191

15. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion : HNO_3 makes iron passive.

Reason : HNO_3 forms a protective layer of ferric nitrate on the surface of iron.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
- (2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
- (3) (A) is correct but (R) is not correct.
- (4) (A) is not correct but (R) is correct.

CPB192

16. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion : H_3PO_2 is a dibasic acid.

Reason : Two H-atoms are directly attached to phosphorous.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
- (2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
- (3) (A) is correct but (R) is not correct.
- (4) (A) is not correct but (R) is correct.

CPB193

17. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion : Boric acid is considered as a weak acid.

Reason : It is not able to release H^+ ions on its own.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
- (2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
- (3) (A) is correct but (R) is not correct.
- (4) (A) is not correct but (R) is correct.

CPB194

18. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion : Aluminium wire is used to make transmission cables.

Reason : Aluminium has a high electrical and thermal conductivity and due to its low cost & light weight.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
- (2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
- (3) (A) is correct but (R) is not correct.
- (4) (A) is not correct but (R) is correct.

CPB195

19. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion : (B-F) Bond lengths in BF_3 and BF_4^- is different.

Reason : In both BF_3 and BF_4^- $P_\pi - P_\pi$ back bonding is present.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
- (2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
- (3) (A) is correct but (R) is not correct.
- (4) (A) is not correct but (R) is correct.

CPB196

20. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion : Stability of +5 O.S. state decreases and that of +3 oxidation state increases down the group in group 15.

Reason : Inert pair effect is more prone in case of heavier members of p-block.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
- (2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
- (3) (A) is correct but (R) is not correct.
- (4) (A) is not correct but (R) is correct.

CPB197

21. Match the column :

Column-I		Column-II	
(A)	$\text{Borax} \xrightarrow{\Delta}$	(i)	BN
(B)	$\text{B}_2\text{H}_6 + \text{H}_2\text{O} \rightarrow$	(ii)	B_2H_6
(C)	$\text{B}_2\text{H}_6 + \text{NH}_3 \rightarrow$ (excess)	(iii)	H_3BO_3
(D)	$\text{BCl}_3 + \text{LiAlH}_4 \rightarrow$	(iv)	$\text{NaBO}_2 + \text{B}_2\text{O}_3$

- (1) A - iii, B - iv, C - ii, D - i
- (2) A - ii, B - i, C - iv, D - iii
- (3) A - i, B - ii, C - iii, D - iv
- (4) A - iv, B - iii, C - i, D - ii

CPB198

22. Match the column :

Column-I		Column-II	
(A)	He	(i)	It's partial hydrolysis does not change oxidation state of central atom.
(B)	XeF ₆	(ii)	It is used in modern diving apparatus.
(C)	XeF ₄	(iii)	It is used to provide inert atmosphere for filling electrical bulbs.
(D)	Ar	(iv)	Its central atom has sp ³ d ² hybridisation

- (1) A - iv, B - iii, C - ii, D - i
 (2) A - ii, B - i, C - iv, D - iii
 (3) A - iii, B - iv, C - i, D - ii
 (4) A - i, B - ii, C - iii, D - iv

CPB199

23. Match the column :

Column-I		Column-II	
(A)	H ₄ P ₂ O ₇	(i)	Peroxy disulphuric acid
(B)	H ₂ S ₄ O ₆	(ii)	Pyro sulphurous acid
(C)	H ₂ S ₂ O ₅	(iii)	Pyro phosphoric acid
(D)	H ₂ S ₂ O ₈	(iv)	Tetra thionic acid

- (1) A - ii, B - iii, C - iv, D - i
 (2) A - iii, B - iv, C - ii, D - i
 (3) A - iii, B - iv, C - i, D - ii
 (4) A - i, B - ii, C - iii, D - iv

CPB200

24. Match the column :

Column-I		Column-II	
(A)	Ostwald process	(i)	in the manufacturing of NH ₃
(B)	Deacon's process	(ii)	in the manufacturing of H ₂ SO ₄
(C)	Contact process	(iii)	in the manufacturing of Cl ₂
(D)	Haber process	(iv)	in the manufacturing of HNO ₃

- (1) A - i, B - iii, C - ii, D - iv
 (2) A - iv, B - iii, C - ii, D - i
 (3) A - iii, B - ii, C - iv, D - i
 (4) A - iv, B - i, C - iii, D - ii

CPB201

25. Match the column :

Column-I		Column-II (Basic unit)	
(A)	Ortho Silicate	(i)	SiO ₂
(B)	Pyro Silicate	(ii)	(Si ₂ O ₅ ⁻²) _n
(C)	2-D Silicate	(iii)	Si ₂ O ₇ ⁻⁶
(D)	3-D Silicate	(iv)	(SiO ₄ ⁻⁴)

- (1) A - iv, B - iii, C - ii, D - i
 (2) A - ii, B - iii, C - i, D - iv
 (3) A - iii, B - ii, C - iv, D - i
 (4) A - iv, B - i, C - iii, D - ii

CPB202

26. Match the column :

Column-I		Column-II	
(A)	Br ₂	(i)	used in estimation of CO
(B)	HF	(ii)	powerful bleaching agent
(C)	O ₃	(iii)	liquid at room temperature
(D)	I ₂ O ₅	(iv)	used in permanent marking on glass surface

- (1) A - i, B - iii, C - ii, D - iv
 (2) A - ii, B - i, C - iii, D - i
 (3) A - iii, B - iv, C - ii, D - i
 (4) A - iv, B - ii, C - i, D - iii

CPB203

27. Match the column :

Column-I		Column-II	
(A)	Anhydride of HNO ₃	(i)	P ₄ O ₁₀
(B)	Anhydride of HNO ₂	(ii)	P ₄ O ₆
(C)	Anhydride of H ₃ PO ₄	(iii)	N ₂ O ₃
(D)	Anhydride of H ₃ PO ₃	(iv)	N ₂ O ₅

- (1) A - i, B - iv, C - iii, D - ii
 (2) A - iv, B - iii, C - i, D - ii
 (3) A - ii, B - i, C - iv, D - iii
 (4) A - iii, B - ii, C - iv, D - i

CPB204

28. Match the column :

Column-I		Column-II	
(A)	Red Lead	(i)	CoCl ₂
(B)	Carborandum	(ii)	Cl ₃ C.NO ₂
(C)	Tear gas	(iii)	SiC
(D)	Phosgene	(iv)	Pb ₃ O ₄

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

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

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

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

CPB205

29. Match the column :

Column-I		Column-II	
(A)	Bleaching powder	(i)	Na ₂ S ₂ O ₃ .5H ₂ O
(B)	Pseudo halogen	(ii)	ICl ₃
(C)	Inter halogen compound	(iii)	(CN) ₂
(D)	Hypo solution	(iv)	CaOCl ₂

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

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

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

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

CPB206

30. Match the column :

Column-I		Column-II	
(A)	Borax	(i)	Form complex with haemoglobin
(B)	Diborane	(ii)	used as a fire extinguisher
(C)	Carbon mono oxide	(iii)	Swell's up on heating
(D)	Carbon dioxide	(iv)	Catches fire spontaneously

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

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

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

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

CPB207

31. Which of the following statements are correct?

(A) P₄ molecule in white phosphorous have angular strain therefore white phosphorous is very reactive.(B) All the three (N-O) bond lengths are equal in HNO₃.(C) PCl₅ is ionic in solid state in which cation is tetrahedral and anion is octahedral.(D) All (P-Cl) B.L. in PCl₅ mol. in gaseous state are equal.

(1) If (A), (B) and (C) options are correct.

(2) If (A) and (B) both options are correct.

(3) If (B) and (D) both options are correct.

(4) If (A) and (C) both options are correct.

CPB208

32. In which of the following reactions conc. H₂SO₄ is not used as an oxidising agent :-(1) $\text{Zn} + 2\text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{SO}_2 + 2\text{H}_2\text{O}$ (2) $2\text{HI} + \text{H}_2\text{SO}_4 \rightarrow \text{I}_2 + \text{SO}_2 + 2\text{H}_2\text{O}$ (3) $\text{NaCl} + \text{H}_2\text{SO}_4 \rightarrow \text{NaHSO}_4 + \text{HCl}$ (4) $\text{Cu} + 2\text{H}_2\text{SO}_4 \rightarrow \text{CuSO}_4 + \text{SO}_2 + 2\text{H}_2\text{O}$

CPB209

33. In which of the following terminal (2C - 2e-) bond and bridge bond are not lying in the same plane ?

(1) B₂H₆(2) Solid BeCl₂(3) Al₂Cl₆(4) I₂Cl₆

CPB210

34. PH₃ can not be obtained by :-(1) Heating of H₃PO₃(2) Reacting white P₄ with hot & conc. NaOH(3) Hydrolysis of Ca₃P₂(4) Heating of H₃PO₄

CPB211

35. Acids of sulphur which contain peroxy linkage :-

(1) H₂S₂O₈(2) H₂S₂O₇(3) H₂S₂O₆(4) H₂S₂O₃

CPB212

36. Which of the following will not give N_2 when heated :

- (1) NaN_3 (2) NH_4NO_2
(3) $(NH_4)_2Cr_2O_7$ (4) NH_4NO_3

CPB213

37. Heating of oxalic acid with conc. H_2SO_4 not evolves:-

- (1) CO (2) CO_2
(3) Both (1) and (2) (4) SO_2

CPB214

38. SiO_2 reacts with :-

- (1) HF (2) NaOH
(3) Both (1) and (2) (4) CO_2

CPB215

39. Which of the following compound produce oxy acid of central atom on hydrolysis ?

- (1) NF_3 (2) SF_6 (3) PCl_5 (4) NCl_3

CPB216

40. Which of the following cation can not give borax bead test ?

- (1) Cu^{2+} (2) Co^{+2} (3) Zn^{+2} (4) Mn^{+2}

CPB217

EXERCISE-III (Analytical Questions)

ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	1	2	4	1	2	1	2	3	4	2	1	1	2	3
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	4	1	1	3	1	4	2	2	2	1	3	2	3	4	3
Question	31	32	33	34	35	36	37	38	39	40					
Answer	4	3	1	4	1	4	4	3	3	3					