RAVI MATHS TUITION CENTRE , WHATSAPP - 8056206308

Time : 1 Mins **P BLOCK ELEMENTS 2 1** **Marks : 1797**

1. Among the following the correct order of acidity is _____ .
   a) $HClO_3 < HClO_4 < HClO_2 < HClO$
   b) $HCl < HClO_2 < HClO_3 < HClO_4$
   c) $HClO_2 < HClO < HClO_3 < HClO_4$
   d) $HClO_4 < HClO_2 < HClO < HClO_3$
2. Which is not a method of preparing carbon monoxide on a commercial scale?
   a) $C_{(s)} + H_2O_{(g)} \xrightarrow[\Delta]{473-1273k} CO_{(g)} + H_{2(g)}$ b) $2C_{(s)} + O_{2(g)} + 4N_{2(g)} \xrightarrow{1273K} 2CO_{(g)} + 4N_{2(g)}$
   c) $2C_{(s)} + O_{2(g)} \longrightarrow 2CO_{(g)}$ d) $HCOOH \xrightarrow[conc.\ H_2SO_4]{373K} H_2O + CO$
3. Quartz is extensively used as a piezoelectric material, it contains _____
   a) Pb b) Si c) Ti d) Sn
4. Match the column I with column II and mark the appropriate choice.

Column I		Column II	
(A)	Borax-bead	(i)	Alum
(B)	Inorganic benzene	(ii)	Diborane
(C)	Antiseptic	(iii)	Metaborate
(D)	Bridged hydrogens	(iv)	Borazine

   a) (A) ⟶ (i), (B) ⟶ (iii), (C) ⟶ (ii), (D) ⟶ (iv) b) (A) ⟶ (iii), (B) ⟶ (iv), (C) ⟶ (i), (D) ⟶ (ii)
   c) (A) ⟶ (iv), (B) ⟶ (iii), (C) ⟶ (i), (D) ⟶ (ii) d) (A) ⟶ (ii), (B) ⟶ (iii) (C) ⟶ (iv) (D) ⟶ (i)
5. Which of the following compound does not _____ .
   a) NCl_5 b) AsF_5 c) $SbCl_5$ d) PF_5
6. Oxidation states of P in $H_4P_2O_5$, $H_4P_2O_6$, $H_4P_2O_7$ are respectively.
   a) +3, +5, +4 b) +5, +3, +4 c) +5, +4, +3 d) +3, +4, +5
7. Which of these is not a monomer for a high molecular mass silicone polymer?
   a) Me_2SiCl_2 b) Me_3SiCl c) $PhSiCl_3$ d) $MeSiCl_3$
8. Which of the following is used in the preparation of chlorine?
   a) Both MnO_2 and $KMnO_4$ b) Only $KMnO_4$ c) Only MnO_4 d) Either MnO_4 or $KMnO_4$
9. Match the column I with column II and mark the appropriate choice

Column I		Column II	
(A)	Galena	(i)	Abrasive
(B)	Diamond	(ii)	Metal carbonyls
(C)	Carbon monoxide	(iii)	Hydrides of Si
(D)	Silanes	(iv)	An ore of lead

a) (A) ⟶ (iv), (B) ⟶ (ii), (C) ⟶ (i), (D) ⟶ (iii) b) (A) ⟶ (iv), (B) ⟶ (i), (C) ⟶ (ii), (D) ⟶ (iii)
c) (A) ⟶ (ii), (B) ⟶ (i), (C) ⟶ (iii), (D) ⟶ (iv) d) (A) ⟶ (i), (B) ⟶ (ii), (C) ⟶ (iii), (D) ⟶ (iv)

10. In which of the following compounds, nitrogen exhibits highest oxidation state?
a) N_2H_4 b) NH_3 c) N_3H d) NH_2OH

11. $NaBH_4 + I_2 \longrightarrow X + Y + Z$

$$BF_3 + NaH \xrightarrow{450K} X + P$$

$BF_3 + LiAlH_4 \longrightarrow X + Q + R$

X, Y, Z, P, Q and R in the reactions a

a)

X	Y	Z	P	Q	R
$Na_4B_4O_7$	NaI	HI	HF	LiF	AlF_3

b)

X	Y	Z	P	Q	R
B_2H_6	NaI	H_2	NaF	LiF	AlF_3

c)

X	Y	Z	P	Q	R
B_2H_6	BH_3	NaI	$B_3N_3H_6$	Al_2F_6	AlF_3

d)

X	Y	Z	P	Q	R
BH_3	B_2H_6	H_2	$B_3N_3H_6$	LiF	AlF_3

12. Mark the example which is not correct.
a) Non-combustible heavy liquid used as fire extinguisher - CCl_4
b) Blocks used to shield radioactive materials - Lead
c) Element which has property of leaving mark on paper - Graphite
d) gas in solid form used as a refrigerant - Carbon monoxide

13. First ionisation enthalpy of Al is lower than that of Mg. This is because:
a) the size of Al is bigger than Mg
b) ionisation enthalpy decrease in a period from left to right
c) it is easier to remove electron from unpaired $3p^1$ than from paired $3s^2$
d) aluminium is a passive metal while magnesium is active metal.

14. Match the compounds given in column I with the hybridisation and shape given in column II and mark the correct option.

Column-I	Column-II
1. XeF_6	(i) Distorted octahederal
2. XeO_3	(ii) Square planar
3. $XeOF_4$	(iii) Pyramidal
4. XeF_4	(iv) Square pyramidal

a) 1 2 3 4 b) 1 2 3 4 c) 1 2 3 4 d) 1 2 3 4

(a)(i)(iii)(iv)(ii) (b)(i)(ii)(iv)(iii) (c)(iv)(iii)(i)(ii) (d)(iv)(i)(ii)(iii)

15. Which of the following phosphorus is the most reactive?
a) Scarlet phosphorus b) White phosphorus c) Red phosphorus d) Violet phosphorus

16. PCl_3 reacts with water to form.
a) PH_3 b) H_3PO_3, HCI c) $POCl_3$ d) H_3PO_4

17. The correct order of acidity of oxoacids of halogens is
a) $HClO < HClO_2 < HClO_3 < HClO_4$ b) $HClO_4 < HClO_3 < HClO_2 < HClO$
c) $HClO < HClO_4 < HClO_3 < HClO_2$ d) $HClO_4 < HClO_2 < HClO_3 < HClO$

18. Match the column I with column II and mark the appropriate choice.

Column I	Column II
(A) ClF_3	(i) Pentagonal bipyramidal
(B) IF_5	(ii) Square Pyramidal
(C) IF_7	(iii) Bent T-shaped
(D) BrF_3	(iv) Square planar

a) (A) ⟶ (iii); (B) ⟶ (i); (C) ⟶ (iv); (D) ⟶ (ii) b) (A) ⟶ (i); (B) ⟶ (ii); (C) ⟶ (iii); (D) ⟶ (iv)
c) (A) ⟶ (ii); (B) ⟶ (ii); (C) ⟶ (i); (D) ⟶ (iii) d) (A) ⟶ (iii); (B) ⟶ (ii); (C) ⟶ (i); (D) ⟶ (iii)

19. Which of the following statements about H_3BO_3 is not correct?
a) It is a strong tribasic acid b) It is prepared by acidifying an aqueous solution of borax
c) It has a layer structure in which planar BO_3 units are joined by hydrogen bonds
d) It does not act as proton donor but acts as a Lewis acid by accepting hydroxyl ion

20. Assertion: $HClO_4$ is a stronger acid than $HClO_3$.
Reason: Oxidation state of chlorine in $HClO_4$ is +7 and in $HClO_3$ is +5.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b)
If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If both assertion and reason are false

21. The gases respectively absorbed by alkaline pyrogallol and oil of cinnamon are _____ .
a) O_3, CH_4 b) O_2, O_3 c) SO_2, CH_4 d) N_2O, O_3

22. Electropositive character for the elements of group 13 follows the order
a) B > Al > Ga > In > Tl b) B < Al < Ga < In < Tl c) B < Al> Ga < In > Tl
d) B < Al > Ga > In > Tl

23. Catenation i.e., linking of similar atoms depends on size and electronic configuration of atoms. The tendency of catenation in Group 14 elements follows the order
a) C > Si > Ge > Sn b) C >> Si > Ge ≈ Sn c) Si > C> Sn > Ge d) Ge> Sn > Si > C

24. The electronegativity difference between N and F is greater than that between Nand H yet the dipole moment of NH_3(1.5 D) is larger than that of NF_3 (0.2 D). This is because:
a)
in NH_3 the atomic dipole and bond dipole are in the opposite directions whereas in NF_3 these are in the same direction.
b) in NH_3 as well as in NF_3 the atomic dipole and bond dipole are in the same direction.
c)
in NH_3 the atomic dipole and bond dipole are in the same direction where as in NF_3 these are in opposite directions.
d) in NH_3 as well as in NF_3 the atomic dipole and bond dipole are in opposite directions.

25. When three parts of conc. HCl and one part of conc. HNO_3 is mixed, a compound 'X' is formed. The correct option related to 'X' is
a) 'X' is known as aqua-regia b) 'X' is used for dissolving gold
c) 'X' is used for decomposition of salts of weaker acids d) both (a) and (b).

26. Which of the following properties correctly explain SiO_2?

a) Linear, basic b) Tetrahedral, acidic c) Tetrahedral, basic d) Linear, acidic

27. 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
    a) H_2SO_4 reduces HI to I_2 b) HI is of violet colour c) HI gets oxidised to I_2
    d) HI changes to HIO_3.
28. Group 13 elements show:
    a) only +1 oxidation state b) only +3 oxidation state c) +1 and +3 oxidation states
    d) +1, +2 and +3 oxidation states
29. Chemically borax is
    a) sodium metaborate b) sodium orthoborate c) sodium tetraborate decahydrate
    d) sodium hexaborate
30. CO_2 is not a poisonous gas but there is increase in concentration of CO_2 in the atmosphere due to burning of fossil fuels and decomposition of limestone. The increase in concentration of CO_2 may lead to
    a) increase in photosynthesis in plants b) higher concentration of CO_2 in water
    c) increase in greenhouse effect, thus raising the temperature
    d) increase in formation of metal carbonates.
31. Which among the following statements is incorrect?
    a) XeF_4 and SbF_5 combine to form salt. b) He and Ne do not form clathrates.
    c) He has highest boiling point in its group
    d) He diffuses through rubber and polyvinyl chloride.
32. Holme's signal uses chemical compound
    a) calcium carbide b) calcium phosphide c) calcium carbide and calcium phosphide
    d) calcium carbide and aluminium carbide
33. The structure and hybridisation of $Si(CH_3)_4$ is
    a) octahedral, sp^3d b) tetrahedral, sp^3 c) bent, sp d) trigonal, sP^3
34. Compound with the geometry square pyramidal and sp^3d^2 hybridisation is
    a) $XeOF_2$ b) $XeOF_4$ c) XeO_4 d) XeO_2F_2
35. Borax is not used
    a) as a styptic to stop bleeding b) in making enamel and pottery glazes
    c) as a flux in soldering d) in making optical glasses
36. Compound (X) on reduction with LiAlH4 gives a hydride (Y) containing 21.72% hydrogen along with other products. The compound (Y) reacts with air explosively resulting in boron trioxide. Compounds X and Yare respectively
    a) BCl_3,B_2H b) B_2H_6,BCl_3 c) BF_3,Al_2O_6 d) B_2H_6,BF_3
37. Which of the following is not true regarding the nature of halides of boron?
    a) Boron trihalides are covalent
    b) Boron trihalides are planar triangular with sp^2 hybridisation
    c) Boron trihalides act as Lewis acids. d) Boron trihalides cannot be hydrolysed easily

38. A metal M reacts with sodium hydroxide to give a white precipitate X which is soluble in excess of NaOH to give Y. Compound X is soluble in HCl to form a compound Z. Identify M, X, Y and Z.

a)

M	X	Y	Z
Si	SiO_2	Na_2SiO_3	$SiCl_4$

b)

M	X	Y	Z
Al	$Al(OH)_3$	$NaAlO_2$	$AlCl_3$

c)

M	X	Y	Z
Mg	$Mg(OH)_3$	$NaMgO_3$	$MgCl_2$

d)

M	X	Y	Z
Ca	$Ca(OH)_2$	Na_2CO_3	$NaHCO_3$

39. The oxidation state of sulphur in the anions SO^{2-}_3, $S2O^{2-}_4$ and $S2O^{2-}_6$ follows the order
a) $S2O^{2-}_6 < S2O^{2-}_4 < SO^{2-}_3$ b) $S2O^{2-}_4 < SO^{2-}_3 < S2O^{2-}_6$ c) $SO^{2-}_3 < S2O^{2-}_4 < S2O^{2-}_6$
d) $S2O^{2-}_4 < S2O^{2-}_6 < SO^{2-}_3$

40. Group 16 elements have lower value of first ionisation enthalpy as compared to group 15 elements because
a) half filled p-orbitals in group 15 elements are more stable
b) group 16 elements have smaller size than group 15 elements
c) group 16 elements contain double bond while group 15 elements have triple bond
d) group 16 elements have more number of electrons in p-orbitals

41. The basic character of hydrides of the V group elements decreases in the order:
a) $NH_3 > PH_3 > AsH_3 > SbH_3$ b) $SbH_3 > AsH_3 > PH_3 > NH_3$ c) $SbH_3 > PH_3 > AsH_3 > NH_3$
d) $NH_3 > SbH_3 > PH_3 > AsH_3$

42. Match the column I with column II and mark the appropriate choice

Column I		Column II	
(A)	Used as lubricant	(i)	Carbon dioxide
(B)	Oxide with three-dimensional structure	(ii)	Graphite
(C)	Used in solar cells	(iii)	Silica
(D)	Anhydride of carbonic acid	(iv)	Silicon

a) (A) ⟶ (iv), (B) ⟶ (iii), (C) ⟶ (ii), (D) ⟶ (i) b) (A) ⟶ (iv), (B) ⟶ (i), (C) ⟶ (iii), (D) ⟶ (ii)
c) (A) ⟶ (iii), (B) ⟶ (ii), (C) ⟶ (i), (D) ⟶ (iv) d) (A) ⟶ (ii), (B) ⟶ (iii), (C) ⟶ (iv), (D) ⟶ (i)

43. Match the column I with column II and mark the appropriate choice

Column I		Column II	
(A)	Coal gas	(i)	$CO+H_2$
(B)	Synthesis gas	(ii)	CH_4
(C)	Producer gas	(iii)	$H_2 + CH_4 + CO$
(D)	Natural gas	(iv)	$CO+N_2$

a) (A) ⟶ (i), (B) ⟶ (ii), (C) ⟶ (iii), (D) ⟶ (iv) b) (A) ⟶ (iii), (B) ⟶ (i), (C) ⟶ (iv), (D) ⟶ (ii)
c) (A) ⟶ (iv), (B) ⟶ (iii), (C) ⟶ (ii), (D) ⟶ (i) d) (A) ⟶ (i), (B) ⟶ (iii), (C) ⟶ (ii), (D) ⟶ (iv)

44. Bond angle in H_2O (104.5°) is higher than the bond angle of H_2S (92.1°). The difference is due to:

a) O is diatomic and S is tetra-atomic b) difference in electronegativity of S and O
c) difference in oxidation states of S and O
d) difference in shapes of hybrid orbitals of S and O.

45. Among the following oxide the lowest acidic is :
a) As_4O_6 b) A_s6O_{10} c) P_4O_6 d) P_4O_{10}

46. White phosphorous reacts with limited chlorine and the product is hydrolysed in the presence of water. What would be the mass of HCl obtained by the hydrolysis of the product formed by the reaction of 62 g of white phosphorus with chlorine in the presence of water?
a) 200 g b) 400 g c) 219 g d) 100 g

47. The variation of the boiling point of the hydrogen halides is in the order HF > HI > HBr > HCl.
a) There is strong hydrogen bonding between HF molecules.
b) The bond energy of HF molecules is greater than in other hydrogen halides.
c)
The effect of nuclear shielding is much reduced in fluorine which polarizes the HF molecule.
d) The electronegativity of fluorine is much higher than for other elements in the group.

48. Assertion: Fluorine combines with sulphur to form SF_6 but no other halogen forms hexahalide with sulphur.
Reason: The reactivity of halogens increases as the atomic number increases.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b)
If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false d) If both assertion and reason are false

49. Which of the following oxoacid of sulphur has -O-O- linkage?
a) $H_2\ S_2O_7$, pyrosulphuric acid b) H_2SO_3 , sulphurous acid
c) H_2SO_4 , sulphuric acid d) $H_2SO_2O_8$, peroxodisulphuric acid

50. Assertion: Sn in +2 oxidation state is a reducing agent while Pb in +4 state is an oxidising agent.
Reason: Inert pair effect is due to participation of s electrons in bond formation
a) If both assertion and reason are true and reason is the correct explanation of assertion
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false d) If both assertion and reason are false

51. Boron is unable to form BF_6^{3-} ions due to
a) non-availability of d-orbitals b) small size of boron atom c) non-metallic nature
d) less reactivity towards halogens.

52. Assertion: In vapour state sulphur is paramagnetic in nature.
Reason: In vapour state sulphur exists as S_2 molecule.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false. d) If both assertion and reason are false

53. In qualitative analysis when H_2S is passed through an aqueous solution of salt acidified with dil. HCl, a black precipitate is obtained. On boiling the precipitate with dil. HNO_3, it forms a solution of blue colour. Addition of excess of aqueous solution of ammonia to this solution gives

a) deep blue precipitate of $Cu(OH)_2$ b) deep blue solution of $[Cu(NH_3)_4]^{2+}$

c) deep blue solution of $Cu(NO_3)_2$ d) deep blue solution of $Cu(OH)_2 .Cu(NO_3)_2$

54. The most stable form of carbon at high temperature is X. The C - C bond length in diamond is Y while C - C bond length in graphite is Z. What are X, Y and Z respectively?

a) Graphite, 1.42 Å, 1.54 Å b) Coke, 1.54 Å, 1.84 Å c) Diamond, 1.54 Å, 1.42 Å

d) Fullerene, 1.54 Å, 1.54 Å

55. Which of the following has the highest dipole moment?

a) SbH_3 b) AsH_3 c) NH_3 d) PH_3

56. Each or the following is true for white and red phosphorous except that they:

a) consist of the same kind of atoms b) can be converted into one another

c) are both soluble in CS_2 d) can be oxidized by heating in air

57. In which pair of ions both the species contain S - S bond?

a) $S_4O_6^{2-}, S_2O_3^{2-}$ b) $S_2O_7^{2-}, S_2O_8^{2-}$ c) $S_4O_6^{2-}, S_2O_7^{2-}$ d) $S_4O_7^{2-}, S_2O_3^{2-}$

58. Complete the given equations:

(i) $Cu + 8HNO_3 \rightarrow 3Cu(NO_3)_2$ + ...w.... + $4H_2O$

(ii) 4Zn +lOH$NO_3 \rightarrow$ $4Zn(NO_3)_2 + 5H_2O$ + ...X.

(iii) I_2+ $10HNO_3 \rightarrow$ ...Y ....+ $10NO_2 + 4H_2O$

a)

W	X	Y
$2NO_2$	NO	$5HIO_3$

b)

W	X	Y
2NO	N_2O	$2HIO_3$

c)

W	X	Y
N_2	NO_2	HI

d)

W	X	Y
N_2O	NO_2	3HI

59. Match the compounds given in Column I with the hybridization and shape given in column II and mark the correct option.

Column I	Column II
(A) XeF_6	(i) Distorted ocachdral
(B) XeO_3	(ii) Square planar
(C) $XeOF_4$	(iii) Pyramidal
(D) XeF_4	(iv)Square pyramidal

Code: A B C D

a) (iv) (iii) (i) (ii) b) (iv) (i) (ii) (iii) c) (i) (iii) (iv) (ii) d) (i) (ii) (iv) (iii)

60. If chlorine is passed through a solution of hydrogen sulphide in water, the solution turns turbid due to the formation of

a) free chlorine b) free sulphur c) nascent oxygen d) nascent hydrogen.

61. Strong reducing behaviour of H_3PO_2 is due to _____ .

a) Presence of one -OH group and two P-H bonds

b) High electron gain enthalpy of phosphorus c) High oxidation state of phosphorus

d) Presence of two -OH groups and one P-H bond.

62. Match the column I with column II and mark the appropriate choice.

Column I	Column II
(A) XeF_4	(i) sp^3d^2
(B) XeF_6	(ii) sp^3d^3
(C) $XeOF_2$	(iii) sp^3d
(D) XeO_3	(iv) sp^3

a) (A) ⟶ (i); (B) ⟶ (ii); (C) ⟶ (iii); (D) ⟶ (iv) b) (A) ⟶ (iv); (B) ⟶ (iii); (C) ⟶ (ii); (D) ⟶ (i)
c) (A) ⟶ (iii); (B) ⟶ (iv); (C) ⟶ (i); (D) ⟶ (ii) d) (A) ⟶ (ii); (B) ⟶ (iii); (C) ⟶ (iv); (D) ⟶ (i)

63. Group 13 elements show +1 and +3 oxidation states. Relative stability of +3 oxidation state maybe given as:
a) $Tl^{3+} > In^{3+} > Ga^{3+} > Al^{3+} > B^{3+}$ b) $B^{3+} > Al^{3}+ > Ga^{3+} > In^{3+} > Tl^{3+}$
c) $Al^{3+} > Ga^{3+} > Tl^{3+} > In^{3+} > B^{3+}$ d) $Al^{3+} > B^{3+} > Ga^{3+} > Tl^{3+} > In^{3+}$

64. Which of the following statements is not valid for oxoacids of phosphorus?
a) Orthophosphoric acid is used in the manufacture of triple superphosphate.
b) Hypophosphorous acid is a diprotic acid.
c) Alloxoacids contain tetrahedral four coordinated phosphorus
d) All oxoacids contain at least one P=O unit and one P-OH group.

65. Which of the following oxides is anhydride of nitrous acid?
a) N_2O_3 b) NO_2 c) NO d) N_2O_4

66. On reaction with Cl_2, phosphorus forms two types of halides 'A' and 'B'. Halide 'A' is yellowish-white powder but halide 'B' is colourless oily liquid. What would be the hydrolysis products of if and 'B' respectively?
a) H_3PO_4, H_3PO_3 b) $HOPO_3$, H_2PO_2 c) H_3PO_3, H_3PO_4 d) HPO_3, H_3PO_3

67. Which of the following is not correct about xenon hexafluoride?
a) It has oxidation state of +6. b) The hybridisation involved in XeF_6 is sp^3d^3
c) The shape of XeF_6 is distorted octahedral and can be represented as
d) On hydrolysis it gives Xe, HF and O_2

68. Which of the following compounds will not give ammonia on heating?
a) $(NH_4)_2SO_4$ b) NH_2CONH_2 c) NH_4NO_2 d) NH_4Cl

69. A gas (X) is obtained when copper reacts with dilute HNO_3. The gas thus formed reacts with oxygen to give brown fumes of (Y). (Y) when dissolved in water gives an important acid (Z) and the gas (X). X, Y and Z respectively are
a) NO; NO_2; HNO_3 b) $N0_2$; NO; HNO_3 c) N_2O; NO; HNO_2 d) NO; N_2O; HNO_3

70. The reason behind the lower atomic radius of Ga as compared to Al is
a) increased ionisation enthalpy of Ga as compared to Al b) anomalous behaviour of Ga
c) poor screening effect of d-electrons for the outer electrons from increased nuclear charge
d) increased force of attraction of increased nuclear charge on electrons

71. Which of the following compound does not exist?
a) NCl_5 b) AsF_5 c) $SbCl_5$ d) PF_5

72. Which of the following will be formed, if we heat an aqueous solution of $AlCl_3$ to dryness?
a) Solid $AlCl_3$ b) Dimer Al_2Cl_6 c) $Al(OH)_3$ d) Al_2O_3

73. Which of the following is not a use of graphite?

a) For electrodes in batteries.

b) Crucibles made from graphite are used for its inertness to dilute acids and alkalies

c) For adsorbing poisonous gases. d) Lubricant at high temperature.

74. Match the interhalogen compounds of column-I with the geometry in column II and assign the correct code.

Column-I	**Column-II**
1. XX'	(i) T-shape
2. XX'_3	(ii) Pentagonal bipyramidal
3. XX'_5	(iii) Linear
4. XX'_7	(iv) Square-pyramidal
	(iv) Tetrahedral

a) b) c) d)

1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4

(a)(iii)(i)(iv)(ii) (b)(v)(iv)(iii)(ii) (c)(iv)(iii)(ii)(i) (d)(iii)(iv)(i)(ii)

75. Which of the following pairs of compounds is isoelectronic and isostructural?

a) $BeCl_2$, XeF_2 b) TeI_2, XeF_2 c) IBr_2^-, XeF_2 d) IF_3, XeF_2

76. Which one has the lowest boiling point?

a) NH_3 b) PH_3 c) AsH_3 d) SbH_3

77. The hybridisation state of the central atom and shape of the molecules is given below. Mark the incorrect combination.

a) SO_3 - sp^2 hybridisation, planar triangular b) SO_2 - sp^2 hybridisation, V-shaped

c) H_2SO_4 - sp^2 hybridisation, V-shaped d) O_3 - sp^2 hybridisation, angular

78. Which one is not a property of ozone?

a) it acts as an oxidising agent in dry state. b) oxidation of KI into KIO_2.

c) PbS is oxidised to $PbSO_4$ d) Hg is oxidised to Hg_2O

79. Maximum covalency of nitrogen is _____

a) 3 b) 5 c) 4 d) 6

80. Identify the incorrect statement, regarding the molecule XeO_4:

a) XeO_4 molecule is square planar b) there are four $p\pi$ - $d\pi$ bonds

c) There are four Sp^3 -p, σ bonds. d) XeO_4 molecule is tetrahedral.

81. Which of the following statements is false?

a) Radon is oblained from the decay of radium b) Helium is inert gas

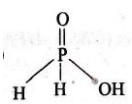
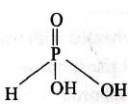
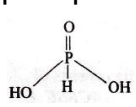
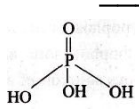
c) Xenon is the most reactive among the rare gases

d) The most abundant rare gas found in the atmosphere is helium

82. Oganesson has been synthetically produced by collision of

a) Ra and Ca b) Cf and Ca c) Cf and Cu d) Ra and He

83. The structural formula of hypophosphorous acid is _____ .

a)  b)  c)  d) 

84. Fill in the blanks:

(i) $Ca_3P_2 + 6HCl \rightarrow 3CaCl_2 + ...p .....$

(ii) $P_4 + 3NaOH + 3H_2O \rightarrow ....q.... + 3NaH_2PO_2$

(iii) $PH_4I + KOH \rightarrow KI + H_2O + ...r... .$

p, q and r respectively are

a) (a) PH_3, H_3PO_3, PI_3 b) (b) PH_3, PH_3, PH_3 c) (c) PCl_3, H_3PO_4, PH_3

d) (d) PCl, PH_3, P_4O_6

85. Basicity of orthophosphoric acid is _____ .

a) 2 b) 3 c) 4 d) 5

86. Ammonia is used in detection of Cu^{2+} ion because

a) aqueous solution of NH_3 reacts with Cu^{2+} ion to form deep blue coloured complex

b) NH_3 reacts with Cu^{2+} ion to give blue precipitate of CuO

c) aqueous solution of NH_3 reacts with Cu^{2+} ion to form white coloured complex

d) NH_3 reacts with Cu^{2+} ion to give green precipitate

87. Assertion: Compounds formed between non-metals are largely covalent in character.

Reason: Non-metals readily form anions

a) If both assertion and reason are true and reason is the correct explanation of assertion

b) If both assertion and reason are true but reason is not the correct explanation of assertion

c) If assertion is true but reason is false d) If both assertion and reason are false

88. $Na_2B_4O_7 \cdot 10H_2O \xrightarrow{\triangle} X \xrightarrow{\triangle} Y + Z$

X, Y and Z in the reaction are

a) X = $Na_2B_4O_7$, Y = $NaBO_2$, Z = B_2O_3 b) X = $Na_2B_4O_7$,Y = B_2O_3, Z = H_3BO_3

c) X = B_2O_3, Y = $NaBO_2$, Z = $B(OH)_3$ d) X = $NaBO_2$, Y = B_2O_3, Z = $B(OH)_3$

89. Nitrogen can form only one chloride with chlorine which is NCl_3 whereas P can form PCl_3 and PCl_5. This is

a) due to absence of d-orbitals in nitrogen b) due to difference in size of N and P

c) due to higher reactivity of P towards Cl than N

d) due to presence of multiple bonding in nitrogen.

90. The structure of white phosphorus is

a) The structure of white phosphorus is b) pyramidal c) tetrahedral d) trigonal planar.

91. Oleum is _____ .

a) Castor oil b) Oil of vitriol c) Fuming H_2SO_4 d) None of these

92. Consider the following oxides:

1. OF_2
2. Cl_2O
3. Br_2O

The correct sequence of X - O - X bond angle is

a) 1> 2 > 3 b) 3> 2 >1 c) 2>1>3 d) 1 > 3 >2

93. Which of the following ions is the most stable?

a) Sn^{2+} b) Ge^{2+} c) Si^{2+} d) Pb^{2+}

94. Which of the following oxides of nitrogen is paramagnetic?

a) NO_2 b) N_2O_3 c) N_2O d) N_2O_5

95. The formation of the oxide ion, $O^{2-}_{(g)}$ from oxygen atom requires first an exothermic and then an endothermic step as shown below:
$O_{(g)} + e^- \longrightarrow O^-_{(g)}$ Δ_f, H^o = -141 kJ mol^{-1}
$O^-_{(g)} + e^- \longrightarrow O^{2-}_{(g)}$; Δ_f, H^o = + 780 kJ mol^{-1}
Thus, process of formation of O^{2-} in gas phase is unfavourable even though O^{2-} is isoelectronic with neon. It is due to the fact that:
a) O ion has comparatively, smaller size than oxygen atom
b) Oxygen is more electronegative
c) addition of electron in oxygen results in larger size of the ion.
d) electron repulsion outweighs the stability gained by achieving noble gas configuration

96. Bleaching powder is obtained by the action of chlorine gas and:
a) dilute solution of $Ca(OH)_2$ b) Concentrated solution of $Ca(OH)_2$ c) dry CaO
d) dry slaked lime.

97. Which is the strongest acid in the following?
a) $HClO_4$ b) H_2SO_3 c) H_2SO_4 d) $HClO_3$

98. Which of the following acids cannot be stored in glass?
a) HF b) HCl c) H_2SO_4 d) HI

99. Which one of the following statements about the zeolite is false?
a) They are used as cation exchangers
b) Some of the SiO_4 units are replaced by AlO_4^{5-} and AlO_6^{9-} ions in zeolite
c) They have open structure which enables them to take up small molecules.
d) Zeolites are aluminosilicates having three dimensional structures.

100. In which of the following sulphur is present in +5 oxidation state?
a) Dithionic acid b) Sulphurous acid c) Sulphuric acid d) Disulphuric acid

101. Which is the correct arrangement of the compounds based on their bond strength?
a) HF> HCl > HBr > HI b) HI > HBr > HCl > HF c) HCl> HF > HBr > HI
d) HF > HBr > HCl > HI

102. Number of electrons shared in the formation of nitrogen molecule is _____ .
a) 6 b) 10 c) 2 d) 8

103. In the preparation of compounds of Xe, Bartlett had taken O_2^+ PtF_6^- as a base compound. This is because
a) both O_2 and Xe have same size b) both O_2 and Xe have same electron gain enthalpy
c) both O_2 and Xe have almost same ionisation enthalpy d) both Xe and O_2 are gases

104. The property of halogens which is not correctly matched is
a) F> Cl> Br > I (Ionisation energy) b) F> Cl > Br > I (Electronegativity)
c) I> Br > Cl > F (Density) d) F > Cl > Br > I (Electron affinity)

105. Nitrogen forms N_2 , but phosphorus is converted into P_4 from P, the reason is _____ .

a) Triple bond is present between phosphorus atom b) $P_\pi - P_\pi$ bonding is strong
c) $P_\pi - P_\pi$ bonding is weak d) Multiple bond is formed easily

106. Bond dissociation enthalpy of E-H (E= element) bonds is given below. Which of the compounds will act as strongest reducing agent?

Compound	**NH_3**	**PH_3**	**AsH_3**	**SbH_3**
Δ_{diss}(E-H)/kJ mol^{-1}	389	322	297	255

a) NH_3 b) PH_3 c) AsH_3 d) SbH_3

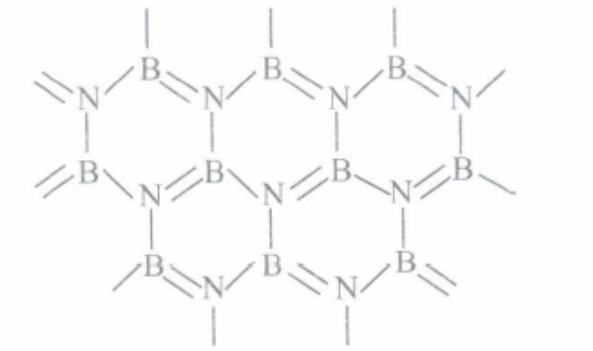
107. Which of the following group-14 elements is a radioactive element?
a) Flerovium b) Germanium c) Nihonium d) Gallium

108. Which is the best description of the behaviour of bromine in the reaction given below?
$H_2O + Br_2 \rightarrow HOBr + HBr$
a) Proton acceptor only b) Both oxidized and reduced c) Oxidized only
d) Reduced only

109. Which oxide of nitrogen is obtained on heating ammonium nitrate at 250°C?
a) Nitric oxide b) Nitrous oxide c) Nitrogen dioxide d) Dinitrogen tetraoxide

110. The correct order of increasing electron affinity of halogens is
a) I < Br < Cl b) Br < I < Cl c) Cl < Br < I d) I< Cl < Br

111. Boron nitride can be represented by the given structure.



The structure of BN is similar to
a) graphite b) diamond c) benzene d) pyridine.

112. Assertion: Acidic character of group 16 hydrides increases from H_2O to H_2Te.
Reason: Thermal stablility of hydrides decreases down the group.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false. d) If both assertion and reason are false.

113. The Stability of 1+ oxidation state among Al, Ga. In and Tl increase in the sequence:
a) Ga b) Al c) T1 d) In

114. The decreasing order of power of boron halides to act as Lewis acids is
a) BF_3> BCl_3> BBr_3 b) BBr_3> BCl_3 > BF_3 c) BCl_3 > BF_3> BBr_3 d) BCl_3 > BBr_3> BF_3

115. A black powder when heated with conc. HCl gives a greenish yellow gas. The gas acts as an oxidising and a bleaching agent. When it is passed over slaked lime, a white powder is formed which is a ready source of gas. The black powder and white powder respectively are
a) $KClO_3$ and $NaClO_3$ b) MnO_2 and $Ca(OCl)_2$ c) MnO_2 and $KClO_3$ d) $MnCl_4$ and $COCl_2$

116. Which of the following oxides is acidic in nature?

a) B_2O_3 b) Al_2O_3 c) Ga_2O_3 d) In_2O_3

117. Which of the following statements is not correct about XeF_2?

a) It can be obtained by direct reaction between F_2 and Xe at high pressure.

b) XeF_2 undergoes alkaline hydrolysis to give O_2 andXe.

c) XeF_2 is a powerful reducing agent.

d) XeF_2 contains two bond pairs and three lone pairs.

118. Match the column I with column II and mark the appropriate choice.

Column I		**Column II**	
(A)	Thiosulphuric acid	(i)	H_2SO_5
(B)	Caro's acid	(ii)	$H_2S_2O_6$
(C)	Marshall's acid	(iii)	$H_2S_2O_3$
(D)	Dithionic acid	(iv)	$H_2S_2O_5$

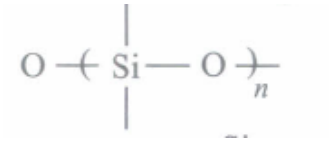
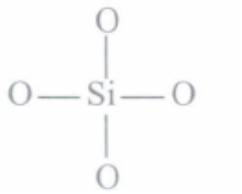
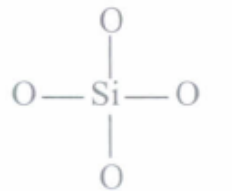
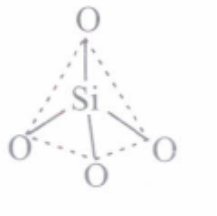
a) (A) $\rightarrow$ (i); (B) $\rightarrow$ (ii); (C) $\rightarrow$ (iii); (D) $\rightarrow$ (iv)

b) (A) $\rightarrow$ (iv); (B) $\rightarrow$ (iii); (C) $\rightarrow$ (ii); (D) $\rightarrow$ (i)

c) (A) $\rightarrow$ (iii); (B) $\rightarrow$ (i); (C) $\rightarrow$ (iv); (D) $\rightarrow$ (ii)

d) (A) $\rightarrow$ (ii); (B) $\rightarrow$ (iii); (C) $\rightarrow$ (i); (D) $\rightarrow$ (iv)

119. Which of the following bonds is shown in silicones?

a)  b)  c)  d) 

120. Among the following which is the strongest oxidising agent?

a) Br_2 b) I_2 c) Cl_2 d) F_2

121. Assertion: Atomic radius of Ga is larger than that of aluminium.

Reason: Atomic radius always increases down the group.

a) If both assertion and reason are true and reason is the correct explanation of assertion

b) If both assertion and reason are true but reason is not the correct explanation of assertion

c) If assertion is true but reason is false d) If both assertion and reason are false

122. H_3PO_2 is the molecular formula of an acid of phosphorous. Its name and basicity respectively are _____ .

a) Phosphorous acid and 2 b) Hypophosphorous acid and 2

c) Hypophosphorous acid and one d) Hypophosphoric acid and two

123. $SiCl_4 \xrightarrow[H_2O]{} X \xrightarrow[Heat]{} Y \xrightarrow[NaOH]{} Z$

X, Y and Z in the above reaction are

a)

X	Y	Z
$Si0_2$	Si	NaSi

b)

X	Y	Z
$Si(OH)_4$	SiO_2	Na_2SiO_3

c)

X	Y	Z
$Si(OH)_4$	Si	SiO_2

d)

X	Y	Z
SiO_2	$SiCl_4$	Na_2SioO_3

124. The tendency of group 14 elements to show +2 oxidation state increases in the order of

a) C < Si < Sn < Pb < Ge b) C < Si < Ge < Sn < Pb c) Ge < Sn < Pb < C < Si

d) Pb < Sn < Ge < C < Si

125. Phosphine is prepared by the action of

a) P and H_2SO_4 b) P and NaOH c) P and H_2S d) P and HNO_3

126. Fill in the blanks.

The high reactivity of fluorine is due to its _____ dissociation energy. Its shows only _____oxidation state. It has electron affinity than chlorine. Among all hydrogen halides boiling point is highest for _____.

a) low, -I, lower, HF b) high, +1, higher, HF c) low, +1, lower, HCl d) high, -I, higher, HF

127. Which of the following is an isoelectronic pair?

a) ICl_2, ClO_2 b) BrO_2^- , BrF_2^+ c) ClO_2 , BrF d) CN^-, O_3

128. Assertion: The heavier p-block elements do not form strong π bonds.

Reason : The heavier elements of p-block form dπ - pπ or dπ - dπ bonds.

a) If both assertion and reason are true and reason is the correct explanation of assertion

b) If both assertion and reason are true but reason is not the correct explanation of assertion

c) If assertion is true but reason is false d) If both assertion and reason are false

129. Which of the following is the most basic oxide?

a) Sb_2O_3 b) Bi_2O_3 c) SeO_2 d) Al_2O_3

130. In the case of alkali metals, the covalent character decreases in the order:

a) $MCl > MI > MBr > MF$ b) $MF > MCl > MBr > MI$

c) $MF > MCl > MI > MBr$ d) $MI > MBr > MCl > MF$

131. Which of the following metals does not show inert pair effect?

a) Thallium b) Gallium c) Indium d) Aluminium

132. Dry ice is

a) solid NH_3 b) solid SO_2 c) solid CO_2 d) solid N_2

133. Which of the following statements is not correct?

a) Oxygen molecule is paramagnetic with two unpaired electrons.

b) Sulphur shows maximum covalency of four.

c) Ozone can be easily detected by mercury.

d) Both sulphurous and sulphuric acid are dibasic in nature.

134. Which one of the following oxides is expected to exhibit paramagnetic behaviour?

a) CO_2 b) SiO_2 c) SO_2 d) ClO_2

135. Which one of the following molecules contains no π bond?

a) SO_2 b) NO_2 c) CO_2 d) H_2O

136. Which property of CO_2 makes it of biological and geo-chemical importance?

a) Its acidic nature. b) Its colourless and odourless nature c) Its low solubility in water.

d) Its high compressibility.

137. Ionisation enthalpy (Δ_iH_1 kJ mol^{-1}) for the elements of Group 13 follows the order

a) B > Al > Ga > In > T b) B < Al < Ga < In < Tl c) B < Al > Ga < In > Tl
d) B > Al < Ga > In < Tl

138. Why all P - F bonds in PFs are not equivalent?

a)

PF_5 has sp^3d hybridisation, out of five P - F bonds three are equatorial which have different lengths.

b)

PF_5 has Sp^3 hybridisation, out of five P - F bonds two are equatorial which have different lengths.

c)

Out of five P - F bonds two are axial and three equatorial. All five bonds have different bond lengths.

d)

PFs is made up of two types of bonds namely covalent and coordinate, hence are not equivalent.

139. Correct order of 1^{st} ionization potential among following elements Be, B, C, N, O is :
a) B < Be < C < O < N b) B < Be < C < N < O c) Be < B < C < N < O
d) Be < B < C < O < N

140. Assertion: CO_2 is a gas at room temperature while SiO_2 is a crystalline solid.
Reason: SiO_2 is a network of silicon and oxygen atoms joined by multiple bonds.
a) If both assertion and reason are true and reason is the correct explanation of assertion
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false d) If both assertion and reason are false

141. The element of group 17 whose half life is in milliseconds only is
a) Ts b) Te c) At d) Og

142. Which of the following factors would favour the formation of ammonia?
a) High pressure b) Low temperature c) High volume d) Low pressure

143. In the preparation of HNO_3, we get NO gas by catalytic oxidation of ammonia. The moles of NO produced by the oxidation of two moles of NH_3 will be _____
a) 2 b) 3 c) 4 d) 6

144. The element which exists in liquid state for a wide range of temperature and can be used for measuring high temperature is
a) B b) Al c) Ga d) In

145. Repeated use of which one of the following fertilisers would increase the acidity of the soil?
a) Urea b) Superphosphate of lime c) Ammonium sulphate d) Potassium nitrate

146. Anhydrous $AlCl_3$ fumes in air. What is the reason for it?
a) It is hygroscopic in nature b) It gives out chlorine when exposed to air
c) It is hydrolysed in moist air giving out fumes of HCl
d) It loses water when exposed to moist air.

147. Mark the correct statements about halogens.

a) Electron affinity of halogens is in the order F> Cl > Br > I.

b) HF is the strongest hydrohalic acid. c) F_2 has lower bond dissociation energy than Cl_2.

d) All halogens show variable oxidation states.

148. The shapes and hybridisation of BF_3 and BH_4^- respectively are
a) BF_3 - Trigonal, sp^2 hybridisation ; BH_4^- -Square planar, Sp^3 hybridisation
b) BF_3 - Triangular, Sp^3 hybridisation ; BH_4^- - Hexagonal, sp^3 d hybridisation
c) BF_3 - Trigonal, sp^2 hybridisation ; BH_4^- - Tetrahedral, Sp^3 hybridisation
d) BF_3- Tetrahedral, Sp^3 hybridisation ; BH_4^- - Tetrahedral, sp^3 hybridisation

149. Assertion: Fullerenes are the only pure form of carbon.
Reason: It contains twenty, five-membered rings and twelve, six-membered rings
a) If both assertion and reason are true and reason is the correct explanation of assertion

b) If both assertion and reason are true but reason is not the correct explanation of assertion

c) If assertion is true but reason is false d) If both assertion and reason are false

150. $HgCl_2$ and I_2 both when dissolved in water containing I^- ions, the pair of species formed is:
a) HgI_2, I_3^- b) $Hg1_2$, I^- c) HgI_4^{2-}, I_3^- d) Hg_21_2, I^-

151. Sugarcane on reaction with nitric acid gives:
a) CO_2 and SO_2 b) $(COOH)_2$ c) 2HCOOH (two moles) d) no reaction

152. In the manufacture of bromine from sea water, the mother liquor containing bromides is treated with:
a) carbon dioxide b) chlorine c) iodine d) sulphur dioxide

153. Which of the following structure is similar to graphite?
a) B b) B_4C c) B_2H_6 d) BN

154. Which of the following acids forms three series of salts?
a) H_3PO_2 b) H_3BO_3 c) H_3PO_4 d) H_3PO_3

155. Which among the following is paramagnetic?
a) Cl_2O b) ClO_2 c) Cl_2O_7 d) Cl_2O_6

156. The acid which has a peroxy linkage is _____ .
a) Sulphurous acid b) Pyrosulphuric acid c) Dithionic acid d) Caro's acid

157. Nitrogen is relatively inactive element because:
a) its atom has a stable electronic configuration b) it has low atomic radius
c) its electronegativity is fairly high d) dissociation energy of its molecule is fairly high.

158. Lassaigne's test is used to detect.
a) Nitrogen b) Sulphur c) Chlorine d) All of the above

159. Sulphur trioxide is not directly dissolved in water to form sulphuric acid because
a) SO_3 does not react with water to form acid

b) SO_3 gets oxidised to H_2SO_3 when dissolved in water

c) it results in the formation of dense fog of sulphuric acid which is difficult to condense

d) sulphur trioxide is insoluble in water due to its covalent nature.

160. Which of the following is not a use of noble gases?

a) Argon is widely used for filling incandescent electric bulbs.

b) Neon is used in safety devices for protecting electrical instruments.

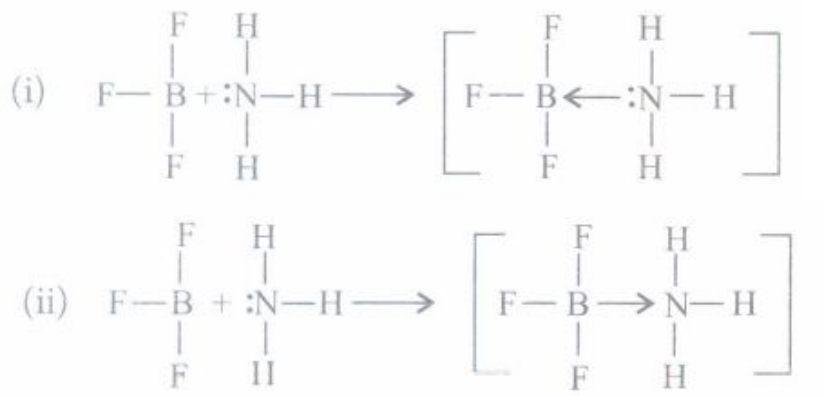
c) Radon is used in radiotherapy of cancer.

d) Helium is filled in tubes of cycles and scooters tyres.

161. Nitrogen is used to fill electric bulbs because

a) it is lighter than air b) it makes the bulb to glow c) it does not support combustion d) it is non-toxic.

162. Which of the following is a correct representation of the reaction when BF_3 reacts with ammonia?



a) (i) is incorrect and (ii) is correct b) (i) is correct and (ii) is incorrect

c) Both (i) and (ii) are correct d) Both (i) and (ii) are incorrect

163. Glass reacts with HF to produce

a) SiF_4 b) H_2SiF_6 c) H_2SiO_3 d) Na_3AlF_6

164. Oxyacids of phosphorous and the starting materials for their preparation are given below.

Oxyacid	**Materials for preparation**
(A) H_3PO_2	(i) Red P+alkali
(B) H_3PO_3	(ii) $P_4O_{10}+H_2O$
(C) H_3PO_4	(iii) $P_2O_3+H_2O$
(D) $H_4P_2O_6$	(iv) White P+alkali

Choose the correct answer from the codes given below:

a) (A)-(iv); (B)-(iii); (C)-(ii); (D)-(i) b) (A)-(i); (B)-(iii); (C)-(ii); (D)-(iv)

c) (A)-(iv); (B)-(iii); (C)-(i); (D)-(ii) d) (A)-(ii); (B)-(iii); (C)-(i); (D)-(iv)

165. In the structure of diborane

a)

all hydrogen atoms lie in one plane and boron atoms lie in a plane perpendicular to this plane

b)

2 boron atoms and 4 terminal hydrogen atoms lie in the same plane and 2 bridging hydrogen atoms lie in the perpendicular plane

c)

4 bridging hydrogen atoms and boron atoms lie in one plane and two terminal hydrogen atoms lie in a plane perpendicular to this plane

d) all the atoms are in the same plane

166. Which would quickly absorb oxygen?
a) Alkaline solution of pyrogallol b) Cone. H_2SO_4 c) Lime water
d) Alkaline solution of $CuSO_4$

167. Which of the following elements can be involved in pπ-dπ bonding?
a) Carbon b) Nitrogen c) Phosphorus d) Boron

168. Which of the following statements in not valid for oxoacids of phosphorus?
a) Orthophosphoric acid is used in the manufacture of triple superphosphate.
b) Hwophosphorous acid is a diprotic acid.
c) All oxoacids contain tetrahedral four coordinated phosphorus
d) All oxoacids contain atleast one P = O and one P - OH group.

169. The correct order of increasing bond angles in the following species are:
a) $Cl_2O < ClO_2 < ClO_2^-$ b) $ClO_2 < Cl_2O < ClO_2^-$
c) $Cl_2O < ClO_2^- < ClO_2$ d) $ClO_2^- < Cl_2O < ClO_2$

170. What is the correct relationship between the pH of isomolar solutions of sodium oxide, Na_2O (pH_1), sodium sulphide, Na_2S (pH_2), sodium selenide, Na_2Se (pH_3) and sodium telluride Na_2Te(pH_4)?
a) $pH_1 > pH_2 > pH_3 > pH_4$ b) $pH_1 > pH_2 \approx pH_3 > pH_4$ c) pH_1 2 < $pH_3 < pH_4$
d) $pH_1 < pH_2 < pH_3 \approx pH_4$

171. Which of the following does not show electrical conduction?
a) Potassium b) GraPhite c) Diamond d) Sodium

172. The comparatively high boiling point of hydrogen fluoride is due to
a) high reactivity of fluorine b) small size of hydrogen atom
c) formation of hydrogen bonds d) small size of fluorine

173. Which of the following elements has maximum electron affinity?
a) CL b) Br c) I d) F

174. Which of the following has the greatest electron affinity
a) I b) Br c) F d) Cl

175. In which of the following the inert pair effect is most prominent?
a) C b) Ge c) Si d) Pb

176. An inorganic compound 'A' shows the following reactions:
(i) It is white solid, exists as dimer and fumes in wet air
(ii) It sublimes at 180°C and forms monomer if heated to 400 °C.
(iii) Its aqueous solution turns blue litmus to red and gives a white precipitate with $AgNO_3$ solution, which is soluble in NH_4OH.
(iv). Addition of NH_4OH and NaOH separately to the solution of 'A' gives a gelatinous precipitate which in however soluble in excess of NaOH.
a) $Al(OH)_3$ b) Al_6Cl_6 c) Al_2O_3 d) $Al_2(SO_4)_3$

177. A type of zeolite used to convert alcohols directly into gasoline is
a) zeolite A b) zeolite L c) zeolite Beta d) ZSM-5

178. Which of the following statements is not correct for SO_2 gas

a) It acts as bleaching agent in moist conditions.

b) Its dilute solution is used as disinfectant. c) Its molecules have linear geometry.

d) Acidified $KMnO_4$ is decolourised when SO_2 is passed through it.

179. Match the column I with column II and mark the appropriate choice.

Column I	Column II
(A) $(CN)_2$	(i) Hydrogen bonding
(B) IF_7	(ii) Deacon's process
(C) Cl_2	(iii) Pseudohalogen
(D) HF	(iv) sp^3d^3 hybridisation

a) (A) ⟶ (iv); (B) ⟶ (i); (C) ⟶ (iii); (D) ⟶ (ii) b) (A) ⟶ (ii); (B) ⟶ (iii); (C) ⟶ (iv); (D) ⟶ (i)
c) (A) ⟶ (iii); (B) ⟶ (iv); (C) ⟶ (ii); (D) ⟶ (i) d) (A) ⟶ (i); (B) ⟶ (ii); (C) ⟶ (iv); (D) ⟶ (iii)

180. Lassaigne's test for the detection of nitrogen fails in _____ .

a) $NH_2CONHNH_2 \cdot HCl$ b) $NH_2NH_2 \cdot HCl$ c) NH_2CONH
d) $C_6H_5NHNH_3 \cdot HCl$

181. PH_4I + NaOH forms:

a) PH_3 b) NH_3 c) P_4O_6 d) P_4O_{10}

182. The oxyacid of sulphur that contains a lone pair of electrons on sulphur is

a) sulphurous acid b) sulphuric acid c) peroxodisulphuric acid d) pyrosulphuric acid.

183. When orthophosphoric acid is heated to 600°C the product formed is _____ .

a) PH_3 b) P_2O_5 c) H_3PO_3 d) HPO_3

184. Which is the correct statement for the given acids?

a) Phosphinic acid is a diprotic acid while phosphonic acid is a monoprotic acid
b) Phosphinic acid is a monoprotic acid while phosphonic acid is a disprotic acid
c) Both are triprotic acids d) Both are diprotic acids

185. Pure nitrogen is prepared in the laboratory by heating a mixture of _____ .

a) $NH_4OH + NaCl$ b) $NH_4NO_3 + NaCl$ c) $NH_4Cl + NaOH$
d) $NH_4CI + NaNO_2$

186. In the reaction

$2X + B_2H_6 \longrightarrow [BH_2(X_2)]^+[BH_4]^-$

'X cannot be

a) NH_3 b) CH_3NH c) $(CH)_3)_2NH$ d) $(CH_3)_3N$

187. Which one of the following orders is correct for the bond dissociation enthalpy of halogen molecules?

a) $Br_2 > I_2 > F_2 > Cl_2$ b) $F_2 > Cl_2 > Br_2 > I_2$ c) $I_2 > Br_2 > Cl_2 > F_2$ d) $Cl_2 > Br_2 > F_2 > I_2$

188. Which of the following is a nitric and anhydride?

a) NO b) NO_2 c) N_2O_5 d) N_2O_5

189. Which of the following compounds is formed in borax bead test?

a) Metaborate b) Tetraborate c) Triborate d) Orthoborate

190. What happens when diborane reacts with Lewis bases?

a) It forms boron trihydride (BH_3) due to cleavage

b) It undergoes cleavage to give borane adduct BH_3L (where, L = Lewis base).

c) It oxidises to give B_2O_3. d) It does not react with Lewis bases.

191. Which of the following oxides is most acidic?
a) As_2O_5 b) P_2O_5 c) N_2O_5 d) Sb_2O_5

192. Anhydrous $AlCl_3$ is prepared by
a) reaction of HCl and Al metal b) reaction of dry HCl gas and heated Al metal
c) passing Cone HNO_3 gas over heated Al metal d) reaction of Al_2O_3 with dil. HCl.

193. Which of the following is not true about structure of carbon dioxide?
a) In CO_2, carbon is sp - hybridised.
b) C forms two sigma bonds one with each oxygen atom and two pπ - pπ bonds.
c) CO_2 is a linear covalent compound. d) It is a polar molecule.

194. Glass and cement are two important examples of
a) man-made silicates b) silicones c) zeolites d) organic polymers

195. Which of the following compound has a 3-centre bond?
a) Diborane b) CO_2 c) Boron tntluoride d) Ammonia

196. Alum is not used
a) in the purification of water b) as an insecticide c) as a mordant in dyeing
d) in tanning of leather.

197. In which of the following molecules are all the bond not equal?
a) NF_3 b) CF_3 c) BF_3 d) AlF_3

198. Buckminsterfullerene is
a) graphite b) diamond c) C-60 d) quartz

199. Which of the following is a Lewis acid?
a) $AlCl_3$ b) $MgCl_2$ c) $CaCl_2$ d) $BaCl_2$

200. The oxidation state of nitrogen is highest in:
a) N_3H b) NH_3 c) NH_2OH d) N_2H_4

201. About 20km above the earth, there is an ozone layer. Which one of the following statements about ozone and ozone layer is true?
a) Ozone is a triatomic linear molecule b) It is harmful as it stops useful radiation
c) It is beneficial to us as it stops UV-radiation
d) Conversion of O_3 to O_2 is an endothermic reaction

202. Interhalogen compounds are more reactive than the individual halogens because
a) they are prepared by direct combination of halogens
b) X-X' bond is weaker than X-X or X' -X' bonds
c) they are thermally more stable than halogens
d) there is a large difference in their electronegativity

203. Which of the following would have a permanent dipole moment?
a) SiF_4 b) SF_4 c) XeF_4 d) BF_3

204. Which one of the following arrangement does not give the correct picture of trends indicated against it?

a) $F_2 > Cl_2 > Br_2 > I_2$: Oxidizing power
b) $F_2 > Cl_2 > Br_2 > I_2$: Electron gain enthalpy
c) $F_2 > Cl_2 > Br_2 > I_2$: Bond dissociation energy
d) $F_2 > Cl_2 > Br_2 > I_2$: Electronegativity.

205. Aluminium exhibits +3 oxidation state. As we move down the group, +1 oxidation state gets more stable. This is a consequence of:
a) increasing size of the atom b) inert pair effect c) electron deficient nature
d) p π - pπ bonding.

206. Which one of the following compounds is a peroxide?
a) KO_2 b) BaO_2 c) MnO_2 d) NO_2

207. Identify X and Y in the following reaction.

$$BCl_3 + 3NH_4Cl \xrightarrow[140^0]{C_6H_5Cl} X \xrightarrow[NaBH_4]{} Y$$

a) X = $NaBO_2$, Y = B_2O_3 b) X = $NazB_4O_7$, Y = H_3BO_3 c) X = BN, Y = $[NH_4]^+[BCl_4]^-$
d) X = $B_3N_3H_3Cl_3$, Y = $B_3N_3H_6$

208. Each of the following is true for white and red phosphorus except that they
a) are both soluble in CS_2 b) can be oxidized by heating in air
c) consist of the same kind of atoms d) can be converted into one another.

209. When white phosphorus is heated at 473 K under high pressure, what will happen?
a) α - Black phosphorus is formed. b) β - Black phosphorus is formed.
c) Red phosphorus is formed. d) No change would be observed.

210. In graphite, C atom is in ..... state
a) sp^3 b) sp c) sp^2 d) None of these.

211. Assertion: Fluorine oxidises water to oxygen whereas chlorine and bromine react with water to form corresponding hydrohalic and hypohalous acids.
Reason: The reactivity of halogens increases down the group.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b)
If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If both assertion and reason are false

212. In SiO^4 , the tetrahedral molecule, two oxygen atoms are shared in
a) sheet silicates b) double-chain silicates c) chain silicates
d) three-dimensional silicates

213. Assertion: White phosphorus is more reactive than red phosphorus.
Reason: It readily catches fire in air to give dense white fumes of P_4O_{10}.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false. d) If both assertion and reason are false.

214. Glass is a _____ .
a) Liquid b) Solid c) Supercooled liquid d) Transparent organic polymer

215. Match the following

Oxide	Nature
(A) Co	(i) Basic
(B) BaO	(ii) Neutral
$(C)\mathrm{Al_2O_3}$	(iii) Acidic
$(D)\mathrm{Cl_2O_7}$	(iv) Amphoteric

a) (A)(B)(C)(D) (a)(iv)(iii)(ii) (ii)
b) (A)(B)(C)(D) (b)(i) (ii) (iii)(iv)
c) (A)(B)(C)(D) (c)(ii) (i) (iv)(iii)
d) (A)(B)(C)(D) (d)(iii)(iv)(i) (ii)

216. Which of the following is not true about structure of diamond and graphite?

a)
In diamond, each carbon is sp^3 hybridised while in graphite each carbon is Sp^2 hybridised.

b)
In diamond, carbon atoms are closely packed in crystal lattice while graphite has layer structure.

c) Diamond is a hard substance while graphite is a soft substance

d)
Graphite is thermodynamically very less stable as compared to diamond and is amorphous form of carbon.

217. Arrange the following hydrides of group 16 elements in order of increasing stability.
a) $H_2S < H_2O < H_2Te > H_2Se$ b) $H_2O < H_2Te < H_2Se < H_2S$ c) $H_2O < H_2S < H_2Se < H_2Te$
d) $H_2Te < H_2Se < H_2S < H_2O$

218. Match the list of noble gas compounds in column I with their shapes in column II and mark the appropriate choice.

Column I	Column II
(A) XeF_4	(i) Distorted octahedral
(B) XeF_6	(ii) Tetrahedral
(C) XeO_3	(iii) Square planar
(D) XeO_4	(iv) Trigonal pyramidal

a) (A) ⟶ (iv); (B) ⟶ (iii); (C) ⟶ (ii); (D) ⟶ (i) b) (A) ⟶ (i); (B) ⟶ (ii); (C) ⟶ (iii); (D) ⟶ (iv)
c) (A) ⟶ (ii); (B) ⟶ (iii); (C) ⟶ (iv); (D) ⟶ (i) d) (A) ⟶ (iii); (B) ⟶ (i); (C) ⟶ (iv); (D) ⟶ (ii)

219. Aluminium is extracted from alumina (Al_2O_3) by electrolysis of a molten mixture of:
a) $Al_2O_3 + HF + NaAlF_4$ b) $Al_2O_3 + CaF_2 + NaAlF_4$ c) $Al_2O_3 + NaAlF_4 + CaF_2$
d) $Al_2O_3 + KF + NaAlF_4$

220. How many P-O- P bonds appear in cyclotrimetaphosphoric acid?
a) Four b) Three c) Two d) One

221. Which of the following elements is extracted commercially by the electrolysis of an aqueous solution of its compound?
a) Cl b) Br c) Al d) Na

222. In the clathrates of xenon with water the nature of bonding in Xe and H_2O molecule is
a) covalent b) hydrogen bonding c) coordinate d) dipole-induced dipole

223. Polyanion formation is maximum in _____ .

a) Nitrogen b) Oxygen c) Sulphur d) Boron

224. Which of the following hydroxides is acidic?
a) $Al(OH)_3$ b) $Ga(OH)_3$ c) $Tl(OH)_3$ d) $B(OH)_3$

225. A one litre flask is full of brown bromine vapours. The intensity of brown colour of vapours will not decrease appreciably on adding to the flask some.
a) Pieces of marble b) Animal charcoal powder c) Carbon tetrachloride
d) Carbon disulphide

226. Percentage of lead in lead pencil is
a) zero b) 20 c) 80 d) 70

227. Which of the following does not show similarity between boron and aluminium?
a) Both form oxides of type M_2O_3 when heated with oxygen at high temperature
b) Both dissolve in alkalies and evolve hydrogen
c) Hydroxides of both the elements are basic in nature
d) Both form nitrides of MN type when heated with N_2

228. Nitrogen because is relatively inactive element.
a) Its atom has a stable electronic configuration b) It has low atomic radius
c) Its electronegativity is fairly high d) Dissociation energy of its molecule is fairly high

229. The species, having bond angles:
a) PH_3 b) ClF_3 c) NCl_3 d) BCl_3

230. Which of the following does not give oxygen on heating?
a) $K_2Cr_2O_7$ b) $(NH_4)_2Cr_2O_7$ c) $KClO_3$ d) $Zn(ClO_3)_2$

231. Atomicity of phosphorus is
a) one b) two c) three d) four.

232. Nitrogen combines with metals to form
a) nitrites b) nitrates c) nitrosyl chloride d) nitrides

233. A metal X reacts with aqueous NaOH solution to form Yand a highly inflammable gas. Solution Y is heated and CO_2 is poured through it. Z precipitates out and Na_2CO_3 is formed. Z on heating gives Al_2O_3. Identify X, Y and Z.

a)

X	**Y**	**Z**
Al	$NaAlO_2$	$Al(OH)_3$

b)

X	**Y**	**Z**
Al_2O_3	$NaAlO_2$	Al_2CO_3

c)

X	**Y**	**Z**
Al_2O_3	$[Na_2AlO_2]^+OH^-$	$Al(OH)_3$

d)

X	**Y**	**Z**
Al	$Al(OH)_3$	Al_2O_3

234. Al_2O_3 can be converted to anhydrous $AlCl_3$ by heating:
a) Al_2O_3 with NaCl in solid state b) a mixture of A_2O_3 and carbon in dry Cl_2 gas
c) Al_2O_3 with Cl_2 gas d) Al_2O_3 with HCl gas

235. An aqueous solution of boric acid is found to be weakly acidic in nature. This acidic character arises due to the following reasons.
a) It is a protic acid which donates protons in aqueous solution

b)
It is a Lewis acid which abstracts OH^- from water and leaves H^+ to make the solution acidic

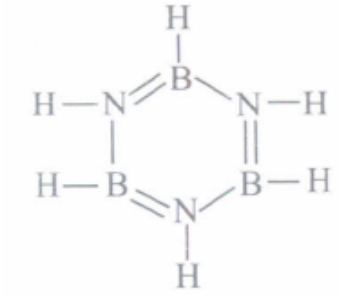
c) It gives metaboric acid when dissolved in water.

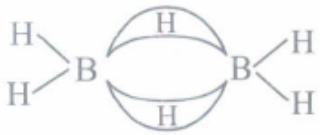
d) It is prepared by reaction of borax with sulphuric acid hence it behaves as an acid.

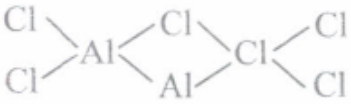
236. Aqueous solution of ammonia consists of _____ .

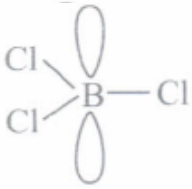
a) H^+ b) OH^+ c) NH_4^+ d) $NH_4^+ and OH^-$

237. Which of the following compounds is not matched correctly with its structure?

a)  – Borazine

b)  – Diborane

c)  – Aluminium chloride

d)  – Boron trichloride

238. The geometry of a complex species can be understood from the knowledge of type of hybridisation of orbitals of central atom. The hybridisation of orbitals of central atom in $[B(OH)_4]^-$ and the geometry of the complex are respectively:

a) Sp^3, tetrahedral b) Sp^3, square planar c) sp^3d^2, octahedral d) dsp^2, square planar

239. Which one of the following orders correctly represents the increasing acid strengths of the given acids?

a) $HOClO < HOCl < HOClO_3 < HOClO_2$

b) $HOClO_2 < HOCl_3 < HOClO < HOCl$

c) $HOClO_3 < HOClO_2 < HOClO < HOCl$

d) $HOCl < HOClO < HOClO_2 < HOClO_3$

240. Assertion: In trigonal bipyramidal structure two axial bonds are longer than the equatorial bonds.

Reason: Axial bonds suffer more repulsion as compared to equatorial bonds.

a) If both assertion and reason are true and reason is the correct explanation of assertion.

b)

If both assertion and reason are true but reason is not the correct explanation of assertion.

c) If assertion is true but reason is false. d) If both assertion and reason are false

241. Fill in the blanks by choosing an appropriate option.__(i)____ is a synthetic radioactive element of group 15 having electronic configuration -.__(ii)____

a)

(i)	(ii)
$_{115}Mc$	$[Rn]5f^{14}6d^{10}7s^27P^3$

b)

(i)	(ii)
$_{115}Mc$	$[Xe]5f^{14}6d^{10}7s^27P^3$

c)

(i)	(ii)
$_{116}LV$	$[Rn]5f^{14}6d^{10}7s^27P^4$

d)

(i)	(ii)
$_{114}Fl$	$[Rn]5f^{14}6d^{10}7s^27P^2$

242. Assertion: In diborane, each B atom is Sp^3 hybridised.
Reason : In diborane, the terminal 2-centre-2-electron B-H bonds are called banana bonds
a) If both assertion and reason are true and reason is the correct explanation of assertion
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false d) If both assertion and reason are false

243. Which one of the following oxides of chlorine is obtained by passing dry chlorine over silver chlorate at $90^\circ C$?
a) Cl_2O b) ClO_3 c) ClO_2 d) ClO_4

244. On heating $KClO_3$, we get
a) $KClO_2 + O_2$ b) $KCl + O_2$ c) $KCl + O_3$ d) $KCl + O_2 + O_3$

245. Prussian blue is formed when _____ .
a) Ferrous sulphate reacts with $FeCl_3$ b) Ferric sulphate reacts with $Na_4[Fe(CN)_6]$
c) Ferrous ammonium sulphate reacts with $FeCl_3$ d) Ammonium sulphate reacts with $FeCl_3$

246. Which of the following statements is true?
a) Silicon exhibits 4 coordination number in its compounds
b) Bond energy of F_2 is less than Cl_2
c) Mn (III) oxidation state is more stable than Mn(II) in aqueous state.
d) Elements of 15^{th} group show only +3 and +5 oxidation states.

247. The symbol of element with atomic number 113, is:
a) Nh b) Ni c) No d) Nb

248. The variation of the boiling point of the hydrogen halides is in the order HF > HI > HBr > HCl. What explains the higher boiling point of hydrogen fluoride?
a) The electronegativity of flourine is much higher than for other elements in the group
b) There is strong hydrogen bonding between HF molecules
c) The bond energy of HF molecules is greater than in other hydrogen halides.
d)
The effect of nuclear shielding is much reduced in flourine which polarises the HF molecule.

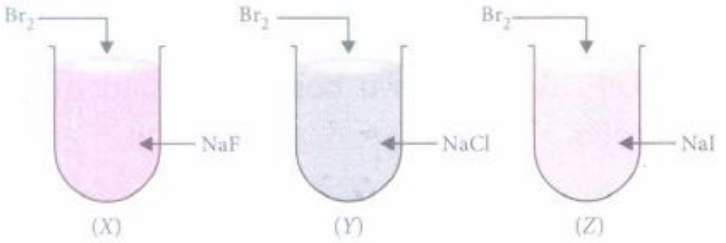
249. Which of the following is a tetrabasic acid?
a) Hypophosphorous acid b) Metaphosphoric acid c) Pyrophosphoric acid
d) Orthophosphoric acid

250. Match List-I (substances) with List-II (processes) employed in the manufacture of the substances and select the correct option

List-I Substances	**List-II Processes**
1.Sulphuric acid	(i) Haber's process
2.Steel	(ii) Bessemer's process
3.Sodium hydroxide	(iii) Leblanc process
4.Ammonia	(iv) Contact process

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

251. What is the correct observation when Br_2 is treated with NaF, NaCl and NaI taken in three test-tubes labelled as (X), (Y) and (Z)?



a) F_2 is liberated in (X) and Cl_2 in (Y). b) Only I_2 is liberated in (Z).
c) Only Cl_2 is liberated in (Y). d) Only F_2 is liberated in (X).

252. The correct order of N-compounds in its decreasing order of oxidation states is :
a) HNO_3, NH_4Cl, NO, N_2 b) HNO_3, NO, NH_4Cl, N_2 c) HNO_3, NO, N_2, NH_4Cl
d) NH_4Cl, N_2, NO, HNO_3

253. When copper is heated with cone. HNO_3 it produces:
a) $Cu(NO_3)_2$, NO and NO_2 b) $Cu(NO_3)_2$ and N_2O c) $Cu(NO_3)_2$ and NO_2
d) $Cu(NO_3)_2$ and NO

254. Assertion: In p-block elements, a lot of variation in properties of elements in a group is observed.
Reason: Difference in inner core of electronic configuration greatly influences the physical and chemical properties of elements
a) If both assertion and reason are true and reason is the correct explanation of assertion
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false d) If both assertion and reason are false

255. In XeF_2, XeF_4 and XeF_6 the number of lone pairs on Xe is respectively:
a) 2, 3, 1 b) 1, 2, 3 c) 4, 1, 2 d) 3, 2, 1

256. In graphite, the layers of carbon atoms are held by
a) van der Waals forces b) ionic bonds c) covalent bonds d) coordinate bonds

257. Among K, Ca, Fe and Zn, the element which can form more than one binary compound with chlorine is:
a) Fe b) Zn c) K d) Ca

258. Thermite is a mixture of iron oxide and
a) aluminium powder b) zinc powder c) iron turnings d) copper turnings

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

260. Under hydrolytic conditions, the compounds used for preparation of linear polymer and for chain termination, respectively, are:
a) $CH_3SiCl_3$and $Si(CH_3)_4$ b) $(CH_3hSiCl_2$ and $(CH_3)_3SiCl$ c) $(CH_3)_2SiCl_2$ and CH_3SiCl_3
d) $SiCl_4$ and $(CH_3)_3hSiCl$

261. Which of the following is not an ore of aluminium?
a) Bauxite b) Cryolite c) Kernite d) Corundum

262. Which of the following pairs of ions are isoelectronic and isostructural?
a) CO_3^{2-}, NO_3^- b) ClO_3^-, CO_3^{2-} c) SO_3^{2-}, NO_3^- d) ClO_3^-, SO_3^{2-}

263. Which of the following oxides can act as a reducing agent?
a) CO b) CO_2 c) SnO_2 d) PbO_2

264. Maximum ability of catenation is shown by
a) silicon b) lead c) germanium d) carbon

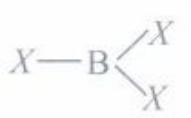
265. A solution of KBr is treated with each of the following. Which one would liberate bromine?
a) Hydrogen iodide b) Sulphur dioxide c) Chlorine d) Iodine

266. It is possible to obtain oxygen from air by fractional distillation because _____ .
a) Oxygen is in a different group of the periodic table from nitrogen
b) Oxygen is more reactive than nitrogen c) Oxygen has higher boiling point than nitrogen
d) Oxygen has a lower density than nitrogen

267. On heating, lead nitrate forms oxides of nitrogen and lead. The oxides formed are _____
a) N_2O, PbO b) NO_2, PbO c) NO, PbO d) NO, PbO_2

268. Dry SO_2 does not bleach dry flowers because
a) nascent hydrogen responsible for bleaching is produced only in presence of moisture
b) water is the actual reducing agent responsible for bleaching
c) water is stronger acid than SO_2 d) the OH^- ions produced by water cause bleaching.

269. In BX_3, B - X distance is shorter than what is expected theoretically because (X = F, Cl, Br, I)



a) Sp^3 hybridisation of B is responsible for shorter B - X distance
b) B - X has a double bond character due to back bonding.
c) Dimerisation takes place in BX_3 which is responsible for shorter B - X distance
d) Due to large size of X, B- X distance decreases

270. The hybridisation of sulphur in sulphur tetrafluoride is
a) sp^3d^3 b) sp^3 c) sp^3d d) sp^3d^2

271. What are X and Y in the reaction?

$$3B_2H_6 + 6X \rightarrow 3[BH_2(X)_2]^+[BH_4]^- \xrightarrow[heat]{} Y + 12H_2$$

a) X = NH_3, Y = $B_3N_3H_6$ b) X = CO, Y = BH_3CO c) X = NaH, Y = NaF
d) X = NF_3, Y = B_3N_3

272. Which of the following compounds are formed when BCl_3 is treated with water?
a) H_3BO_3 b) B_2H_6 c) B_2O_3 d) HBO_2

273. Which of the following statements are incorrect?
a) SO_3 is a stronger oxidising agent and more acidic than SO_2
b) Selenium forms only two oxoacids i.e., selenous acid (H_2SeO_3) and selenic acid (H_2SeO_4)

c)

The acidic strength and oxidising power of oxoacids is greater in +6 oxidation state than in +4 oxidation state.

The thermal stability of oxides of group 16 elements decreases in the order:

d) $SO_2 > SeO_2 > TeO_2 > PoO_2$

274. Which of the following species has four lone pairs of electrons?

a) I b) O c) Cl^- d) He

275. How many bridging oxygen atoms are present in P_4O_{10}?

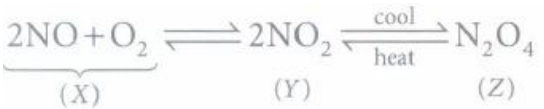
a) 6 b) 4 c) 2 d) 5

276. Which of the following is the correct statement about silicones?

a) They are made up of $SiO^{4-}{}_4$units b) They are polymers made up of R_2SiO units

c) They are water soluble compounds d) They are hydrophilic in nature

277. Consider the following sequence of conversion



X, Y and Z can be described as

a)

X	Y	Z
Colourless	Brown, paramagnetic	Colourless, paramagnetic

b)

X	Y	Z
Brown	Colourless, paramagnetic	Brown, paramagnetic

c)

X	Y	Z
Colourless	Colourless, paramagnetic	Brown, paramagnetic

d)

X	Y	Z
Brown	Brown, paramagnetic	Brown, paramagnetic

278. Assertion : In CO_2 molecule, C-atom undergoes Sp^2 hybridisation.

Reason: CO_2 molecule has net dipole moment.

a) If both assertion and reason are true and reason is the correct explanation of assertion

b) If both assertion and reason are true but reason is not the correct explanation of assertion

c) If assertion is true but reason is false d) If both assertion and reason are false

279. In group 13, electronegativity first decreases from B to Al and then increases marginally down the group. This is because of

a) non-metallic nature of B b) discrepancies in atomic size of elements

c) ability of B and Al to form $p\pi$ - $p\pi$ multiple bonds

d) irregular trend in electronegativity throughout the periodic table.

280. Hot conc. H_2SO_4 acts as moderately strong oxidising agent. It oxidises both metals and non-metals. Which of the following elements is oxidised byconc. H_2SO_4 into two gaseous products?

a) Cu b) S c) C d) Zn

281. In diborane,

a) four bridged hydrogen atoms and two terminal hydrogen atoms are present

b) two bridged hydrogen atoms and four terminal hydrogen atoms are present

c) three bridged hydrogen atoms and three terminal hydrogen atoms are present

d) there are no bridged hydrogen atoms in diborane, only hydrogen bonds are present

282. Assertion: O_3 acts as a powerful oxidising agent.
Reason: O_3 oxidises lead sulphide to lead sulphate and iodide ions to iodine.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b)
If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If both assertion and reason are false.

283. Match the column I with column II and mark the appropriate choice.

Column I		**Column II**	
(A)	H_2SO_3	(i)	+6, dibasic
(B)	H_2SO_5	(ii)	+5, dibasic
(C)	$H_2S_2O_6$	(iii)	+6, monobasic
(D)	H_2SO_4	(iv)	+4, dibasic

a) (A) $\rightarrow$ (i); (B) $\rightarrow$ (ii); (C) $\rightarrow$ (iii); (D) $\rightarrow$ (iv)
b) (A) $\rightarrow$ (ii); (B) $\rightarrow$ (iii); (C) $\rightarrow$ (i); (D) $\rightarrow$ (iv)
c) (A) $\rightarrow$ (iii);(B) $\rightarrow$ (iv); (C) $\rightarrow$ (ii); (D) $\rightarrow$ (i)
d) (A) $\rightarrow$ (iv); (B) $\rightarrow$ (iii); (C) $\rightarrow$ (ii); (D) $\rightarrow$ (i)

284. In a cyclotrimetaphosphoric acid molecule, how many single and double bonds are present?
a) 3 double bonds; 9 single bonds b) 6 double bonds; 6 single bonds
c) 3 double bonds; 12 single bonds d) Zero double bonds; 12 single bonds

285. Assertion: The covalence of nitrogen in N_2O_5 is 5.
Reason : Nitrogen can expand its covalence beyond 4
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b)
If both assertion and reason are true but reason is not the correct explanation of assertion,
c) If assertion is true but reason is false. d) If both assertion and reason are false.

286. It is because of inability of ns^2 electrons of the valence shell to participate in bonding that
a) Sn^{2+} is oxidising while pb^{4+} is reducing
b) Sn^{2+} and Pb^{2+} are both oxidising and reducing
c) Sn^{4+} is reducing while Pb^{4+} is oxidising d) Sn^{2+} is reducing while pb^{4+} is oxiding

287. Which of the following bonds will be most polar?
a) N -Cl b) O-F c) N-F d) N-N

288. Bleaching powder reacts with a few drops of cone HCI to give _____ .
a) Chlorine b) Hypochlorous acid c) Calcium oxide d) Oxygen

289. The product obtained as a result of a reaction of nitrogen with CaC_2 is _____ .
a) $\mathrm{Ca(CN)_2}$ b) CaCN c) $\mathrm{CaCN_3}$ d) $\mathrm{Ca_2CN}$

290. Match the uses of the metal aluminium given in column I with its properties given in column II and mark the appropriate choice

Column I		**Column II**	
(A)	Transmission cables	(i)	High malleability

Column I		Column II	
(B)	Aircraft body	(ii)	High electrical conductivity
(C)	Packing industry	(iii)	industry conductivity
(D)	Utensils	(iv)	Light and tough alloys

a) (A) ⟶ (ii), (B) ⟶ (i), (C) ⟶ (iii), (D) ⟶ (iv) b) (A) ⟶ (iv), (B) ⟶ (iii), (C) ⟶ (ii), (D) ⟶ (i)
c) (A) ⟶ (ii), (B) ⟶ (iv), (C) ⟶ (i), (D) ⟶ (iii) d) (A) ⟶ (iii), (B) ⟶ (iv), (C) ⟶ (i), (D) ⟶ (ii)

291. Which of the following is not correct about carbon monoxide?
a) It is produced due to incomplete combustion b) It form carboxyhaemoglobin
c) It reduce oxygen carrying ability of blood
d) The carboxyhaemoglobin (haemoglobin bouncl to CO) is less stable than oxyhaemoglobin

292. Oxygen will directly react with each of the following elements except
a) P b) Cl c) Na d) S

293. The members of group 14 form tetrahalides of the type MX_4 Which of the following halides cannot be readily hydrolysed by water?

a) CX_4 b) SiX_4 c) GeX_4 d) SnX_4

294. Which is not the use of orthoboric acid?
a) As an antiseptic and eye wash. b) In glass industry. c) In glazes for pottery
d) In borax - bead test.

295. Which of the following bonds has the highest energy?
a) S-S b) O-O c) Se-Se d) Te-Te

296. $PH_4I + NaOH$ forms _____ .
a) PH_3 b) NH_3 c) P_4O_6 d) P_4O_{10}

297. An alkali metal hydride (NaH) reacts with diborane in 'A' to give a tetrahedral compound 'B' which is extensively used as reducing agent in organic synthesis. The compounds 'A' and 'B' respectively are
a) CH_3COCH_3 and $B_3N_3H_6$ b) $(C_2H_5)_2O$ and $NaBH_4$ c) C_2H_6 and C_2H_5Na
d) C_6H_6 and $NaBH_4$

298. An amorphous solid (X) burns in air to form a gas (Y) which turns lime water milky. This gas decolourises aqueous solution of acidified $KMnO_4$ Gas (Y) reacts with oxygen to give another gas (Z) which is responsible for acid rain. X, Y and Z are

a)

X	Y	Z
C	CO	CO_2

b)

X	Y	Z
S	SO_2	SO_3

c)

X	Y	Z
P	P_2O_3	P_2O_5

d)

X	Y	Z
S	SO_3	H_2SO_4

299. Assertion: Ozone layer in the upper region of atmosphere protects earth from UV radiations of sun.
Reason: Ozone is a powerful oxidising agent as compared to oxygen.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b)
If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If both assertion and reason are false.

300. Which of the following is correct representation of reaction of acidified permanganate solution with sulphur dioxide?
a) $2MnO^-_4+5SO_2+2H_2O \rightarrow 5SO_4^{2-}+2Mn^{2+}+4H^+$ b) $2MnO^-_4+SO_2+2H_2O \rightarrow S+Mn^{2+}+4H^+$
c) $2MnO^-_4+5SO_2+2H_2O \rightarrow 4SO^{2-}_3+S+2Mn^{2+}+4H^+$
d) $3MnO^-_4+2SO_2+2H_2O \rightarrow 2S+3Mn^{2+}+4H^+$

301. The tendency of BF_3, BCl_3 and BBr_3 to behave as Lewis acid decrease in the sequence
a) $BCl_3 > BF_3 > BBr_3$ b) $BBr_3 > BCl_3 > BF_3$
c) $BBr_3 > BF_3 > BCl_3$ d) $BF_3 > BCl_3 > BBr_3$

302. Which of the following is used as protective shields in nuclear industries?
a) ^{27}Al b) ^{10}B c) $^{16}0$ d) ^{l4}C

303. Sulphur trioxide can be obtained by which of the following reaction?
a) $CaSO_4$+ C $\xrightarrow{\triangle}$ b) $Fe_2(SO_4)_3 \xrightarrow{\triangle}$ c) S + $H_2SO_4 \xrightarrow{\triangle}$ d) H_2SO_4 + $PCl_5 \xrightarrow{\triangle}$

304. An example of a double salt is
a) bleaching powder b) $K_4[Fe(CN)_6]$ c) hypo d) potash alum

305. Assertion: Sulphuric acid reacts with sodium chloride in the following way:
$2NaCl+H_2SO_4 \rightarrow 2HCl+Na_2SO_4$
Reason: Sulphuric acid because of its low volatility can be used to manufacture more volatile acids from their corresponding salts.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b)
If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If both assertion and reason are false

306. Assertion: Zeolites are the three-dimensional network silicates.
Reason: Negative charge on zeolite structure is neutralised by positively charged Al^{3+}ions.
a) If both assertion and reason are true and reason is the correct explanation of assertion
b) If both assertion and reason are true but reason is not the correct explanation of assertio
c) If assertion is true but reason is false d) If both assertion and reason are false

307. Complete the following reactions:
(i) SiO_2 + 2NaOH $\rightarrow$ X + H_2O
(ii) SiO_2 + 4HF $\rightarrow$ Y + $2H_2O$
(iii) Si + $2CH_3Cl \xrightarrow[570\ K]{Cu\ powder}$ Z

a)

X	**Y**	**Z**
Na_2SiO_3	SiF_4	$(CH_3)_2SiCl_2$

b)

X	**Y**	**Z**
H_2SiO_3	SiF_2	CH_3SiCl_3

c)

X	**Y**	**Z**
Na_2SiO_3	H_2SiO_3	$(CH_3)_3SiCl$

d)

X	**Y**	**Z**
Na_2SiO_3	H_2SiF_4	$(CH_3)_2SiCl_2$

308. Match the column I with column II and mark the appropriate choice.

Column I		**Column II**	
(A)	Laughing gas	(i)	Hydrazoic acid

(B)	Anhydride of HNO_3	(ii)	Nitrous oxide
(C)	Anhydride of HPO_3	(iii)	Nitrogen pentoxide
(D)	Acid hydride of nitrogen	(iv)	Phosphorus pentoxide

a) (A) $\rightarrow$ (i), (B) $\rightarrow$ (ii), (C) $\rightarrow$ (iii), (D) $\rightarrow$ (iv)
b) (A) $\rightarrow$ (iv), (B) $\rightarrow$ (i), (C) $\rightarrow$ (ii), (D) $\rightarrow$ (iii)
c) (A) $\rightarrow$ (ii), (B) $\rightarrow$ (iii), (C) $\rightarrow$ (iv), (D) $\rightarrow$ (i)
d) (A) $\rightarrow$ (iii), (B) $\rightarrow$ (iv), (C) $\rightarrow$ (i), (D) $\rightarrow$ (ii)

309. Match the column I and column II and mark the appropriate choice.

Column I		**Column II**	
(A)	H_3PO_2	(i)	+3 O.S. of P
(B)	$H_3P_3O_9$	(ii)	Cyclic oxoacid
(C)	$H_4P_2O_6$	(iii)	Monobasic acid
(D)	H_3PO_3	(iv)	One P - P bond

a) (A) $\rightarrow$ (i), (B) $\rightarrow$ (iii), (C) $\rightarrow$ (ii), (D) $\rightarrow$ (iv)
b) (A) $\rightarrow$ (ii), (B) $\rightarrow$ (iv), (C) $\rightarrow$ (iii), (D) $\rightarrow$ (i)
c) (A) $\rightarrow$ (iii), (B) $\rightarrow$ (ii), (C) $\rightarrow$ (iv), (D) $\rightarrow$ (i)
d) (A) $\rightarrow$ (iv), (B) $\rightarrow$ (i), (C) $\rightarrow$ (ii), (D) $\rightarrow$ (iii)

310. Which of the following oxides will be the least acidic?
a) $\mathrm{As_4O_6}$ b) $\mathrm{As_4O_{10}}$ c) $\mathrm{P_4O_{10}}$ d) $\mathrm{P_4O_6}$

311. Which of the statements given below is incorrect?
a) O_3 molecule is bent. b) ONF is isoelectronic with O_2N. c) OF_2 is an oxide of fluorine.
d) Cl_2O_7 is an anhydride of perchloric acid.

312. When chlorine is passed over dry slaked lime at room temperature, the main reaction product is :
a) $Ca(ClO)_2$ b) $CaCl_2$ c) $CaOC_2$ d) $Ca(OCl)_2$

313. Fill in the blanks by choosing the appropriate option. Conc. H_2SO_4 chars paper, wood and sugar by removing (i) from them. It is also known as ii. It is manufactured by (iii) process. It is a strong (iv) and (v) acid.

a)

(i)	**(ii)**	**(iii)**	**(iv)**	**(v)**
H_2O	oil of vitriol	Contact	oxidising	dibasic

b)

(i)	**(ii)**	**(iii)**	**(iv)**	**(v)**
O_2	oil of vitriol	Oleum	dehydrating	monobasic

c)

(i)	**(ii)**	**(iii)**	**(iv)**	**(v)**
H_2O	oil of olay	Solvay	dehydrating	dibasic

d)

(i)	**(ii)**	**(iii)**	**(iv)**	**(v)**
SO_2	oil of winter green	Contact	oxidising	monobasic

314. Elements of group-15 form compounds in +5 oxidation state. However, bismuth forms only one well characterised compound in +5 oxidation state. The compound is
a) Bi_2O_5 b) BiF_5 c) $BiCl_5$ d) Bi_2S_5

315. In solid state PCl_5 is a _____

a) covalent solid b) octahedral structure

c) ionic solid with $[PCl_6]$ octahedral and $[PCl_4]^-$ tetrahedral

d) ionic solid with $[PCl_4]^+$ tetrahedral and $[PCl_6]^-$ octahedral

316. Carbon monoxide acts as a donor and reacts with certain metals to give metal carbonyls. This is due to

a) presence of one sigma and two pi bonds between C and O(:C = O:)

b) presence of a lone pair on carbon atom in CO molecule

c) presence of lone pair on oxygen atom in CO molecule d) poisonous nature of CO

317. Identify the incorrect statement.

a) Graphite is thermodynamically most stable allotrope of carbon.

b)
Other forms of elemental carbon like coke, carbon black, charcoal are impure forms of graphite.

c) All allotropes of carbon have thermodynamically different stability.

d) Charcoal and coke are obtained by heating wood in absence of air.

318. Which of the following hydrides is least stable to hydrolysis?

a) CH_4 b) SiH_4 c) SnH_4 d) PbH_4

319. In the manufacture of bromine from sea water the mother liquor containing bromide is treated with _____ .

a) Carbon dioxide b) Chlorine c) Iodine d) Sulphur dioxide

320. Complete the following reactions by filling the appropriate choice.

(A) $6XeF_4 + 12H_2O \rightarrow 4Xe + 2XeO_3 +$ _____(i)_____ + _____(ii)_____

(B) $XeF_6 + 3H_2O \rightarrow$ _____(iii)_____ +6HF

a)

(i)	(ii)	(iii)
F_2	H_2O	$XeOF_4$

b)

(i)	(ii)	(iii)
24HF	$3O_2$	XeO_3

c)

(i)	(ii)	(iii)
2HF	$2H_2O$	XeO

d)

(i)	(ii)	(iii)
HF	H_2O	Xe_2O_3

321. Elements of which of the following groups will form anions most readily?

a) Oxygen family b) Nitrogen family c) Halogens d) Alkali metals

322. Aluminium oxide is not reduced by chemical reactions due to

a) its highly stable nature b) its highly unstable nature c) its amphoteric nature

d) its highly explosive nature.

323. White phosphorus is soluble in CS_2 whereas red phosphorus is insoluble in CS_2.

a) α- Black phosphorus is formed. b) β-Black phosphorus is formed

c) Red phosphorus is formed. d) No change would be observed.

324. Water gas is produced by

a) passing steam through a red hot coke bed b) saturating hydrogen with moisture

c) mixing oxygen and hydrogen in the ratio of 1:2

d) heating a mixture of CO_2 and CH_4, in petroleum refineries

325. The oxidation state of central atom in the anion of compound NaH_2PO_2 will be

a) +3 b) +5 c) +1 d) -3

326. Match the column I with column II and mark the appropriate choice

Column I		**Column II**	
(A)	Borax	(i)	Na_3AlF_6
(B)	Inorganic benzene	(ii)	$Na_2B_4O_7 \cdot 10H_2O$
(C)	Cryolite	(iii)	$Al_2O_3 \cdot 2H_2O$
(D)	Bauxite	(iv)	$B_3N_3H_6$

a) (A) ⟶ (ii), (B) ⟶ (iv), (C) ⟶ (i), (D) ⟶ (iii) b) (A) ⟶ (i), (B) ⟶ (ii), (C) ⟶ (iii), (D) ⟶ (iv)
c) (A) ⟶ (ii), (B) ⟶ (iii), (C) ⟶ (i), (D) ⟶ (iv) d) (A) ⟶ (iii), (B) ⟶ (i), (C) ⟶ (ii), (D) ⟶ (iv)

327. The stability of dihalides of Si, Ge, Sn and Pb increases steadily in the sequence
a) PbX_2 << snX_2 << GeX_2 << SiX_2 b) GeX_2 << SiX_2 << snX_2 << PbX_2
c) SiX_2 << GeX_2 << PbX_2 << snX_2 d) SiX_2 << GeX_2 << snX_2 << PbX_2.

328. PCl_3 reacts with water to form:
a) PH_3 b) H_3PO_3, HCl c) $POCl_3$ d) H_3PO_4

329. Silicon is an important constituent of
a) sand b) atmosphere c) plants d) water bodies

330. Reaction of sodium thiosulphate with iodine gives:
a) tetrathionate ion b) sulphide ion c) sulphate ion d) sulphite ion

331. On heating a mixture of NH_4Cl and KNO_2, we get
a) NH_4NO_3 b) $KNH_4(NO_3)_2$ c) N_2 d) NO

332. Cane sugar on reaction with nitric acid gives _____ .
a) CO_2 and SO_2 b) 2HCOOH c) $(COOH)_2$ d) No reaction

333. The decreasing order of boiling points of the following hydrides is
a) $SbH_3 > AsH_3 > PH_3 > NH_3$ b) $NH_3 > SbH_3 > AsH_3 > PH_3$
c) $SbH_3 > NH_3 > AsH_3 > PH_3$ d) $PH_3 > AsH_3 > SbH_3 > NH_3$

334. Identify the wrong example from the following for the group 14 elements.
a) Element which forms most acidic dioxide- Carbon
b) Element which is affected by water - Lead
c) Commonly found in +2 oxidation state - Lead
d) Element used as semiconductor - Silicon.

335. The substance used as a smoke screen in warfare is _____ .
a) $SiCl_4$ b) PH_3 c) PCl_5 d) Acetylene

336. HCl can be prepared by
a) NaCl + $H_2SO_4 \xrightarrow{420K}$ b) $NaHSO_4$ + NaCl $\xrightarrow{823K}$ c) $NaNO_3$ + H_2SO_4 ⟶
d) both (a) and (b)

337. Which of the following is a nitric acid anhydride?
a) NO b) NO_2 c) N_2O_5 d) N_2O_3

338. Which of the following sets has strongest tendency to form anions?
a) Ga, Ni, Tl b) Na, Mg, Al c) N, O, F d) V, Cr, Mn.

339. Assertion: Catenation tendency is weaker in nitrogen.
Reason: Nitrogen exists as diatomic gas.

a) If both assertion and reason are true and reason is the correct explanation of assertion

b) If both assertion and reason are true but reason is not the correct explanation of assertion

c) If assertion is true but reason is false. d) If both assertion and reason are false

340. Which of the following statements is not correct for nitrogen?
a) Its electronegativity is very high b) d-orbitals are available for bonding
c) It is a typical non-metal d) Its molecular size is small

341. P and Q, respectively are the sodium salts of
a) hypochlorous and chloric acids b) hypochlorous and chlorous acids
c) chloric and perchloric acids d) chloric and hypochlorous acids.

342. Basicity of orthophosphoric acid is :
a) 2 b) 3 c) 4 d) 5

343. Which of the following is not tetrahedral in shape?
a) NH_4^+ b) $SiCl_4$ c) SF_4 d) SO_4^{2-}

344. Which of the following displaces Br_2 from an aqueous solution containing bromide ions?
a) I_2 b) I^-_3 c) Cl^- d) Cl

345. Noble gases do not react with other elements because _____ .
a) They are monoatomic b) They are found in abundance
c) The size of their atoms is very small
d) They are completely paired up and have stable electron shells

346. Match the inter-halogen compounds of column I with the geometry in Column II and assign the correct code.

Column I	Column II
A.XX'	(i) T-shade
B.XX'_3	(ii) Pentagonal bipyramidal
C.XX'_5	(iii) Linear
D.XX'_7	(iv) Square pyramidal
	(v)Tetrahedral

code A B C D
a) (iii) (iv) (i) (ii) b) (iii) (i) (iv) (ii) c) (v) (iv) (iii) (ii) d) (iv) (iii) (ii) (i)

347. Which is the hardest compound of boron?
a) B_2O_3 b) BN c) B_4C d) B_2H_6

348. Which of the following types of forces bind together the carbon atoms in diamond?
a) Ionic b) Covalent c) Dipolar d) van der Waals

349. $Na_2B_4O_7 + X \longrightarrow H_3BO_3$. What is X in the reaction?
a) Aqueous solution of NaOH b) Dilute nitric acid c) Cone. H_2SO_4 or HCl d) Water

350. $AlCl_3$ achieves stability by forming a dimer. In trivalent state the compound is hydrolysed in water. $AlCl_3$ in acidified aqueous solution forms:
a) $Al(OH)_3$ + HCl b) $[Al(H_2O)_6]^{3+}$ + $3Cl^-$ c) $AlCl_3 \cdot 2H_2O$ d) Al_2O_3 + HCl

351. The correct order of acid strength is:

a) $HClO_4 < HClO_3 < HClO_2 < HClO$ b) $HClO < HClO_2 < HClO_3 < HClO_4$
c) $HClO_4 < HClO < HClO_2 < HClO_3$ d) $HClO_2 < HClO_3 < HClO_4 < HClO$

352. The type of hybridization of boron in diborane is
a) sp-hybridization b) sp^2-hybridization c) sp^3-hybridization d) sp^3d^2-hybridization

353. Assertion: Interhalogen compounds are more reactive than halogens (except fluorine)
Reason: They all undergo hydrolysis giving halide ion derived from the smaller halogen and anion derived from larger halogen.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b)
If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If both assertion and reason are false

354. Which compound has planar structure?
a) XeF_4 b) $XeOF_3$ c) XeO_2F_2 d) XeO_4

355. The bond dissociation energy of B- F in BF_3 is 646 kJ mol^{-1} whereas that of C - F in CF_4 is 515 kJ mol^{-1}. The correct reason for higher B - F bond dissociation energy as compared to that of C - F bond is:
a) stronger o bond between B and F in BF_3 as compared to that between C and F in CF_4
b)
significant pπ-pπ interaction between B and F in BF_3 whereas there is no possibility of such interaction between C and F in CF_4
c)
lower degree of pπ-pπ interaction between Band F in BF_3 than that between C and F in CF_4
d) smaller size of B-atom as compared to that of C-atom

356. In borax bead test which compound is formed?
a) Ortho-borate b) Meta-borate c) Double oxide d) Tetra-borate

357. Which of the following statements is not true?
a) HF is a stronger acid than HCl
b) Among halide ions, iodide is the most powerful reducing agent
c) Fluorine is the only halogen that does not show a variable oxidation state
d) HOCl is a stronger acid than HOBr

358. Which of the following is used to prepare Cl_2 gas at room temperature from concentrated HCl?
a) MnO_2 b) H_2S c) $KMnO_4$ d) Cr_2O_3

359. Which of the following fluorides does not exist?
a) NF_5 b) PF_5 c) AsF_5 d) SbF_5

360. On hydrolysis, diborane produces
a) $H_3BO_2 + H_2O_2$ b) $H_3BO_3 + H_2$ c) $B_2O_3 + O_2$ d) $H_3BO_3 + H_2O_2$

361. Affinity for hydrogen decreases in the group from fluorine to iodine. Which of the halogen acids should have highest bond dissociation enthalpy?
a) HF b) HCl c) HBr d) HI

362. Xenon has closed shell configuration but is known to give compounds with fluorine because

a) Xe atom has large size and lower ionisation potential as compared to other noble gases

b) Xe has unpaired electrons which can form covalent bonds

c) Xe has highest boiling point hence it can form compounds with fluorine

d) fluorine is the smallest element hence it can react with all noble gases.

363. Nitrogen shows different oxidation states ranging from:
a) -3 to +5 b) -5 to +5 c) 0 to -5 d) -3 to +3

364. P_2O_5 is heated with water to give _____ .
a) Hypophosphorous acid b) Phosphorous acid c) Hypophosphoric acid
d) Orthophosphoric acid

365. When excess of carbon dioxide is passed through lime water, the milkiness first formed disappears due to
a) the reversible reaction taking place b) formation of water soluble calcium bicarbonate

c) huge amount of heat evolved during the reaction

d) formation of water soluble complex of calcium.

366. On heating with concentrated NaOH solution in an inert atmosphere of CO_2, white phosphorus gives a gas. Which of the following statements is incorrect about the gas?
a) It is more basic than NH_3 b) It is less basic than NH_3

c) It is highly poisonous and has smell like rotten fish.

d) Its solution in water decomposes in the presence of light.

367. Which one of the following orders is not in accordance with the property stated against is?
a) $\mathrm{HI} > \mathrm{HBr} > \mathrm{HCl} < \mathrm{HF}$: Acidic property in water
b) $\mathrm{F_2} > \mathrm{Cl_2} > \mathrm{Br_2} > \mathrm{I_2}$: Electronegativity
c) $\mathrm{F_2} > \mathrm{Cl_2} > \mathrm{Br_2} > \mathrm{I_2}$: Bond dissociation energy
d) $\mathrm{F_2} > \mathrm{Cl_2} > \mathrm{Br_2} > \mathrm{I_2}$: Oxidising power

368. A black compound of manganese reacts with a halogen acid to give greenish yellow gas. When excess of this gas reacts with NH_3 an' unstable trihalide is formed. In this process the oxidation state of nitrogen changes from
a) -3 to +3 b) -3 to 0 c) - 3 to +5 d) 0 to -3

369. Strongest hydrogen bonding is shown by _____ .
a) Water b) Ammonia c) HF d) Hydrogen sulphide

370. Assertion: Boron forms only covalent compounds.
Reason: Boron has very small size.
a) If both assertion and reason are true and reason is the correct explanation of assertion

b) If both assertion and reason are true but reason is not the correct explanation of assertion

c) If assertion is true but reason is false d) If both assertion and reason are false

371. An element of group 14 forms two oxides one of which is highly poisonous and neutral. Other oxide can be easily liquefied and compressed to give a solid which is used as a refrigerant under the name of drikold. The element and the oxides are
a) Si, SiO, SiO_2 b) Pb, PbO, PbO_2 c) C, CO, CO_2 d) Sn, SnO, SnO_2

372. Which of the following is most acidic?

a) N_2O_5 b) P_2O_5 c) As_2O_5 d) Sb_2C_5

373. Which one of the following which is the strongest oxidizing agent?
a) HOClO < HOCl < $HOClO_3$ < $HOClO_2$ b) $HOClO_2$ < $HOClO_3$ < HOClO < HOCl
c) $HOClO_3$ < $HOClO_2$ < HOClO < HOCl d) HOCl < HOClO < $HOClO_2$ < $HOClO_3$

374. A compound 'X is heated with C_2H_5OH and H_2SO_4, the fumes produced burn with green flame. The compound 'X is
a) H_3BO_3 b) $Na_2B_4O_7 \cdot 10H_2O$ c) K_3BO_3 d) none of these

375. The bleaching action of chlorine is due to _____ .
a) Reduction b) Hydrogenation c) Chloronation d) Oxidation

376. A translucent white waxy solid (A) reacts with excess of chlorine to give a yellowish white powder (B). (B) reacts with organic compounds containing -OH group converting them into chloro derivatives. (B) on hydrolysis gives (C) and is finally converted to phosphoric acid. (A), (B) and (C) are:
a) P_4, PCl_3, H_3PO_4 b) P_4, PCl_5 , H_3PO_3 c) P_4, PCl_5, $POCl_3$ d) P_4, PCl_3, $POCl_3$

377. Assertion: Solubility of noble gases in water decreases with increasing size of the noble gas.
Reason: Solubility of noble gases in water is due to dipole-dipole interaction.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false. d) If both assertion and reason are false.

378. There is a large number of carbon compounds due to
a) tetravalency of carbon b) strong catenation property of carbon
c) allotropic property of carbon d) non-metallic character of carbon

379. What happens when a mixture of cobalt oxide and borax is heated in a flame on a loop of platinum wire?
a) A transparent white bead is formed. b) A bright pink coloured $NaBO_2$ bead is formed
c) A blue coloured $Co(BO_2)_2$ bead is formed. d) A red coloured $Co(BO_2)_2$ bead is formed.

380. Name the type of the structure of silicate in which one oxygen atom of $[SiO_4]^{4-}$ is shared?
a) Linear chain silicate b) Sheet silicate c) Pyrosilicate d) Three dimensional

381. Phosphorous acid on heating gives the following products:
$4H_3PO_3 \xrightarrow{\Delta} 3H_3PO_4 + PH_3$
The above reaction is an example of
a) oxidation b) thermal decomposition c) disproportionation d) reduction.

382. Repeated use of which one of the following fertilizers would increase the acidity of the soil?
a) Ammonium sulphate b) Superphosphate of lime c) Urea d) Potassium nitrate

383. Boric acid is the trival name for
a) orthoboric acid b) metaboric acid c) pyroboric acid d) none of these

384. Which of the following shows nitrogen in its increasing order of oxidation number?
a) $NO < N_2O < NO_2 < NO_3^-, NH_4^+$
b) $NH_4^+ < N_2O < NO_2 < NO_3^- < NO$

c) $NH_4^+ < N_2O < NO < NO_2 < NO_3^-$
d) $NH_4^+ < NO_2 < N_2O < NO_2 < NO_3^-$

385. Boric acid has a polymeric layer structure in which planar BO_3 units are joined by:
a) covalent bonds b) two centre - two electron bonds c) coordinate bonds
d) hydrogen bonds.

386. Nitrogen forms stable N_2 molecule but phosphorus is converted to P_4 from P_2 because
a) $p\pi$ - $p\pi$ bonding is strong in phosphorus b) $p\pi$ - $p\pi$ bonding is weak in phosphorus
c) triple bond is present in phosphorus d) single P - P bond is weaker than N -N bond.

387. The most commonly used reducing agent is
a) $AlCl_3$ b) $PbCl_2$ c) $SnCl_4$ d) $SnCl_2$

388. Why is sulphur dioxide considered as an air pollutant?
a) It increases the temperature of the atmosphere.
b) It is used as insecticidewhich causes air pollution.
c) It causes acid rain due to formation of sulphuric acid on combining with O_2 and H_2O .
d) It is a strong oxidising agent hence oxidises the other components of air.

389. Which one of the following is not the characteristic property of carbon?
a) It exhibits catenation. b) It forms compounds with multiple bonds.
c) Its melting point and boiling point are exceptionally high.
d) It shows semi-metallic character.

390. A brown ring is formed in the ring test for NO_3^- ion. It is due to the formation of
a) $[Fe(H_2O)_5(NO)]^{2+}$ b) $FeSO_4 \cdot NO_2$ c) $[Fe(H_2O)_4(NO)_2]^{2+}$ d) $FeSO_4.HNO_3$

391. Oxidation of thiosulphate by iodine gives _____ .
a) Tetrathionate ion b) Sulphide ion c) Sulphate ion d) Sulphite ion

392. Assertion: Although aluminium is above hydrogen in electrochemical series, it is stable in air and water.
Reason: The thin protective layer of oxide (Al_2O_3) on the surface protects the aluminium
a) If both assertion and reason are true and reason is the correct explanation of assertion
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false d) If both assertion and reason are false

393. Borax-bead test is responded by
a) divalent metals b) heavy metals c) light metals
d) metals which form coloured metaborates

394. Which of the following statements about the zeolites is false?
a) They are used as cation exchangers
b) They have open structure which enables them to take up small molecular
c) Zeolites are aluminosilicates having three dimensional network
d) Some of the SiO_4^{4-} units are replaced by AlO_4^{5-} and AlO_6^{9-} ions in zeolites

395. The first member of the p-block elements differs from the remaining members of their corresponding groups due to

a) small size and absence of d-orbitals b) diagonal relationship with other elements
c) difference in ability to form double and triple bonds d) high ionisation enthalpy.

396. Which of the following statements is wrong?
a) Single N-N bond is stronger than the single P-P bond.
b)
PH_3 can act as a ligand in the formation of coordination compound with transition elements.
c) NO_2 is paramagnetic in nature. d) Covalency of nitrogen in N_2O_5 is four.

397. All members of group 14 when heated in oxygen form oxides. Which of the following is the correct trend of oxides?
a) Dioxides CO_2, SiO_2 and GeO_2 are acidic while SnO_2 and PbO_2 are amphoteric.
b) CO, GeO, SnO and PbO are amphoteric.
c) Monoxides react with haemoglobin to form toxic compounds
d) All oxides burn with blue flame.

398. Regarding F^- and Cl^- which of the following statement(s) is/are correct?
I. Cl^- can give up an electron more easily than F^- .
II. Cl^- is a better reducing agent than F^- .
III. Cl^- is smaller in size than F^- .
IV. F^- can be oxidised more readily than Cl^- .
a) I and II b) I, II and IV c) III and IV d) Only I

399. Sulphur molecule is
a) diatomic b) triatomic c) tetratomic d) octa-atomic.

400. Which of the following increasing order is not correct as mentioned in the property with it?
a) $HClO < HClO_2 < HClO_3 < HClO_4$ (thermal stability)
b) $HClO_4 < HClO_3 < HClO_2 < HClO$ (oxidising power) c) $F^- < cl^- < Br^- < I^-$ (reducing nature)
d) $HIO_4 < ICl < I_2 < HI$ (oxidation number of iodine)

401. Identify the correct statements from the following
1. $CO_2(g)$ is used as refrigerant for ice-cream and frozen food
2. The structure of C_{60} contains twelve six carbon rings and twenty five carbon rings.
3. ZSM-5, a type of zeolite, is used to convert alcohols into gasoline.
4. CO is colorless and odouless gas.
a) (3) and (4) only b) (1) and (2) and (3) only c) (1) and (3) only d) (2) and (3) only

402. Which of the following statement is not correct for nitrogen?
a) Its electronegativity is very high. b) d-orbitals are available for bonding.
c) It is a typical non-metal. d) Its molecular size is small

403. Reduction potentials of some ions are given below. Arrange them in decreasing order of oxidising power.

Iron	**ClO_4^-**	**IO_4^-**	**BrO_4^-**
Reduction potential E^0/V	E^0=1.19V	E^0=1.65V	E^0=1.74V

a) $ClO_4^- > IO_4^- > BrO_4^-$ b) $IO_4^- > BrO_4^- > ClO_4^-$ c) $BrO_4^- > IO_4^- > ClO_4^-$ d) $BrO_4^- > ClO_4^- > IO_4^-$

404. Which statements is wrong?

a) Feldspars are not aluminosilicates b) Beryl is an example of cyclic silicate
c) Mg_2SiO_4 is orthosilicate d) Basic structure unit in silicates is the SiO_4 tetrahedran

405. Cement, the important building material is a mixture of oxides of several elements. Besides calcium, iron and sulphur, oxides of elements of which of the group(s) are present in the mixture?
a) Group 2 b) Groups 2,13 and 14 c) Groups 2 and 13 d) Groups 2 and 14

406. The angular shape of ozone molecule (O_3) consists of:
a) 1σ and 1π bond b) 2σ and 1π bond c) 1σ and 2π bonds d) 2σ and 2π bonds

407. Choose the correct statements from the following?
a) Rhombic sulphur is blue in colour.
b) Rhombic sulphur is soluble in water but insoluble in organic solvents
c) Rhombic and monoclinic sulphur have S_6 molecules
d) In Cyclo-S_6 molecule, the ring adopts chair form.

408. In the following reactions sequence $(A) + N_2 \xrightarrow{\Delta} (B) \xrightarrow{+H_2O} (C) + (D)$ white ppt. (C) is formed and gas (D) is evolved. White ppt. (C) dissolves in NaOH solution, while gas (D) gives white fumes in HCl. Thus, (A) is
a) B b) Al c) Ga d) C

409. Which of the following does not depict properties of fullerenes?
a) Fullerenes are made by heating graphite. b) Fullerenes are pure forms of carbon.
c) Fullerenes have open cage structure like ice d) C60 is called Buckminsterfullerene.

410. Which is used in the laboratory for fast drying of neutral gases?
a) P_2O_s b) Anhyd.$CaCl_2$ c) Activated charcoal d) Na_3PO_4

411. Silicon has a strong tendency to form polymers like silicones. The chain length of silicone polymer can be controlled by adding
a) $MeSiCl_3$ b) Me_2SiCl_2 c) Me_3SiCl d) Me_4Si

412. Among the following molecules (i) XeO_3 (ii) $XeOF_4$ (iii) XeF_6 those having same number of lone pairs on Xe are
a) (i) and (ii) only b) (i) and (iii) only c) (ii) and (iii) only d) (i), (ii) and (iii)

413. Match the column I with column II and mark the appropriate choice.

Column I	**Column II**
(A) H_2SO_4	(i) Highest electron gain enthalpy
(B) CCl_3NO_2	(ii) Chalcogen
(C) Cl_2	(iii) Tear gas
(D) Sulphur	(iv) Storage batteries

a) (A) ⟶ (iv), (B) ⟶ (iii) (C) ⟶ (i), (D) ⟶ (ii) b) (A) ⟶ (iii), (B) ⟶ (iv), (C) ⟶ (i), (D) ⟶ (ii)
c) (A) ⟶ (iv), (B) ⟶ (i), (C) ⟶ (ii), (D) ⟶ (iii) d) (A) ⟶ (ii), (B) ⟶ (i), (C) ⟶ (iii), (D) ⟶ (iv)

414. An aqueous solution of sodium carbonate absorbs NO and NO_2 to give _____ .
a) $CO_2 + NaNO_3$ b) $CO_2 + NaNO_2$ c) $NaNO_2 + CO$
d) $NaNO_3 + CO$

415. The straight chain polymer is formed by

a) hydrolsis of CH_3SiCl_3 followed by condensation polyrnerisation
b) hydrolysis of $(CH_3)_4Si$ by addition polymerisation
c) hydrolysis of $(CH_3)_2SiCl_2$ followed by condensation polymerisation
d) hydrolysis of $(CH_3)_3SiCl$ followed by condensation polymerisation

416. A compound X, of boron reacts with NH_3 on heating to give another compound Y which is called inorganic benzene. The compound X can be prepared by treating BF3 with lithium aluminium hydride. The compounds X and Yare represented by the formulas:
a) B_2H_6, $B_3N_3H_6$ b) B_2O_3, $B_3N_3H_6$ c) BF_3, $B_3N_3H_6$ d) $B_3N_3H_6$ ' B_2H_6

417. Read the passage given and answer the questions
The reactions of Cl_2 gas with cold-dilute and hot-concentrated NaOH in water give sodium salts of two (different) oxoacids of chlorine, P and Q, respectively. The Cl_2 gas reacts with SO_2 gas, in presence of charcoal, to give a product R. R reacts with white phosphorus to give a compound S. On hydrolysis, S gives an oxoacid of phosphorus, T.
R, S and T, respectively are
a) SO_2Cl_2, PCl_5 and H_3PO_4 b) SO_2Cl_2, PCl_3 and H_3PO_3 c) $SOCl_2$, PCl_3 and H_3PO_2
d) $SOCl_2$, PCl_5 and H_3PO_4

418. Fill in the blanks by choosing the appropriate option. The noble gases can form compounds with _____(i)_____ and _____(ii)_____. The mixture of _____(iii)_____ and _____(iv)_____ is used for respiration by drivers.

a)

(i)	(ii)	(iii)	(iv)
iodine	oxygen	oxygen	argon

b)

(i)	(ii)	(iii)	(iv)
fluorine	oxygen	helium	oxygen

c)

(i)	(ii)	(iii)	(iv)
xenon	platinum	argon	krypton

d)

(i)	(ii)	(iii)	(iv)
helium	oxygen	xenon	argon

419. Which of the following is not correctly matched?
a) PCl_5 - Sp^3d hybridisation b) PCl_3 - Sp^3 hybridisation c) PCl_5 (solid) - $[PtCl_4]^+$ $[PtCl_6]^-$
d) PCl_5 - brownish powder

420. Select the correct option regarding the properties of dioxygen?
a) Dioxygen never reacts with metals. b) Dioxygen is diamagnetic in nature.
c) Combination of dioxygen with other elements is highly exothermic process.
d) Dioxygen liquefies at 55 K and freezes at 90 K.

421. In which of the following arrangements the given sequence is not strictly according to the property indicated against it?
a) $HF < HCl < HBr < HI$: increasing acidic strength
b) $H_2O < H_2S < H_2Se < H_2$ Te : increasing pKa values
c) $NH_3 < PH_3 < AsH_3 < SbH_3$: increasing acidic character
d) $CO_2 < SiO_2 < SnO_2 < PbO_2$: increasing oxidising power

422. Which of the following statements is not true for halogens?
a) Allbut fluorine shows positive oxidation states. b) All are oxidizing agents.
c) All form monobasic oxyacids d) Chlorine has the highest electron-gain enthalpy.

423. Assertion: Carbon monoxide is a poisonous gas.
Reason: Carbon monoxide combines with haemoglobin to form carboxy - haemoglobin which prevents absorption of oxygen by it
a) If both assertion and reason are true and reason is the correct explanation of assertion
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false d) If both assertion and reason are false

424. Assertion: Diamond is the hardest substance on the earth.
Reason: It has high melting point
a) If both assertion and reason are true and reason is the correct explanation of assertion
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false d) If both assertion and reason are false

425. Which compound is prepared by the following reaction:
$Xe+F_2 \xrightarrow[673K]{Ni}$
a) XeF_4 b) XeF_2 c) XeF_6 d) None of these

426. BF_3 is used as a catalyst in various organic reactions because
a) it is a strong reducing agent b) it is a highly reactive compound
c) it is a weak Lewis acid d) it is a strong Lewis acid

427. Elements of which of the following groups will form anions most readily?
a) Oxygen family b) Nitrogen family c) Halogens d) Alkali metals

428. Which of the following statements is not correct about the structure of PCl_5?
a) PCIs has a trigonal bipyramidal structure.
b) Three equatorial P-CI bonds are equivalent.
c) The two axial bonds are different and longer than equatorial bonds.
d) Equatorial bond pairs suffer more repulsion than that of the axial bond pairs.

429. Which of the following is not matched correctly with its use
a) Piezoelectric material- Quartz b) Ion -exchangers - Graphite c) Filtration plants - Silica
d) Electrical insulators - Silicones

430. Assertion: Ammonia acts as a ligand.
Reason: A lone pair of electrons on nitrogen can be donated to acceptor.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false. d) If both assertion and reason are false

431. The exhibition of highest co-ordination number depends on the availability of vacant orbitals in the central atom. Which of the following elements is not likely to act as central atom in MF_6^{3-} ?
a) B b) Al c) Ga d) In

432. Covalency of oxygen cannot exceed 2 unlike sulphur which can show +4 or +6 because

a) oxygen atom does not have d-orbitals

b) oxygen atom has two unpaired electrons in its valence shell

c) oxygen can form a double bond with another oxygen atom

d) electrons of oxygen atom cannot be promoted to d-orbitals due to its small size.

433. A solution of potassium bromide is treated with each of the following. Which one would liberate bromine?
a) Hydrogen iodide b) Sulphur dioxide c) Chlorine d) Iodine

434. Fluorine is the best oxidising agent because it has
a) highest electron affinity b) highest reduction potential c) highest oxidation potential

d) lowest electron affinity.

435. Ammonia is a Lewis base. It forms complexes with cations. Which one of the following cations does not form complex with ammonia?
a) Ag^+ b) Cu^{2+} c) Cd^{2+} d) Pb^{2+}

436. Which of the following pairs is not correctly matched.
a) Allotropic form of sulphur which is more stable at room temperature - Rhombic

b) The hydride of group 16 which is liquid at room temperature - Water

c) The gas formed in the upper layers of atmosphere by action of UV radiations - Nitrogen

d) The catalyst used in the manufacture of H_2SO_4 by contact process - Vanadium pentoxide

437. Ingraphite, electrons are
a) localised on each C-atom b) localised on every third C-atom
c) spread out between the structure d) Both (b) and (c)

438. On heating ammonium dichromate and barium azide separately we get
a) N_2 in both cases b) N_2 with ammonium dichromate and NO with barium azide

c) N_2O with ammonium dichromate and N_2 with barium azide

d) N_2O with ammonium dichromate and NO_2 with barium azide.

439. An oxide X in its normal form is almost nonreactive due to very high X - 0 bond enthalpy. It resists the attack by halogens, hydrogen and most of acids and metals even at elevated temperatures. It is only attacked by HF and NaOH. The oxide X is
a) SiO_2 b) CO_2 c) SnO_2 d) PbO_2

440. Why do boron and aluminium halides behave as Lewis acids?
a) Both halides (MX_3) can accept electrons from a donor to complete their octet
b) Both halides (MX_3) can donate a pair of electrons
c) Both halides (MX_3) are covalent polymeric structures.
d) Both halides (MX_3) react with water to give hydroxides and HCl.

441. Boric acid is an acid because its molecule
a) contains replaceable H^+ ion b) gives up a proton

c) accepts OH^- from water releasing proton d) combines with proton from water molecule

442. Identify X in the reaction: $X + \underset{(steam)}{2H_2O} \xrightarrow{\Delta} XO_2 + 2H_2$

a) C b) Si c) Ge d) Sn

443. The basic structural unit of silicates is
a) SiO_4^{4-} b) SiO_3^{2-} c) SiO_4^{2-} d) SiO

444. What happens when silicon is heated with methyl chloride in presence of copper as a catalyst at 573 K?
a) Methyl substituted chlorosilanes are formed. b) Only Me_4Si is formed.
c) Polymerised chains of $(CH_3)_3SiCl$ are formed. d) Silicones are formed.

445. Which of the following is the wrong statement?
a) Ozone is paramagnetic gas
b) The two oxygen -oxygen bond length in ozone are identical. c) O_3 molecule is bent.
d) Ozone is violet-black in solid state.

446. Which of the following represents calcium chlorite?

a) $Ca(ClO_3)_2$ b) $Ca(ClO_2)_2$ c) $CaClO_2$ d) $Ca(ClO_4)_2$

447. Acidity of diprotic acids in aqueous solutions increases in the order
a) $H_2S < H_2Se < H_2Te$ b) $H_2Se < H_2S < H_2Te$ c) $H_2Te < H_2S < H_2Se$
d) $H_2Se < H_2Te < H_2S$

448. Which of the following elements does not show allotropy?
a) Nitrogen b) Bismuth c) Antimony d) Arsenic

449. Name of the synthetic radioactive element of group 16 having atomic number 116 is
a) Livermorium b) Tennessine c) Livernorium d) Moscovium.

450. The halogen that is most easily reduced is
a) F_2 b) Cl_2 c) Br_2 d) I_2