Multiple Choice Questions

Group 16 elements

[MHT-CET 2005]

1. Number of unpaired electrons in sulphur is
a) 2 b) 6 c) 8 d) 1

[MHT-CET 2013]

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

[MHT-CET 2015]

3. Identify a metalloid from the following list of elements.
a) Carbon b) Neon c) Sodium d) Tellurium

[MHT-CET 2016]

4. The element that does NOT form acidic oxide is
a) Carbon b) Phosphorus c) Chlorine d) Barium

[MHT-CET 2017]

5. Which among the following compounds does not act as a reducing agent ?
a) H_2O b) H_2S c) H_2Se d) H_2Te

[MHT-CET 2018]

6. Identify the element that forms amphoteric oxide.
a) Carbon b) Zinc c) Calcium d) Sulphur

[MHT-CET 2019]

7. The oxidation number of sulphur in S_8 molecule is
a) 0 b) 2 c) 6 d) 3

8. The oxidation state of sulphur in $H_2S_2O_7$ is
a) + 4 b) + 6 c) + 5 d) + 7

9. Which substance is used to bleach wood pulp into white paper ?
a) H_2O_2 b) NaOI c) Chlorine gas d) H_2SO_4/ $KMnO_4$

10. Which of the following oxides is amphoteric in nature ?
a) CaO b) Na_2O c) Al_2O_3 d) SO_3

11. Which of the following oxyacids of sulphur contains S = S linkage ?
a) $H_2S_2O_5$ b) $H_2S_2O_2$ c) H_2SO_3 d) $H_2S_2O_4$

[MHT-CET 2020]

12. In resonance hybrid of ozone molecule, O – O bond length is
a) 148 pm b) 134.5 pm c) 121 pm d) 128 pm

13. Which of the following oxyacids of sulphur contains both S = S and S = O bonds ?
a) $H_2S_2O_3$ b) $H_2S_2O_4$ c) $H_2S_2O_2$ d) $H_2S_2O_5$

14. Which among the following oxides is amphoteric in nature ?
a) SnO b) CaO c) B_2O_3 d) Cl_2O_7

15. What is the oxidation state of sulphur in oil of vitriol ?
a) + 3 b) + 2 c) + 6 d) − 3

16. The oxidation state of chlorine in its oxyacid depends upon
a) number of lone pair electrons on oxygen atom.
b) oxidation state of oxygen in molecule.
c) number of chlorine atoms per molecule.
d) number of oxygen atoms per molecule.

17. What is the colour of gaseous ozone ?
a) Yellowish white b) Blue black c) Blue d) Violet black

18. The O – S – O bond angle and hybridization of sulphur in SO_2 molecule are respectively
a) 119°, sp^2 b) 134°, sp^2 c) 105°, sp^3d d) 117°, sp^3

19. When sulphur dioxide combines with chlorine in the presence of charcoal catalyst, the product formed is
a) S_2Cl_2 b) $SOCl_2$ c) Colloidal Sulphur d) SO_2Cl_2

20. What is the ratio of volumes of gases involved in the preparation of sulphur trioxide from sulphur dioxide and dioxygen respectively under similar conditions of temperature and pressure ?
a) 1 : 3 : 1 b) 2 : 1 : 2 c) 1 : 1 : 1 d) 1 : 2 : 1

21. Which among the following catalysts is used in manufacture of sulphuric acid by contact process ?
a) Ni b) Fe with Mo c) MnO_2 d) V_2O_5

[MHT-CET 2021]

22. Which among the following reactions exhibits the reducing property of ozone ?
a) $PbS_{(s)} + 4O_{3(g)} \rightarrow PbSO_{4(s)} + 4O_{2(g)}$
b) $BaO_{2(g)} + O_{3(g)} \rightarrow BaO_{(s)} + 2O_{2(g)}$
c) $NO_{(g)} + O_{3(g)} \rightarrow NO_{2(g)} + O_{2(g)}$
d) $2KI_{(aq)} + H_2O_{(l)} + O_{3(g)} \rightarrow 2KOH_{(aq)} + I_{2(g)} + O_{2(g)}$

23. What is the bond angle O – O – O and bond length O – O in O_3 molecule respectively ?
a) 109.5° and 128 pm b) 117° and 128 pm
c) 107° and 120 pm d) 109.5° and 120 pm

24. Identify neutral oxide from following :
a) N_2O_5 b) N_2O c) Al_2O_3 d) BaO

25. Which of the following elements does NOT form gaseous hydride at room temperature ?
a) Selenium b) Tellurium c) Oxygen d) Sulphur

26. What is O – O bond length in resonance hybrid of ozone ?
a) 131 pm b) 121 pm c) 128 pm d) 148 pm

27. What is the number of allotropes of selenium ?
a) 2 b) 4 c) 5 b) 6

28. Which among the following is NOT the use of SO_2 gas ?
a) As a preservative b) In manufacture of H_2SO_4
c) With conc. H_2SO_4 it forms oleum d) As an antichlor

What is bond angle O–S–O in SO_2 molecule ?
a) 107° b) 180° c) 90° d) 119.5°

Identify amphoteric oxide from following.
a) SO_3 b) Na_2O c) N_2O d) Al_2O_3

Which among the following statements about ozone depletion is NOT true ?
a) Depletion of ozone is most pronounced over Antarctica.
b) Freons used in aerosol that enter into atmosphere cause depletion of ozone layer.
c) Nitrogen oxide released from cars causes ozone depletion.
d) Due to ozone depletion less amount of UV radiations reach to earth surface.

Which element from following belongs to oxygen family ?
a) Ba b) Se c) Rb d) Ca

Which from following statements is true for group 16 elements ?
a) All elements of this group form EO_2 type oxides.
b) It includes all the nonmetals.
c) Oxides of all elements of this group are gaseous at room temperature.
d) Reducing properties of dioxides of this group elements decrease from SO_2 to TeO_2.

Which among the following oxides is acidic in nature ?
a) N_2O_5 b) NO c) Na_2O d) CO

[MHT-CET 2022]

What is the quantity of sugar charcoal remaining behind after charring 17.1 g sugar using conc. H_2SO_4 under ideal conditions ?
a) 7.2 g b) 14.4 g c) 10.5 g d) 11.4 g

Which from following activities results into the formation of oleum in manufacture of sulphuric acid by contact process ?
a) By passing SO_2 gas into the dil. H_2SO_4.
b) Passing SO_2 gas through NaOH solution.
c) By absorbing SO_3 gas in conc. H_2SO_4.
d) By adding sodium sulphite and SO_2 in water.

Identify the product obtained when sucrose is treated with conc. H_2SO_4.
a) Saccharic acid b) Sugar charcoal and water
c) Glucose and fructose d) Gluconic acid and fructose

What is the quantity of sugar charcoal obtained when 34.2 g sugar is charred using required quantity of conc. sulphuric acid under ideal conditions ?
a) 14.4 g b) 10.5 g c) 114 g d) 11.0 g

What is the number of moles of water removed from one mole of cane sugar when charred completely using conc. H_2SO_4 ?
a) 1 b) 11 c) 4 d) 2

What quantity of carbon dioxide is produced when 2 moles of carbon are burnt in 16 g of dioxygen ?
a) 88 g b) 44 g c) 11 g d) 22 g

Which among the following is group 16 element ?
a) Sb b) Pb c) Po d) As

[MHT-CET 2015]

60. Which is the most abundant element on earth ?
a) Hydrogen b) Nitrogen c) Oxygen d) Silicon

61. Which halogen forms an oxyacid that contains the halogen atom in tripositive oxidation state?
a) Fluorine b) Chlorine c) Bromine d) Iodine

[MHT-CET 2016]

62. Which halide of magnesium has highest ionic character ?
a) Chloride b) Bromide c) Iodide d) Fluoride

63. What is the highest oxidation state exhibited by group 17 elements ?
a) + 1 b) + 3 c) + 5 d) + 7

[MHT-CET 2017]

64. Which halogen has the highest value of negative electron gain enthalpy ?
a) Fluorine b) Chlorine c) Bromine d) Iodine

[MHT-CET 2019]

65. Which among the following does not form polyhalide ion ?
a) Bromine b) Iodine c) Fluorine d) Chlorine

66. Arrange the following in the increasing order of their acidic strength.
a) HBr < HI < HF < HCl b) HCl < HBr < HI < HF
c) HI < HBr < HCl < HF d) HF < HCl < HBr < HI

67. The shape of BrF_5 molecule is
a) Trigonal bipyramidal b) Square planar
c) Trigonal pyramidal d) Square pyramidal

[MHT-CET 2020]

68. How many lone pairs of electrons are present on chlorine atom in chlorous acid ?
a) 3 b) 4 c) 2 d) 1

69. Which of the following oxyacids of chlorine has highest thermal stability ?
a) $HClO_2$ b) HClO c) $HClO_4$ d) $HClO_3$

70. Chlorine is manufactured by
a) Haber process b) Ostwald's process
c) Deacon process d) Contact process

71. Which among the following halogens does not form polyhalide ion ?
a) Cl b) F c) Br d) I

72. Which among the following is powerful bleaching and oxidizing agent ?
a) PH_3 b) SO_2 c) Cl_2 d) HI

73. Which among the following is NOT a mineral of chlorine ?
a) Carnallite b) Sylvine c) Horn silver d) Cryolite

74. Which of the following oxyacids of chlorine does not contain lone pair of electrons on chlorine atom ?
a) $HOClO_2$ b) $HOClO_3$ c) HOClO d) HOCl

75. How many lone pairs of electrons are present on chlorine atom in hypochlorous acid ?
a) 4 b) 2 c) 3 d) 1

91. Identify compound having square pyramidal shape from following.
a) BrF_3 b) ICl c) ClF_3 d) BrF_5

92. Which among following compounds of chlorine possesses Cl atom in highest oxidation state ?
a) Chlorous acid b) Chloric acid c) Perchloric acid d) Hypochlorous acid

93. Which among the following is a colourless gas ?
a) IF_7 b) ICl_3 c) ICl d) BrF_3

94. Which from following elements of halogen family is in liquid state at room temperature?
a) Iodine b) Astatine c) Bromine d) Fluorine

95. Identify metal halide from following having highest ionic character : (M = metal atom)
a) MF b) MBr c) MI d) MCl

96. Identify the correct pair of mineral and its formula from following.
a) Baryte – $MgSO_4 . 7 H_2O$ b) Cryolite – Na_3AlF_6
c) Galena – ZnS d) Epsom salt – $CaSO_4 . 2H_2O$

97. Which among the following compounds in NOT a colourless gas ?
a) GIF b) IF_7 c) IF_3 d) ClF_3

98. Which element from following combines with hydrogen to form compound having lowest acidic strength ?
a) Cl b) Br c) F d) I

[MHT-CET 2022]

99. Which among the following is correct decreasing order of covalent character of ionic bond ?
a) $AlCl_3 > NaCl > MgCl_2$ b) $AlCl_3 > MgCl_2 > NaCl$
c) $NaCl > MgCl_2 > AlCl_3$ d) $MgCl_2 > NaCl > AlCl_3$

100. What is action of chlorine on excess ammonia ?
a) Formation of nitrogen trichloride.
b) Formation of dinitrogen and hydrochloric acid.
c) Formation of ammonium chloride and dinitrogen.
d) Formation of nitric oxide and hydrochloric acid.

101. Identify the correct decreasing order of bond dissociation enthalpy from following.
a) Cl – Cl > F – F > Br – Br > I – I b) Cl – Cl > Br – Br > F – F > I – I
c) I – I > Br – Br > Cl – Cl > F – F d) F – F > Cl – Cl > Br – Br > I – I

102. Which among the following molecules has lowest bond dissociation enthalpy ?
a) Br_2 b) F_2 c) Cl_2 d) I_2

103. Which among the following hydrogen halides is thermally least stable ?
a) HI b) HCl c) HBr d) HF

104. Which from following molecules has highest bond dissociation enthalpy ?
a) Br_2 b) F_2 c) I_2 d) Cl_2

105. Which of the following compounds is octahedral ?
a) $SeCl_2$ b) SeF_4 c) SF_6 d) TeF_4

158. The correct decreasing order of electronegativity is
a) F > Cl > I > Br b) Cl > F > Br > I c) F > Cl > Br > I d) Br > F > I > Cl

159. Given below are two statements :
Statement I : Like nitrogen that can form ammonia, arsenic can form arsine.
Statement II : Antimony cannot form antimony pentoxide.
In the light of the above statements, choose the **most appropriate** answer from the options given below: (NEET - 2025)
a) Statement I is correct but statement II is incorrect
b) Statement I is incorrect but statement II is correct
c) Bot Statement I and statement II are correct
d) Both statement I and Statement II are incorrect

160. **Match List-I with List-II**

List-I	List-II
A. XeO_3	i) sp^3d;linear
B. XeF_2	ii) sp^3;pyramidal
C. $XeOF_4$	iii) sp^3d^3; distorted octahedral
D. XeF_6	iv) sp^3d^2; square pyramidal

Choose the correct answer from the options given below : (NEET - 2025)
a) A-IV, B-II, C-III, D-I b) A-IV, B-II, C-I, D-III
c) A-II, B-I, C-IV, D-III d) A-II, B-I, C-III, D-IV

161. One of the products formed from the reaction of permanganate ion with iodide ion in neutral aqueous medium is (JEE (Advanced) Paper I - 2025)
a) I_2 b) IO_3^- c) IO_4^- d) IO_2^-

162. Which of the following interhalogen compounds is used in the determination of iodine value of an oil? (MHT - CET - 2025)
a) ICl_3 b) ICl c) IF_3 d) IF_7

163. Identify false statement from the following about fluorine. (MHT-CET - 2025)
a) It is highly electronegative element.
b) It exhibits only – 1 oxidation state.
c) It has bond dissociation enthalpy among all halogens.
d) It form only one oxoacid.