Delight classes

VTH GROUP

1	In a molecule of phosphorus (V) oxide there are 1) 4 P-P, 10 P-O and 4 P=O bonds 2) 12 P-O and 4 P=O bonds 3) 2 P-O and 4 P=P bonds 4) 6 P-P; 12 P-O and 4 P=P bonds
2	conc.HNO_3 reacts with iodine to give 1) HI 2) HOI 3) $HOIO_2$ 4) $HOIO_3$
3	A: Although PF_5, PCl_5 are known the pentahalides of Nitrogen have not been observed R: Phosphorus has lower electro-negativity than Nitrogen 1. A and R are true and R is the correct explanation of A 2. A and R are true and R is not the correct explanation of A 3. A is true, R is false 4. Both A and R are false
4	Which of the following order is correct (1) NO > N_2O : Bond length of N–O bond (2) N_2O_3 > N_2O_5 : Acidic character (3) N_2O_3 > N_2O_4 : O–N–O bond angle (4) NO2 = N_2O_5 : O–N–O bond angle
5	Zinc reacts with dilute HNO_3 to give 1) N_2O 2) NO 3) NO_2 4) N_2
6	The following element does not have allotropes 1) N 2) P 3) As 4) Sb
7	Which of the following on decomposition does not give nitrogen gas 1) NH_4NO_2 2) $(NH_4)_2Cr_2O_7$ 3) $Ba(N_3)_2$ 4) NH_4NO_3
8	Boiling point order of VA group hydrides 1) $NH_3 < PH_3 < AsH_3 < SbH_3$ 2) $NH_3 > PH_3 > AsH_3 > SbH_3$ 3) $PH_3 > SbH_3 > NH_3 > AsH_3$ 4) $PH_3 < AsH_3 < NH_3 < SbH_3$

9	Solid PCl_5 exists as 1) PCl_5 2) PCl_4^+ 3) PCl_6^- 4) PCl_4^+ and PCl_6^-
10	The reaction of Zinc with dilute and concentrated nitric acid respectively produces 1) NO_2 & NO 2) NO & NO_2 3) NO_2 & N_2O 4) N_2O & NO_2
11	P_4O_{10} has short and long P – O bonds. The number of short P – O bond in this compound is – 1) 1 2) 2 3) 3 4) 4
12	The maximum number of P – H bonds are contained in which of the following molecules? 1) H_3PO_2 2) H_3PO_3 3) H_3PO_4 4) $H_2P_2O_7$
13	Which of the following does not contain P-O-P bond ? 1. P_4O_6 2. $(HPO_3)_3$ 3. $H_4P_2O_6$ 4. $H_4P_2O_7$
14	Acidic salt among the following is 1) Na H_2 PO_2 2) $Na_2H_2P_2O_7$ 3) Na_3PO_4 4) Na_2HPO_3
15	Nitrogen can not be obtained by heating 1) $Ba(N_3)_2$ 2) $Pb(NO_3)_2$ 3) $(NH_4)_2Cr_2O_7$ 4) NH_4NO_2
16	At 0^0C, NO_2 is 1) Paramagnetic, coloured gas 2) Diamagnetic, coloured gas 3) Diamagnetic, coloured solid 4) Paramagnetic, coloured solid
17	The number of molecules of water needed to convert one molecule of P_2O_5 into ortho phosphonic acid is 1) 2 2) 3 3) 4 4) 5
18	Two oxides of Nitrogen NO and NO_2 are allowed to react together at 243K and form a coloured compound of Nitrogen(X) when compound (X) reacts with water to yield another compound of Nitrogen (Y). The shape of anion of (Y) molecule is 1) triangular planar 2) bent or angular 3) tetrahedron 4) square planar
19	The increasing order of boiling point of hydrides of group 15 elements is - (1) $PH_3 < AsH_3 < NH_3 < SbH_3$ (2) $PH_3 < AsH_3 < SbH_3 < NH_3$ (3) $NH_3 < PH_3 < AsH_3 < SbH_3$ (4) $AsH_3 < PH_3 < NH_3 < SbH_3$

20 In nitrogen family, the H-M-H bond angle in the hydrides gradually becomes closer to 90° on going from N to Bi. This shows that gradually-

(1) The basic strength of the hydrides increases
(2) Almost pure p-orbitals are used for M-H bonding
(3) The bond energies of M-H bonds increase
(4) The bond pairs of electrons become nearer to the central atom

21 P_4O_{10} has short and long P-O bonds. The number of short P-O bonds in this compound is -

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

22 Which one of the following is not an acid salt -

(1) NaH_2PO_2 (2) NaH_2PO_3 (3) NaH_2PO_4 (4) Na_2HPO_4

23 When excess of water is added to $BiCl_3$ solution

(1) Ionization of $BiCl_3$ is increased
(2) A white ppt. of $Bi(OH)_3$ is obtained
(3) $BiCl_3$ is hydrolysed to give white ppt. of BiOCl
(4) $BiCl_3$ is precipitated

24 Skin becomes yellow in conc. HNO_3 because -

(1) The proteins are converted into xanthoproteins
(2) HNO_3 acts as a dehydrating agent
(3) NItrocellulose is formed
(4) HNO_3 acts as an oxidising agent

25 Choose the incorrect statement -

(1) Solid PCl_5 exists as tetrahedral $[PCl_4]^+$ and octahadral $[PCl_6]^-$ ions
(2) Solid PBr_5 exists as $[PBr_4]^+ Br^-$
(3) Solid N_2O_5 exists as $NO_2^+NO_3^-$
(4) Oxides of phosphorus P_2O_3 and P_2O_5 exist as monomers

26 Ammonia reacts with excess of chlorine to form -

(1) N_2 and NH_4Cl (2) NCl_3 and HCl (3) NH_4Cl and NCl_3 (4) N_2 and HCl

27	PCl_3 reacts with water to form - (1) PH_3 (2) H_3PO_3 and HCl (3) $POCl_3$ (4) H_3PO_4
28	The correct order of decreasing acid strength of oxy acids of group 15 elements is - (1) $HNO_3 > H_3SbO_4 > H_3AsO_4 > H_3PO_4$ (2) $H_3PO_4 > H_3AsO_4 > H_3SbO_4 > HNO_3$ (3) $HNO_3 > H_3PO_4 > H_3AsO_4 > H_3SbO_4$ (4) $HNO_3 > H_3AsO_4 > H_3PO_4 > H_3SbO_4$
29	On heating a mixture of NH_4Cl and KNO_2, we get - (1) NH_4NO_3 (2) $KHN_4(NO_3)_2$ (3) N_2 (4) NO
30	Which of the follwing oxides of nitrogen is neutral - (1) N_2O_5 (2) N_2O_3 (3) N_2O_4 (4) N_2O
31	Nitrogen forms N_2 but phosphorus do not forms P_2, but it exists as P_4 the reason for this is - (1) Triple bond is present between phosphorus atoms (2) $p^{\pi} - p^{\pi}$ bonding is weak (3) $p^{\pi} - p^{\pi}$ bonding is strong (4) Multiple bond is formed easily
32	Sodium hexametaphosphate is known as - (1) Calgon (2) Permutit (3) Natalite (4) Nitrolim
33	Least acidic and most acidic oxides of nitrogen are - (1) N_2O, N_2O_5 (2) N_2O, N_2O_4 (3) N_2O, NO (4) N_2O, N_2O_3
34	Aqua regia is mixture of – (1) $3HCl + HNO_3$ (2) $3HNO_3 + HCl$ (3) $H_3PO_4 + HCl$ (4) $PH_3 + HClO$
35	The number of molecules of water needed to convert one molecule of P_2O_5 into orthophosphoric acid is – (1) 2 (2) 6 (3) 4 (4) 5
36	The wrong statement about ammonia is - (1) NH_3 is oxidised with oxygen at 700°C in the presence of platinum (2) NH_3 gives black precipitate with calomel (3) NH_3 can be dried by P_2O_5, H_2SO_4 and $CaCl_2$ (4) NH_3 gives white fumes with HCl

37	Which of the following trihalides is not hydrolysed - (1) PF_3 (2) PCl_3 (3) $AsCl_3$ (4) $SbCl_3$
38	In the compounds of the type POX_3, P atoms show multiple bonding of the type - (1) $p^{\pi} - p^{\pi}$ (2) $d^{\pi} - d^{\pi}$ (3) $p^{\pi} - d^{\pi}$ (4) None of these
39	How many P–O bonds and how many lone pairs respectively are present in P_4O_6 molecule - (1) 12, 4 (2) 8, 8 (3) 12, 16 (4) 12, 12
40	Ammonia reacts with Nessler's reagent to give - (1) Deep blue precipitate (2) White precipitate (3) Green precipitate (4) Brown precipitate
41	Liquid ammonia is used in refrigerators because - (1) It has high dipole moment (2) It has high solubility in water (3) Of its basicity (4) It has high heat of evaporation
42	Red phosphorus is less reactive than yellow phosphorus because - (1) Its colour is red (2) It is highly polymerised (3) It is tetratomic (4) It is hard
43	Mixture used in Holme's signal is - (1) CaC_2 and $CaCl_2$ (2) $CaCl_2$ and Ca_3P_2 (3) CaC_2 and Ca_3N_2 (4) CaC_2 and Ca_3P_2
44	Which out of the following gases is obtained when ammonium dichromate is heated - (1) Oxygen (2) Ammonia (3) Nitrogen (4) Nitrous oxide
45	Among the trihalides of nitrogen which one is most basic - (1) NF_3 (2) NCl_3 (3) NI_3 (4) NBr_3
46	The correct sequence of decrease in the bond angle of the following hydrides is - : (1) $NH_3 > PH_3 > AsH_3 > SbH_3$ (2) $NH_3 > AsH_3 > PH_3 > SbH_3$ (3) $SbH_3 > AsH_3 > PH_3 > NH_3$ (4) $PH_3 > NH_3 > AsH_3 > SbH_3$

47	The low reactivity of nitrogen is due to - (1) Small atomic radius (2) High electronegativity (3) Stable configuration (4) High bond dissociation energy
48	Which one of the following does not undergo hydrolysis - (1) $AsCl_3$ (2) $SbCl_3$ (3) PCl_3 (4) NF_3
49	Which one of the following properties of white phosphorous are shared by red phosphorous (1) It dissolves in CS_2 (2) It burns when heated in air (3) It reacts with NaOH to give PH_3 (4) It phosphorescences in air
50	Which one of the following pentafluorides cannot be formed - (1) PF_5 (2) AsF_5 (3) SbF_5 (4) NF_5
51	The dimerisation of NO_2 as the temperature is lowered is accompanied by - (1) An increase in pressure (2) A darkening in colour (3) A decrease in paramagnetism (4) The formation of a colloid
52	Which of the following reagents can separate nitric oxide from nitrous oxide - (1) Sodium nitroprusside solution (2) Ferrous sulphate solution (3) Nessler's reagent (4) Tollen's reagent
53	Phosphine is not obtained by the reaction when - (1) White P is heated with NaOH (2) Red P is heated with NaOH (3) Ca_3P_2 reacts with water (4) P_4O_6 is boiled with water
54	In P_4O_6 the number of oxygen atoms bonded to each phosphorus atom is - (1) 1.5 (2) 2 (3) 3 (4) 4
55	Bismuth does not form stable pentahalide because of - (1) Its higher electronegativity (2) Its smaller size (3) Inert pair effect (4) Non availability of d-orbitals
56	Which of the following is basic in nature - (1) H_3PO_3 (2) H_3BiO_3 (3) H_3AsO_3 (4) H_3SbO_3

57	Acidic nitrogen hydride is - (1) N_2H_4 (2) N_3H (3) NH_2OH (4) NH_3
58	PCl_5 exists but NCl_5 does not because - (1) Nitrogen has no vacant d-orbitals (2) NCl_5 is unstable (3) Nitrogen atom is much smaller (4) Nitrogen is highly inert.
59	Flower of phosphorous are - (1) Arsenic (2) Phosphorous (3) P_4O_6 (4) P_4O_{10}
60	Aqueous solution of ammonia consists of - (1) H^+ (2) OH^- (3) NH_4^+ (4) NH_4^+ and OH^-
61	Which of the following phosphorus oxyacids can act as a reducing agent ? (1) H_3PO_3 (2) H_3PO_4 (3) HPO_3 (4) $H_4P_2O_7$
62	When white pnosphorous is heated with caustic soda, the compounds formed are - (1) $PH_3 + NaH_2PO_3$ (2) $PH_3 + NaH_2PO_2$ (3) $PH_3 + Na_2HPO_3$ (4) $PH_3 + NaH_2PO_4$
63	The P – P – P bond angle in white phosphorus is - (1) 120° (2) 90° (3) 60° (4) 109° 28'
64	Phosphine produces smoky rings when it comes in contact with air because - (1) It reacts with water vapour (2) It reacts with nitrogen (3) It burns in air (4) It contains impurities of P_2H_4
65	Liquor ammonia is - (1) Ammonium hydroxide (2) Liquified ammonia gas (3) Concentrated solution of NH_3 in water (4) A solution of NH_3 in alcohol
66	Pearl white is - (1) AsOCl (2) SbOCl (3) BiOCl (4) $(NH_4)_2CO_3$

67 PCl_5 is kept in well stoppered bottles because -

(1) It is highly volatile (2) It reacts with oxygen

(3) It reacts readily with moisture (4) It is explosive

68 Which of the following oxides will be least acidic -

(1) P_4O_6 (2) P_4O_{10} (3) As_4O_6 (4) P_2O_5

69 Which of the following oxy acids of Phosphorus is a reducing agent and monobasic -

(1) H_3PO_2 (2) H_3PO_3 (3) H_3PO_4 (4) $H_4P_2O_7$

70 Which of the following is used as anaesthetic -

(1) NH_3 (2) NO (3) N_2O (4) NO_2

71 Which forms strong $p\pi - p\pi$ bonds ?

(1) N (2) As (3) P (4) Bi

72 Phosphide ion has the electronic structure similar to that of :

(1) N^{3-} (2) Cl^- (3) F^- (4) Na^+

73 The correct order for decreasing acidic strength of oxoacids of gp. 15 is :

(1) $HNO_3 > H_3SbO_4 > H_3AsO_4 > H_3PO_4$ (2) $H_3PO_4 > A_3SO_4 > H_3SbO_4 > HNO_3$

(3) $HNO_3 > H_3PO_4 > H_3AsO_4 > H_3SbO_4$ (4) $HNO_3 > H_3AsO_4 > H_3PO_4 > H_3SbO_4$

74 In the atmosphere N_2 is present as element with O_2 because :

(1) N_2 is more reactive (2) N_2 is inert

(3) N_2 does not react with O_2 (4) N_2 is actively participating in the reaction

75 Which oxyacid of nitrogen is obtained when NO_2 is absorbed in conc. H_2SO_4 ?

(1) HNO_2 (2) HNO_4 (3) HNO_3 (4) none of these

76 HNO_3 oxidizes :

(1) H_2O_2 (2) H_2S (3) SO_2 (4) All of these

77	A compound which leaves behind no residue on heating is : (1) $Cu(NO_3)_2$ (2) KNO_3 (3) NH_4NO_3 (4) none of these

KEY

1	**(2)**
2	**(3)**
3	**(2)**
4	**(4)**
5	**(1)**
6	**: (1)** Except nitrogen all elements exhibit allotropy (NCERT page no : 167)
7	**: (4)** $NH_3NO_3 \rightarrow N_2O + 2H_2O$
8	**(4)**
9	**: (4)** Solid PCl_5 exists as $-PCl_4^+$ and $-PCl_6^-$
10	**: (4)** $Zn + dilHNO_3 \rightarrow Zn(NO_3)_2 + H_2O + N_2O$ $Zn + ConHNO_3 \rightarrow Zn(NO_3)_2 + H_2O + N_2O$
11	**: (4)**
12	

	: (1) The structure of the given oxycids of phosphorus are as
13	(3)
14	(2)
15	(2)
16	(3)
17	(3)
18	(2)
19	**ANS-1**
20	**ANS-2**
21	**ANS-4**
22	**ANS-1**
23	**ANS-3**
24	**ANS-1**
25	**ANS-4**
26	**ANS-2**
27	**ANS-2**
28	**ANS-3**
29	**ANS-3**

30	**ANS-4**
31	**ANS-2**
32	**ANS-1**
33	**ANS-1**
34	**ANS-1**
35	**ANS-2**
36	**ANS-3**
37	**ANS-1**
38	**ANS-3**
39	**ANS-3**
40	**ANS-4**
41	**ANS-4**
42	**ANS-2**
43	**ANS-4**
44	**ANS-3**
45	**ANS-3**
46	**ANS-1**
47	**ANS-4**
48	**ANS-4**

49	**ANS-2**
50	**ANS-4**
51	**ANS-3**
52	**ANS-2**
53	**ANS-2**
54	**ANS-3**
55	**ANS-3**
56	**ANS-2**
57	**ANS-2**
58	**ANS-1**
59	**ANS-4**
60	**ANS-4**
61	**ANS-1**
62	**ANS-2**
63	**ANS-3**
64	**ANS-4**
65	**ANS-3**
66	**ANS-3**
67	**ANS-3**
68	**ANS-3**

69	**ANS-1**
70	**ANS-3**
71	**ANS-1**
72	**ANS-2**
73	**ANS-3**
74	**ANS-2**
75	**ANS -3**
76	**ANS -4**
77	**ANS -3**