CHEMISTRY

BOOKS - BITSAT GUIDE

P BLOCK ELEMENTS : GROUP 15- 18

Practice Exercise

1. When conc. HNO_3 is heated with P_2O_5, it forms

A. N_2O

B. NO

C. NO_2

D. N_2O_5

Answer: D

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2. Acidic hydride of nitrogen is

A. NH_3

B. N_2H_4

C. N_2H_2

D. N_3H

Answer: D

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3. Extra pure N_2 can be obtained by heating

A. NH_3 with CuO

B. NH_4NO_3

C. $(NH_4)_2CrO_7$

D. $Ba(N_3)_2$

Answer: D

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4. The number of σ bonds in P_4O_{10} is

A. 6

B. 16

C. 20

D. 7

Answer: B

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5. PH_3, the hydrine of phosphorus is

A. metallic

B. ionic

C. non-metallic

D. covalent

Answer: D

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6. Among the following compounds, the most acidic is

A. As_2O_3

B. P_2O_5

C. Sb_2O_3

D. Bi_2O_3

Answer: B

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7. Among the following, the number of compounds that can react with PCl_5 to give $POCl_3$ is O_2, CO_2, SO_2, H_2O, H_2SO_4, P_4O_{10}.

A. 1

B. 2

C. 3

D. 4

Answer: D

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8. Nitrogen shows different oxidation states in the range

A. $0 \rightarrow +5$

B. $-3 \rightarrow +5$

C. $-5 \rightarrow +3$

D. $-3 \rightarrow +3$

Answer: B

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9. Which of the following acids possesses oxidising, reducing, and complex forming properties ?

A. HCl

B. HNO_2

C. H_2SO_4

D. HNO_3

Answer: B

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10. When conc. H_2SO_4 is heated with P_2O_5, the acid is converted to

A. sulphur trioxide

B. sulphur dioxide

C. sulphur

D. a mixture of sulphur dioxide and sulphur trioxide

Answer: A

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11. Strong reducing behaviour of H_3PO_2 is due to

A. low oxidation state of phosphorus

B. presence of two-OH groups and one P-H bond

C. presence of one-OH group and two P-H bonds

D. high electron gain enthalpy of phosphorus

Answer: C

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12. The molecule having smallest bond angle is

A. NCl_3

B. $AsCl_3$

C. $SbCl_3$

D. PCl_3

Answer: C

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13. Which of the following statements is wrong?

A. The stability of hydrides increases from NH_3 to BiH_3 in group 15 of the periodic table

B. Nitrogen cannot from $d\pi - p\pi$ bond

C. N-N single bond is weaker than the P-P single bond

D. N_2O_4 has two resonance structures

Answer: A

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14. The maximum covalency of nitrogen is

A. 3

B. 5

C. 4

D. 6

Answer: C

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15. Which of the following statements is wrong?

A. N_N single bond is stronger than the P-P single bond

B. PH_3 can act as ligand in the formation of coordination compound with transition elements

C. NO_2 paramagnetic in nature

D. Covalency of nitrogen in N_2O_5 is four

Answer: A

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16. Which of the following elements can be involved in $p\pi - d\pi$ bonding?

A. Carbon

B. Nitrogen

C. Phosphorus

D. Boron

Answer: C

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17. Bond dissociation enthalpy of E-H (E=element) bond is given below.

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

Which of the following compounds will act as strongest reducing agent?

A. NH_3

B. PH_3

C. AsH_3

D. SbH_3

Answer: D

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18. Density of N_2 gas prepared from air is slightly higher than that of nitrogen prepared by chemical reaction from a compound of nitrogen because aerial nitrogen contains

A. CO_2

B. argon

C. some N_2 molecules analogous to O_2

D. greater amount of N_2 molecules derived from N^{15} isotope

Answer: D

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19. Which of the following statements is incorrect?

A. White phosphorus is metastable while red phosphorus is table

B. White phosphorus is lighter than red phosphorus

C. White phosphorus is highly poisonous while red phosphorus is not

D.

Answer: A

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20. Red phosphorus is chemically less reactive because

A. it does not contain P-P bonds

B. it does not not contain tetrahedral P_4 molecules

C. it does not catch fire in air even upto 400° C

D. it has a polymeric structure

Answer: D

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21. Amonia (NH_3) on heating with carbon dioxide under pressure gives

A. NH_4HCO_3

B. $(NH_4)_2CO_3$

C. NH_2COONH_4

D. $(NH_4)_2CO$

Answer: C

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22. Ammonia is mainly manufactured for fertilisers by the reaction

A. $2NH_4Cl + Ca(OH)_2 \rightarrow CaCl_2 + 2H_2O + 2NH_3$

B. by passing an electric discharge in a mixture of N_2 and H_2

C. by reducin the by-product nitric acid

D. by passing a mixture of N_2 and H_2 under pressure and moderate temperature over a calalyst

Answer: D

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23. In PCl_5, phosphorus shows

A. sp^2-hybridisation

B. sp^3-hybridisation

C. sp^3d-hybridisation

D. sp^3d^2-hybridisation

Answer: C

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24. In mdern process, manufacturing of phosphorus is occurred by

A. heating a mixlure of phosphorite mineral with sand and coke in electric furnace

B. heating calcium phosphate with coke

C. heating bone-ash with coke

D. heating the phosphate mineral with sand

Answer: A

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25. Which of the following compounds is not an interpseudo halogen?

A. Cl_2N_3

B. $BrCN$

C. two

D. ICN

Answer: A

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26. The number of hydrogen atoms attached to phosphorus atom in hypophosphorus is

A. three

B. one

C. two

D. zero

Answer: C

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27. Which of the following statements is true?

A. H_3PO_3 is a stronger acid than H_2SO_3

B. In aqueous medium, HF is a stronger acid than HCl

C. $HClO_4$ is weaker acid than $HClO_3$

D. HNO_3 is a stronger acid the HNO_2

Answer: D

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28. 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

Answer: D

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29. Ionisation enthalpy of group 15 elements

I. decreases down the group due to gradual increase in atomic size.

II. Is higher than that of group 14 elements in the corresponding periods.

III. The order of successive ionisation enthalpies is

$\triangle_i H_1 < \triangle_i H_2 < \triangle_i H_3$

Which of the above statements is/are ture?

A. I and II

B. II and III

C. I and III

D. I, II and III

Answer: D

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30. Assertion (A) Heavier elements of group 15 do not form $p\pi - p\pi$ bonds.

Reason (R) Their atomic orbitals cannot have effective overiapping due to their large size. Choose the most suitable option.

A. Both A and R are correct, R is the correct explanation of A

B. Both A and R are correct, R is not the correct explanation of A

C. A is correct, R is incorrect

D. R is correct, A is incorrect

Answer: A

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31. Consider the following statements,

I. Covalency of N is restricted to four.

II. N cannot from $d\pi - p\pi$ bond as the heavier element can.

III. P and As cannot form $d\pi - d\pi$ bond with transition

elements when their compound like $P(C_2H_5)_3$ and $As(C_6H_5)_3$ act as ligands.

Which of the above statements are true?

A. I and II

B. II and III

C. I and III

D. All of these

Answer: A

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32. Complete the following reactions.

$6Li + . .1.... \xrightarrow{Heat} 2Li_3N$

$3Mg + N_2 \xrightarrow{Heat} II$

$N_2(g) + 3H_2(g) \overset{773K}{\Longleftrightarrow} ...III..., \ \triangle_f H^\circ = -46.1KJMol^{-1}$

Here, I, liand III refer to

A. $\begin{matrix} I & II & III \\ N_2 & Mg_3N_2 & NH_3 \end{matrix}$

B. $\begin{matrix} I & II & III \\ 2N_2 & Mg_3N & NH_3 \end{matrix}$

C. $\begin{matrix} I & II & III \\ 2N_2 & Mg_3N & 2NH_3 \end{matrix}$

D. $\begin{matrix} I & II & III \\ N_2 & Mg_3N_2 & 2NH_3 \end{matrix}$

Answer: D

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33. $NH_2CONH_2 + 2H_2O \rightarrow .... A....$

$\Leftrightarrow 2NH_3 + H_2O + ... B....$

In the above equation, A and B respectively are

A. $(NH_4)_2CO_3$ and CO_2

B. $(NH_4)_2CO_3$ and CO

C. $(NH_4)CO_3$ and CO

D. $(NH_4)CO_3$ and CO_2

Answer: A

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34. The correct decreasing order for the acidic strength of oxides of nitrogen is

A. $N_2O_5 > N_2O_3 > N_2O_4 > NO > N_2O$

B. $NO > N_2O > N_2O_3 > N_2O_4 > N_2O_5$

C. $N_2O > NO > N_2O_3 > N_2O_4 > N_2O_5$

D. $N_2O_5 > N_2O_4 > N_2O_3 > NO > N_2O$

Answer: D

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35. Brown ring test for nitrates depends on

I. the ability of Fe^{2+} to reduce nitrates to nitric oxide,

II. Its reaction with Fe^{2+} to form a brown coloured complex.

Which of the above statements regarding brown test for nitrates is/are true?

A. Only I

B. Only II

C. Both I and II

D. Neither I nor II

Answer: C

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36. The correct increasing order of acidic strength of oxyacids of group 15 elements is

A. $H_3SbO_4 < H_3PO_4 < H_3AsO_4 < HNO_3$

B. $H_3SbO_4 < H_3AsO_4 < H_3PO_4 < HNO_3$

C. $HNO_3 < H_3SbO_4 < H_3AsO_4 < H_3PO_4$

D. $H_3PO_4 < H_3AsO_4 < H_3SbO_4 < HNO_3$

Answer: B

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37. Reaction of HNO_3 with C,P,S and I respectively give

A. CO, H_3PO_4, H_2SO_4 and HIO_2

B. CO_2, P_2O_5, SO_2 and I_2O_5

C. CO_2, H_3PO_3, H_2SO_3 and HIO_3

D. CO_2, H_3PO_4, H_2SO_4 and HIO_3

Answer: D

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38. Phosphine is used in

A. holme's signals

B. smoke screens

C. Both a. and b.

D. Neither a. nor b.

Answer: C

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39. In trimetaphosphate ion, the number of O-atoms, P-O-P bonds and unit negative charges respectively are

A. 3, 6 and 3

B. 9, 6 and 3

C. 6, 6 and 3

D. 9, 3 and 3

Answer: D

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40. Complete the following reactions:

$I.\ \underset{(Excess)}{8NH_3} + 3Cl_2 \rightarrow I$

$II.\ NH_3 + 3Cl_2 \underset{(Excess)}{\rightarrow} II$

	I	II
a.	$6NH_4Cl + N_2$	$NCl_3 + 3HCl$
b.	$NCl_3 + 3HCl$	$6NH_4Cl + N_2$
c.	$NCl_3 + N_2$	$6NH_4Cl + 3HCl$
d.	$6NH_4Cl + 3HCl$	$NCl_3 + N_2$

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41. The number of S-S bonds in sulphur trioxide trimer (S_3O_9) is

A. three

B. two

C. one

D. zero

Answer: D

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42. Oxidation states of O in OF_2 and O_2F_2 respectively are

A. $+1$ and $+2$

B. $+1$ and $+3$

C. $+2$ and $+3$

D. $+2$ and $+1$

Answer: D

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43. Water is much less volatile than H_2S because

A. H_2O has a bond angle of nearly 150°

B. hydrogen is ioosely bonded with the sulphur

C. sulphur atom is less electronegative than oxygen atom

D. sulphur atom is more electronegative than oxygen atom

Answer: C

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44. Correct decreasing order O-O bond length in O_2,

A. $O_2 > H_2O_2 > O_3$

B. $H_2O_2 > O_2 > O_3$

C. $H_2O_2 > O_3 > O_2$

D. $O_2 > O_3 > H_2O_2$

Answer: C

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45. Uses of ozone (O_3) includes

I. as an oxidising agent in the manufacturing of $KMnO_4$.

II. As a germicide, disinfectant and for sterilisation.

III. For bleaching oils, flour, ivory, starch, etc.

The correct set of uses of ozone is

A. I and II

B. II and III

C. I and III

D. All of these

Answer: D

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46. Angular shape of ozone molecule consists of

A. $1\ \sigma\ \text{and}\ 1\ \pi\ \text{bond}$

B. $2\ \sigma\ \text{and}\ 2\ \pi\ \text{bond}$

C. $1\ \sigma\ \text{and}\ 2\ \pi\ \text{bond}$

D. 2 σ and 1 π bond

Answer: D

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47. Consider the following reaction,

$$2SO_2(g) + O_2(g) \xrightarrow{Catalyst} 2SO_3(g)$$

Identify the catalyst

A. V_2O_5

B. $CuCl_2$

C. MnO_2

D. Either (a) or (b)

Answer: A

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48. Peroxoacids of sulphur are

A. $H_2S_2O_8$ and H_2SO_5

B. $H_2S_2O_8$ and $H_2S_2O_7$

C. $H_2S_2O_7$ and $H_2S_2O_6$

D. H_2SO_5 and $H_2S_2O_7$

Answer: A

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49. Consider the following statements,

I. S-S bond is present in $H_2S_2O_6$.

II. In peroxodisulphuric acid $(H_2S_2O_8)$, sulphur is in $+6$ oxidation state.

The correct set of statement is

A. Only I

B. Only II

C. Both I and II

D. Neither I nor II

Answer: A

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50. On treating PCl_5 with H_2SO_4, sulphuryl chloride (SO_2Cl_2) is formed as the final product. This shows that H_2SO_4

A. is a derivative of SO_2

B. is a dibasic acid

C. has great affinity for water

D. has two hydroxyl groups in its structure

Answer: D

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51. Carborundum is obtained when silica is heated at high temperature with

A. Carbon

B. carbon monoxide

C. carbon dioxide

D. calcium carbonate

Answer: D

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52. Red lead is

A. PbO

B. Pb_3O_4

C. PbO_2

D. Pb_4O_3

Answer: B

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53. Which of the following halides is least stable and has a doubtful existence ?

A. Cl_4

B. Gel_4

C. Snl_4

D. Pbl_4

Answer: D

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54. The mixture of concentrated HCl and HNO_3 made in $3:1$ ratio contains

A. ClO_2

B. $NOCl$

C. NCl_3

D. N_2O_4

Answer: B

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55. For making good quality mirrors, the plates of flint glass are used. These are obtained by floating molten glass over a liquid metal which does not solidify before glass. The metal used can be

A. tin

B. sodium

C. magnesium

D. mercury

Answer: A

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56. When I^{Θ} is oxidised by MnO_4^{Θ} in an alkaine medium, I^{Θ} converts into

A. IO_4^-

B. I_2

C. IO_4^-

D. IO^-

Answer: A

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57. which of the following represent the decreasing order of van der waals forces in halogens?

A. $F_2 > Cl_2 > Br_2 > l_2$

B. $l_2 > Br_2 > Cl_2 > F_2$

C. $Br_2 > Cl_2 > F_2 > l_2$

D. $Cl_2 > Br_2 > l_2 > F_2$

Answer: B

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58. Decreasing order of reducing power of hydrogen halides is

A. $HI > HBr > HCl > HF$

B. $HF > HI > HBr > HCl$

C. $HI > HF > HBr > HCl$

D. None of these

Answer: A

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59. Cl_2O is an anhydride of

A. $HClO_4$

B. $HOCl$

C. $HClO_2$

D. Cl_2O_3

Answer: B

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60. A gas X is passed through water to form a saturated solution. The aqueous solution on treatement with $AgNO_3$ gives a white precipitate. The saturated aqueous solution also dissolves Mg ribbon with evolution of colourless gas Y, X and Y are respectively:

A. CO_2 and Cl_2

B. Cl_2 and CO_2

C. Cl_2 and H_2

D. H_2 and Cl_2

Answer: C

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61. In the oxyacids of chlorine $Cl - O$ bond contains

A. $d\pi - d\pi$ bonding

B. $p\pi - d\pi$ bonding

C. $p\pi - p\pi$ bonding

D. None of these

Answer: B

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62. The stability of the halides of group 16 elements decreases in the order

A. $Br^- > I^- > Cl^- > F^-$

B. $F^- > I^- > Cl^- > Br^-$

C. $F^- Cl^- > Br^- > I^-$

D. $I^- Cl^- > Br^- > F^-$

Answer: C

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63. Arrange the following acids in the correct increasing order of their acidic strength,

HCl, HBr, HI, HF

A. $HI < HBr < HCl < HF$

B. $HF < HCl < HBr < HI$

C. $HCl < HBr < HI < HF$

D. $HBr < HI < HF < HCl$

Answer: B

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64. Consider the following statements,

I. Fluorine forms two oxides OF_2 and O_2F_2.

II. OF_2 is thermodynamically stable at 298 K.

III. O_2F_2 oxidises plutonium to PuF_6.

The correct set of statements is,

A. I and II

B. II and III

C. I and III

D. I, II and III

Answer: D

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65. Reduction potentials of some ions are given below.

Ion	ClO_4^-	IO_4^-	BrO_4^-
Reduction potential $E°/V$	$E°$ = 1.19 V	$E°$ 1.65 V	$E°$ 1.74 V

Arrange them in decreasing order of oxidising power.

A. $ClO_4^- > IO_4^- > BrO_4^-$

B. $IO_4^- > BrO_4^- > ClO_4^-$

C. $BrO_4^- > IO_4^- > ClO_4^-$

D. $BrO_4^- > ClO_4^- > IO_4^-$

Answer: D

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66. Consider the following statements,

I. Among halide ions, iodine is the most powerful reducing agent.

II. HOCl is stronger acid than HOBr.

III. HF is stronger acid than HCl.

IV. Fluorine is the only halogen that does not show variable oxidation states.

The correct set of statements is

A. I, II and III

B. II and IV

C. I, II and IV

D. I, II, III and IV

Answer: C

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67. Among the C-X bond (where, X=Cl,Br,I) the correct decreasing order of bond energy is

A. $C-I>C-Cl>C-Br$

B. $C-I>C-Br>C-Cl$

C. $C-Cl>C-Br>C-I$

D. $C - Br > C - Cl > C - I$

Answer: C

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68. $4HCl + O_2 \xrightarrow{CuCl_2} 2Cl_2 + 2H_2O$ The above reaction of chlorine preparation is of

A. Deacon's process

B. Contact process

C. Either (a) or (b)

D. None of these

Answer: A

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69. Bleaching powder is an example of

A. a complex salt

B. an acidic salt

C. a basic salt

D. a mixed salt

Answer: D

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70. $I.\ \underset{(cold\ \text{and}\ dlll)}{2NaOH} + Cl_2 \rightarrow ...A... + ...B... + H_2O$

$II.\ \underset{(hot\ \text{and}\ conc.)}{6NaOH} + 3Cl_2 \rightarrow ...C... + ...D... + 3H_2O$

Here, A, B, C and D refer to

oxidising agent are

I. $2HI + H_2SO_4 \longrightarrow I_2 + SO_2 + 2H_2O$

II. $NaCl + 2H_2SO_4 \longrightarrow NaHSO_4 + HCl$

III. $CaF_2 \mid H_2SO_4 \longrightarrow CaSO_4 + 2HF$

IV. $Cu + 2H_2SO_4 \longrightarrow CuSO_4 + SO_2 + 2H_2O$

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71. The reactions in which conc. H_2SO_4 is used as an oxidising agent are

I. $2HI + H_2SO_4 \rightarrow I_2 + SO_2 + 2H_2O$

II. $NaCl + 2H_2SO_4 \rightarrow NaHSO_4 + HCl$

III. $CaF_2 \mid H_2SO_4 \rightarrow CaSO_4 + 2HF$

IV. $Cu + 2H_2SO_4 \rightarrow CuSO_4 + SO_2 + 2H_2O$

Choose the correct option.

A. I and II

B. II and III

C. I and III

D. I and IV

Answer: D

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72. Hydrolysis of one mole of peroxodisulphuric acid produces

A. two moles of peroxomonosulphuric acid

B. two moles of sulphuric acid

C. one mole each of sulphuric acid, peroxomonosulphuric acid and hydrogen peroxide

D. one mole of sulphuric acid and one mole of peroxomonosulphuric acid

Answer: D

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73. Enthalpy of molecular oxygen is almost identical with that of

A. neon

B. argon

C. helium

D. xenon

Answer: D

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74. The ease of liquefaction of noble gases increases in the order

A. $He < Xe < Ar < Kr < Ne$

B. $Xe < Kr < Ar < He < Ne$

C. $He < Ne < Ar < Kr < Xe$

D. $Xe < He < Ne < Ar < Kr$

Answer: C

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75. Among XeO_2, XeO_2F_2 and XeF_6, the molecules having same number of lone pairs on Xe are

A. XeF_6 and XeO_2F_2

B. XeO_3 and XeO_2F_2

C. XeO_3 and XeF_6

D. XeO_3, XeO_2F_2 and XeF_6

Answer: B

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76. Which of the following complexes is responsible for the brown colour of the ring formed in the ring test for the nitrates?

A. $FeSO_4.NO_2$

B. $FeSO_4.HNO_3$

C. $\left[Fe(H_2O)_5(NO)\right]^{2+}$

D. $\left[Fe(H_2O)_4(NO)_2\right]^{2+}$

Answer: C

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77. Which of the following statements regarding sulphur is incorrect?

A. S_2 molecule is paramagnetic

B. The vapour at 200° C consists mostly of S_8 rings

C. At 600° C, the gas mainly consists of S_2 molecules

D. The oxiadation state of sulphur is never less than $+4$ In its compounds

Answer: D

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78. Which one of the following reaction of xenon compounds is not Feasible?

A. $XeO_3 + 6HF \rightarrow XeF_6 + 3H_2O$

B. $3XeF_4 + 6H_2O \rightarrow 2Xe + XeO_3 + 12HF + 1.5O_2$

C. $2XeF_2 + 2H_2O \rightarrow 2Xe + 4HF + O_2$

D. $XeF_6 + RbF \rightarrow Rb[XeF_7]$

Answer: A

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79. 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

Answer: C

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80. The correct decreasing order of the acidic strength of $HClO, HClO_2, HClO_4, HClO_4$ is

A. $HClO > HClO_2 > HClO_3 > HClO_4$

B. $HClO_4 > HClO_3 > HClO_2 > HClO$

C. $HClO_4 > HClO_2 > HClO > HClO_3$

D. $HClO_3 > HClO > HClO_4 > HClO_2$

Answer: B

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81. The hybrid state of halogen atom is sp^3 in

A. ClO_4^-

B. ClO^-

C. ClO_3^-

D. All of the above

Answer: D

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82. Interhalogen compounds are

A. covalent molecules

B. diamagnetic in nature

C. volatile solids/liquids at 298 K except CIF

D. All of the above

Answer: D

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83. Interhalogen compounds can be used as

I. non-aqueous solvents,

II. Flurinating agents.

The correct use(s) is/are

A. Only I

B. Only II

C. Both I and II

D. Neither I nor II

Answer: C

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84. Assertion (A) X-X' bond in interhalogens is weaker than X-X bond in halogens.

Reason (R) Interhalogen compounds are more reactive than halogens (except fluorine).

A. Both A and R are correct, R is the correct explanation of A

B. Both A and R are correct, R is not the correct explanation of A

C. A is correct, R is incorrect

D. R is correct, A is incorrect

Answer: B

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85. Which of the following statements are correct?

I. Among halogens, radius ratio between iodine and fluorine is maximum.

II. Leaving F-F bond, all halogens have weaker X-X bond than X-X' bond in interhalogens.

III. Among interhalogen compounds, maximum number of atoms are present in iodine fluoride.

IV. Interhalogen compounds are more reactive than halogen compounds.

The correct option is

A. I, II and III

B. I, III and IV

C. II, III and IV

D. I and IV

Answer: B

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86. Assertion (R) SF_6 is known but SCl_6 is not.

Reason (R) Due to small size of F.

A. Both A and R are correct, R is the correct explanation of A

B. Both A and R are correct, R is not the correct explanation of A

C. A is correct, R is incorrect

D. R is correct, A is incorrect

Answer: A

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Bitast Archives

1. The reaction of P_4 with X leads selectively to P_4O_6 The X is :

A. dry O_2

B. moist O_2

C. mixture of O_2 and N_2

D. O_2 in the presence of aqueous NaOH

Answer: C

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2. The acidic strength for the hydrides of group 15 follows the order

A. $NH_3 > PH_3 > AsH_3 > SbH_3$

B. $NH_3 < PH_3 < AsH_3 < SbH_3$

C. $NH_3 > PH_3 > SbH_3 > AsH_3$

D. $NH_3 < PH_3 < SbH_3 < AsH_3$

Answer: B

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3. BF_3 and NF_3 both molecules, are covalent, but BF_3 is non - polar and NF_3 is polar.Its reason is

A. boron is a metal and nitrogen is a gas in uncombined state

B. BF_3 bonds have no dipole moment whereas NF_3 bond have dipole moment

C. atomic size of boron is smaller than that of nitrogen

D. BF_3 is symmetrical molecule whereas NF_3 is unsymmetrical

Answer: D

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4. Sodium carbonate reacts with SO_2 in aqueous medium to give

A. $NaHSO_3$

B. $Na_2S_2O_3$

C. $NaHSO_4$

D. Na_2SO_4

Answer: A

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5. The highest bond strength is shown by

A. O-O bond

B. S-S bond

C. Se-Se bond

D. Te-Te bond

Answer: B

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6. Which one of the following is pyrophosphoric acid ?

A. H_3PO_4

B. $H_4P_2O_7$

C. $H_4P_2O_5$

D. H_3PO_4

Answer: B

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7. Which of the following has maximum dipole moment?

A. NCl_3

B. NBr_3

C. NH_3

D. NI_3

Answer: C

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8. Chlorine acts as a bleaching agent only in the presence of

A. dry air

B. moisture

C. sunlight

D. pure oxygen

Answer: B

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9. Helium-oxygen mixture is used by deep sea divers in the presence of nitrogen-oxygen mixture because

A. hellium is much less soluble in blood than nitrogen

B. nitrogen is much less soluble in blood than helium

C. due to high pressure deep under the sea, nitrogen and oxygen react to give poisonous nitric oxide

D. nitrogen is highly soluble in water

Answer: A

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10. Distinguishing reagent between silver and lead salt is

A. H_2S gas

B. dil. HCl solution

C. $[NH_2Cl(solid) + NH_4OH]$ solution

D. $[NH_2Cl(solid) + (NH_4)CO_3]$ solution

Answer: B

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11. Identify B in the following

$$H_4SiO_4 \xrightarrow[-H_2O]{1000^0C} A \xrightarrow[?]{\text{Carbon}} B + CO$$

A. Corundum

B. Quartz

C. Silica

D. Carborundum

Answer: D

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12. The correct order of reducing abilites of hydrides of group 15 elements is

A. $NH_3 < PH_3 < AsH_3 < SbH_3 < BiH_3$

B. $NH_3 > PH_3 > AsH_3 > SbH_3 > BiH_3$

C. $NH_3 < PH_3 > AsH_3 > SbH_3 > BiH_3$

D. $SbH_3 > BiH_3 > AsH_3 > NH_3 > PH_3$

Answer: C

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13. Which one of the following pentafluorides cannot be formed?

A. PF_5

B. AsF_5

C. SbF_5

D. BiF_5

Answer: D

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14. Which of the following is most volatile compound?

A. HI

B. HCl

C. HBr

D. HF

Answer: B

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15. SO_2 does not act as a/an

A. bleaching agent

B. oxidising agent

C. reducing agent

D. dehydrating agent

Answer: D

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16. Which one of the following noble gases is not found in atmoshphere?

A. Ne

B. Ar

C. Rn

D. Kr

Answer: D

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17. In P_4O_{10},

A. second bond in P=O is formed by $p\pi - d\pi$ back bonding

B. P=O bond is formed by $p\pi - p\pi$ bonding

C. P=O bond is formed by $d\pi - d\pi$ bonding

D. P=O bond is formed by $d\pi - d\pi - 3\sigma$ back bonding

Answer: A

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18. Dinitrogen pentoxide ,a colourless deliquescentsolid is ,prepared by

A. heating NH_2NO_2 with an excess of oxygen

B. dehydrating HNO_2 with CaO

C. dehydrating HNO_3 with P_4O_{10}

D. heating a mixture of HNO_2 and $Ca(NO_3)_2$

Answer: C

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19. Incorrect statements for pyrophosphorus acid $(H_4P_2O_5)$ is

A. It contains P in +5 oxidation state

B. It is dibasic acid

C. It is strongly reducing in nature

D. It contains one P-O-P bond

Answer: A

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