Wings

Inorganic Chemistry_Revision_Set II

DATE: 08-01-2022 **TIME:** 200mins

1 **The concentration of dissolved oxygen (DO) in cold water can go upto :**

(A) 8 ppm **(B)** 10 ppm **(C)** 16 ppm **(D)** 14 ppm

2 **Which of the following is not a green house gas ?**

(A) CO **(B)** CH_4 **(C)** H_2O vapours **(D)** O_3

3 **Electronic configuration of Eu (Z = 63) is :**

(A) $(Xe)4\ f^6 5d^1\ 6s^2$ **(B)** $(Xe)4f^7 6^2$

(C) $(Xe)4f^7 5d^1\ 6s^2$ **(D)** none of these

4

Which oxide of nitrogen is not a common pollutant introduced into the atmosphere both due to natural and human activity?

(A) N_2O_5 **(B)** NO_2

(C) N_2O **(D)** NO

5 **The electronic configuration of copper is**

(A) $[Ar]\ 4s^2\ 3d^9$ **(B)** $[Ar]\ 4s^1\ 3d^{10}$

(C) $[Kr]\ 5s^2\ 4d^9$ **(D)** $[Kr]\ 5s^1\ 4d^{10}$

6

Statement I Molar conductance of the following aqueous ion is
$Li^+ < Na^+ < K^+ < Rb^+ < Cs^+$

Statement II More the hydration of cation more will be the conductivity.

(A)
Both statement are correct and statement 2 is the correct explanation of statement1

(B)
Both statement are true and statement 2 is the not the correct explanation of statement1

(C)
Statement I is true but Statement II is false

(D)
Both Statement I and Statement II are false

7 **The artificial sweetener stable at cooking temperature and does not provide calories is**

(A) saccharin **(B)** aspartame

(C) sucralose **(D)** alitame

8 **A reduction in atomic size with increase in atomic number is a characteristic of elements of:**

(A) d-block **(B)** f-block

(C) radioactive series **(D)** high atomic masses

9 **Kjeldahl's method cannot be used for the estimation of nitrogen in:**

(A) Pyridine **(B)** Nitrocompounds **(C)** Azo compounds **(D)** All

10 **The drug used for reducing fever is called**

(A) analgesic **(B)** tranquilizer

(C) antipyretic **(D)** antibiotic

11 **A water sample has ppm level concentration of following anions**

F^- = 10 ; SO_4^{2-} = 100 ; NO_3^- = 50

The anion/anions that make/makes the water sample unsuitable for drinking is/are:

F^- = 10 ; SO_4^{2-} = 100 ; NO_3^- = 50

(A) both SO_4^{2-} and NO_3^- **(B)** only F^-

(C) only SO_4^{2-} **(D)** only NO_3^-

12 **Identify the pollutant gases largely responsible for the dicoloured and lusterless nature of marble of the Taj Mahal.**

(A) SO_2 and NO_2 **(B)** CO_2 and NO_2 **(C)** SO_2 and SO_3 **(D)** O_3 and CO_2

13 **Chloroamphenicol is an**

(A) antifertility drug **(B)** antihistamine

(C) antiseptic and disinfectant **(D)** antibiotic-broad spectrum

14 **Arrange Ce^{3+}, La^{3+}, Pm^{3+}, and Yb^{3+} in increasing order of their ionic radius –**

(A) $Yb^{3+} < Pm^{3+} < Ce^{3+} < La^{3+}$ **(B)** $Ce^{3+} > Yb^{3+} < Pm^{3+} < La^{3+}$ **(C)** $Yb^{3+} > Pm^{3+} < La^{3+} < Ce^{3+}$ **(D)** $Pm^{3+} < La^{3+} < Ce^{3+} < Yb^{3+}$

15 **Antiseptics and disinfectants either kill or prevent growth of microorganisms. Identify which of the following statements is not true.**

(A) Dilute solutions of boric acid and hydrogen peroxide are strong antiseptics. **(B)** Disinfectants harm the living tissues.

(C) A 0.2% solution of phenol is an antiseptic while 1 % solution acts as a disinfectant. **(D)** Chlorine and iodine are used as strong disinfectants.

16 Which one of the following is not a common component of photochemical smog?

(A) Ozone **(B)** Acrolein

(C) Peroxyacetyl nitrate **(D)** Chlorofluorocarbons

17 **Among the following, the one that is not a greenhouse gas is**

(A) sulphur dioxide **(B)** nitrous oxide

(C) Methane **(D)** Ozone

18 **The upper stratosphere consisting of the ozone layer protects us from the sun's radiation that falls in the wavelength region of :**

(A) 600 – 750 nm **(B)** 0.8 – 1.5 nm **(C)** 400 – 550 nm **(D)** 200 – 315 nm

19 **The pH of rain water, is approximately :**

(A) 6.5 **(B)** 7.5 **(C)** 7.0 **(D)** 5.6

20 **Aspirin is**

(A) Antibiotic **(B)** Antipyretic

(C) Sedative **(D)** Psychedelic

21 **The molecule that has minimum/no role in the formation of photochemical smog, is :**

(A) N_2 **(B)** $CH_2 = O$ **(C)** O_3 **(D)** NO

22 **Which of the following metal is leached by cyanide process?**

(A) Ag **(B)** Na **(C)** Al **(D)** Cu

23 Green chemistry means such reactions which

(A) are related to the depletion of ozone layer

(B) study the reactions in plants

(C) produce colour during reactions

(D) reduce the use and production of hazardous chemicals.

24 **The mechanism of action of Terfenadine (Seldane) is:**

(A) Activates the histamine receptor **(B)** Helps in the secretion of histamine

(C) Inhibits the secretion of histamine **(D)** Inhibits the action of histamine receptor

25 **Mixture of chloroxylenol and terpineol acts as**

(A) antiseptic **(B)** antipyretic

(C) antibiotic **(D)** analgesic

26 $X \xrightarrow{N_2,\Delta} Y \xrightarrow{H_2O} \underset{\text{Colourless}}{Z} \xrightarrow{CuSO_4} T\,(\text{Blue colour})$ Y and T respectively,

(A) $Mg(NO_2)_2$, $[Cu(NH_3)_4]SO_4$

(B) Mg_3N_2, $[Cu(NH_3)_4]SO_4$

(C) MgO, $[Cu(NH_3)_4]SO_4$

(D) $Mg(NO_3)_2$, $[Mg(NH_3)_4]SO_4$

27 **The white paint lithopone is**

(A) $ZnS + BaSO_4$ **(B)** $ZnO + BaSO_4$

(C) $ZnSO_4$+BaO **(D)** $ZnSO_4$+BaS

28 कच्ची (अपरिष्कृत) धातुओं के परिशोधन के लिए कौनसी विधि सही नहीं है ?

(A) द्रवण : टिन

(B) जॉन परिशोधन : सिलिकॉन

(C) वैद्युत अपघट्य परिशोधन : फफोलेदार ताँबा

(D) मॉण्ड प्रक्रम : एलुमिनियम

29 **The effect of lanthanoid contraction in the lanthanoid series of elements by and large means :**

(A) increase in both atomic and ionic radii

(B) decrease in both atomic and ionic radii

(C) decrease in atomic radii and increase in ionic radii

(D) increase in atomic radii and decrease in ionic radii

30

	Column I (Radicals)		Column II (colour of borax bead in hot oxidizing flame)
(A)	Co^{2+}	(p)	Violet
(B)	Fe^{3+}	(q)	Blue
(C)	Cr^{3+}	(r)	Green
(D)	Mn^{2+}	(s)	Yellowish brown

(A) A→q ; B→s; C→r; D→p

(B) A→q ; B→s; C→r; D→r

(C) A→q ; B→p; C→r; D→p

(D) A→s ; B→s; C→r; D→p

31 Match the tests with the respective salt solutions:

	Column – I		Column – II
A)	White ppt. formation with aq. $BaCl_2$	p)	$BiCl_3$
B)	Add excess of HNO_3 and then ammonium molybdate., yellow ppt	q)	$(CH_3COO)_2Mg$
C)	Add Conc.H_2SO_4, a pungent smell gas is evolved.	r)	$(NH_4)_3PO_4$
D)	Add Na_2HPO_4 with NH_4Cl and NH_4OH a white ppt.	s)	Na_2SO_4

(A) a) r,s; b) r; c) p; d) p,q

(B) a) r,s; b) r; c) p; d) p,r

(C) a) r,s; b) r; c) r; d) p,q

(D) a) p,s; b) r; c) p; d) p,q

32 **Incorrect reduction process is :**

(A) $2[Ag(CN)_2]^- + Zn \rightarrow [Zn(CN)_4]^{2-} + 2Ag$

(B) $Cu_2O + H_2 \xrightarrow{\Delta} 2Cu + H_2O$

(C) $ZnO + Cu \xrightarrow{\Delta} Zn + CuO$

(D) $TiCl_4 + 2Mg \xrightarrow{\Delta} Ti + 2MgCl_2$

33 **The metal sulphide (A) is**

(A) CuS

(B) ZnS

(C) Cu_2S

(D) None of these

34 **Statement – I :- Molten AlBr3 is poor conductor of electricity**
Statement – II :- AlBr3 being ionic in nature provides Al^{+3} and Br^- ions.

(A) STATEMENT–1 is True, STATEMENT–2 is True; STATEMENT–2 is a correct explanation forSTATEMENT–1

(B) STATEMENT–1 is True, STATEMENT–2 is True; STATEMENT–2 is a correct explanation forSTATEMENT–1

(C) STATEMENT–1 is True, STATEMENT–2 is False

(D) STATEMENT–1 is False, STATEMENT–2 is True

35 **Which of the following ore is concentrated by forth floatation process**

(A) Magnetite

(B) Silver glance

(C) Casetterite

(D) Horn silver

36 **Ammonium dichromate is used in fire works. The green coloured power blown in the air is**

(A) CrO_3

(B) Cr_2O_3

(C) Cr

(D) $CrO(O_2)$

37 **Of the following the metals that can not be obtained by electrolysis of the aqueous solution of their salts are**

(A) Ag **(B)** Mg **(C)** Cu **(D)** None of these

38

Number of unpaired electrons present in Thulium (Tm^{+2}) and Holmium (Ho^{+3}) are respectively :

(A) 0, 3

(B) 1, 4

(C) 2, 4

(D) 1, 3

(A) A **(B)** B

(C) C **(D)** D

39 **The gas (E) is**

(A) SO_2 **(B)** SO_3

(C) H_2S **(D)** CO_2

40

Position of non-polar and polar part in micelle

(A)
polar at outer surface but non-polar at inner surface

(B)
polar at inner surface non-polar at outer surface

(C) distributed over all the surface

(D) are present in the surface only.

41 **Consider the following statements :**
S_1 : In extraction of iron from haematite ore, the reduction reactions take place only in the lower temperature range in the blast furnace.
S_2 : Calamine is a carbonate ore of zinc.
S_3 : The principal ore of aluminium, bauxite, usually contains silica, iron oxides and titanium oxide as impurities.
S_4 : Solidified copper obtained from silica lined convertor (Bessemer converter) has blistered appearance due to the evolution of SO_2.
and arrange in the order of true/false.

(A) F T T T **(B)** F T F F **(C)** F F T T **(D)** T F F T

42 **Down's cell is use for extraction of**

(A) Mg **(B)** Ca

(C) Na **(D)** N_2

43

Which mixture of the solutions will lead to the formation of negatively charged colloidal $[AgI]I^-$ sol?

(A) 50 mL of 0.1 M $AgNO_3$ + 50 mL of 0.1 M KI

(B) 50 mL of 1 M $AgNO_3$ + 50 mL of 1.5 M KI

(C) 50 mL of 1 M $AgNO_3$ + 50 mL of 2 M KI

(D) 50 mL of 2 M $AgNO_3$ + 50 mL of 1.5 M KI

44 **Select incorrect statement(s)**

(A) ionization energies of 5d-elements are greater than those of 3d and 4d elements

(B) Cu(I) is diamagnetic while Cu(II) is paramagnetic

(C) $[Ti(H_2O)_6]^{3+}$ is coloured while $[Sc(H_2O_6)]^{3+}$ is colourless

(D) transition elements cannot form complexes.

45

42. Match the following

	Column – I		Column – II
(A)	Zn	(p)	Self reduction
(B)	Pb	(q)	Fused salt electrolysis
(C)	Ca	(r)	Carbon reduction
(D)	Cu	(s)	Electrolytic purification

(A) (A – r), (B – s), (C – q), (D – p, s)

(B) (A – r), (B – s), (C – s), (D – p, s)

(C) (A – r), (B – r), (C – q), (D – p, s)

(D) (A – r), (B – s), (C – q), (D – p, r)

46 **STATEMENT – 1**
Thermite mixture Fe_2O_3 + Al (powder) is used in the welding
STATEMENT–2
Al is a good reductant.

(A) STATEMENT–1 is True, STATEMENT–2 is True; STATEMENT–2 is a correct explanation forSTATEMENT–1

(B) STATEMENT–1 is True, STATEMENT–2 is True; STATEMENT–2 is NOT a correct explanation for STATEMENT–1

(C) STATEMENT–1 is True, STATEMENT–2 is False

(D) STATEMENT–1 is False, STATEMENT–2 is True

47

Measuring zeta potential is useful in determining which property of colloidal solution?

(A) Viscosity

(B) Solubility

(C) Stability of the colloidal particles

(D) Size of the colloidal particles

48 **STATEMENT-1:**
Chalcocite, chalcopyrites are the ores of copper
STATEMENT-2:
They are mainly used to extract Cu

(A) Statement – 1 is True, Statement – 2 is True; Statement – 2 is a correct explanation for Statement – 1.

(B) Statement – 1 is True, Statement – 2 is True; Statement – 2 is NOT a correct explanation for Statement – 1.

(C) Statement – 1 is True, Statement – 2 is False.

(D) Statement – 1 is False, Statement – 2 is True.

49

Sulphide ores of metals are usually concentrated by froth floatation process. Which one of the following sulphide ores offer an exception and is concentrated by chemical leaching?

(A) Galena

(B) Copper pyrite

(C) Sphalerite

(D) Argentite

50

Select the **CORRECT** order of property regarding p-block elements.

(A) B > Al > Ga > In > Tℓ (Ionisation Enthalpy).

(B) $CO_2 < SiO_2 < GeO_2 < SnO_2 < PbO_2$ (Acidic Nature).

(C) $NH_3 < PH_3 < AsH_3 < SbH_3$ (Reducing Character).

(D) $F_2 > Cl_2 > Br_2 > I_2$ (Bond Dissociation Energy).

51

The Langmuir adsorption isotherm is deduced using the assumption

(A) the adsorption sites are equivalent in their ability to adsorb the particles

(B) the heat of adsorption varies with coverage

(C) the adsorbed molecules interact with each other

(D) the adsorption takes place in multilayers

52 **Conc. HNO_3 is added before proceeding to test III group radicals, because**

(A) to form nitrates which gives granular precipitates.

(B) oxidize any remaining H_2S.

(C) increase ionization of NH_4OH

(D) convert Fe^{2+} ion to Fe^{3+} ions

53 **In the extraction of iron, the slag produced is**

(A) CO

(B) $FeSiO_3$

(C) $MgSiO_3$

(D) $CaSiO_3$

54 **गलत** अपचयन प्रक्रिया है :

(A) $2[Ag(CN)_2]^- + Zn \longrightarrow [Zn(CN)_4]^{2-} + 2Ag$

(B) $Cu_2O + H_2 \xrightarrow{\Delta} 2Cu + H_2O$

(C) $ZnO + Cu \xrightarrow{\Delta} Zn + CuO$

(D) $TiCl_4 + 2Mg \xrightarrow{\Delta} Ti + 2MgCl_2$

55 **Zinc blende is concentrated by**

(A) Electromagnetic process **(B)** Calcination process **(C)** Distillation **(D)** Froth floatation process

56

The Langmuir adsorption isotherm is deduced using the assumption

(A) the adsorption sites are equivalent in their ability to adsorb the particles

(B) the heat of adsorption varies with coverage

(C) the adsorbed molecules interact with each other

(D) the adsorption takes place in multilayers

57

Position of non-polar and polar part in micelle

(A) polar at outer surface but non-polar at inner surface

(B) polar at inner surface non-polar at outer surface

(C) distributed over all the surface

(D) are present in the surface only.

58 **Which of the following crystals acquire brownish yellow colour due to atmospheric oxidation –**

(A) $MgSO_4$ **(B)** $CaSO_4$ **(C)** $FeSO_4$ **(D)** $CuSO_4$

59 **Mac-Arthur forrest process is used for the extraction of**

(A) Zn **(B)** Cu **(C)** Fe **(D)** Ag

60 **The chemical composition of the slag formed during smelting process is**

(A) $CuSiO_3$ **(B)** $FeSiO_3$

(C) $CaSiO_3$ **(D)** $Cu_2O \cdot SiO_2$

61 ***On igniting*** **Fe_2O_3 at 1400^0 C in blast furnace,** ***the product obtained is***

(A) Fe_2O_3 melt **(B)** *FeO* **(C)** Fe_3O_4 **(D)** *Metallic iron*

62 **In the thermite process, the reducing agent is**

(A) Nickel **(B)** Zinc

(C) Sodium **(D)** Aluminium

63 **When calomel reacts with NH_4OH, we get?**

(A) $HgNH_2Cl$ **(B)** $NH_2 — Hg — hg — Cl$ **(C)** Hg_2O **(D)** HgO

64 **Stainless steel does not rust because**

(A) chromium and nickel combine with iron

(B) chromium forms an oxide layer and protects iron from rusting

(C) chromium forms an oxide layer and protects iron from rusting

(D) iron forms a hard chemical compound with chromium present in it

65 **STATEMENT – 1**
$[Ni(CN)_4]^{2-}$ is square planar and diamagnetic
STATEMENT – 2
It has no unpaired electrons due to presence of strong ligand

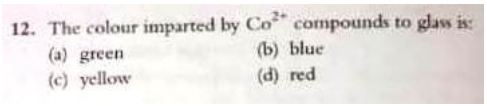
(A) Statement – 1 is True, Statement – 2 is True; Statement – 2 is a correct explanation for Statement – 1.

(B) Statement – 1 is True, Statement – 2 is True; Statement – 2 is NOT a correct explanation for Statement – 1.

(C) Statement – 1 is True, Statement – 2 is False.

(D) Statement – 1 is False, Statement – 2 is True.

66



(A) A

(B) B

(C) C

(D) D

67

निम्न में से कौनसा तापीय अपचयन को दर्शाता है ?

(A) $3Mn_3O_4 + 8Al \longrightarrow 9Mn + 4Al_2O_3$

(B) $Al_2O_3 + 3Mg \xrightarrow{\Delta} 2Al + 3MgO$

(C) $Cu_2S + 2Cu_2O \longrightarrow 6Cu + SO_2$

(D) $Fe_2O_3 + 3CO \longrightarrow 2Fe + 3CO_2$

68 **Which of the following is not a basic flux?**

(A) $CaCO_3$

(B) CaO

(C) SiO_2

(D) MgO

69

The process of the isolation of a metal by dissolving the ore in a suitable chemical reagent followed by precipitation of the metal by a more electropositive metal is called :

(A) hydrometallurgy

(B) electrometallurgy

(C) zone refining

(D) electro-refining

70

Which one of the following is a mineral of iron?

(A) Malachite

(B) Cassiterite

(C) Pyrolusite

(D) Magnetite

71 **The metallic lustre exhibited by sodium is explained by the presence of**

(A) Na^+ ions

(B) conducting electrons

(C) free protons

(D) a body-centred cubic lattice.

72 **STATEMENT - 1**
Cu is extracted from $CuFeS_2$ by self reduction process.
STATEMENT – 2
Blister copper is obtained from self reduction.

(A) Statement – 1 is True, Statement – 2 is True; Statement – 2 is a correct explanation for Statement – 1.

(B) Statement – 1 is True, Statement – 2 is True; Statement – 2 is NOT a correct explanation for Statement – 1.

(C) Statement – 1 is True, Statement – 2 is False.

(D) Statement – 1 is False, Statement – 2 is True.

73 एलुमिनियम के व्यवसायिक निष्कर्षण में उपयोग में आने वाला वैद्युत अपघट्य है :

(A) $Al(OH)_3$ in NaOH

(B) गलित माइका तथा CaF_2

(C) Al_2O_3, Na_3AlF_6 व CaF_2 का गलित मिश्रण

(D) गलित पोटाश एलम

74 **STATEMENT – 1**
$[Fe(CN)_6]^{4-}$ is an inner orbital complex.
STATEMENT – 2
CN^- is a strong field ligand which forces pairing of electrons.

(A)	**(B)**	**(C)**	**(D)**
Statement – 1 is True, Statement – 2 is True; Statement – 2 is a correct explanation for Statement – 1.	Statement – 1 is True, Statement – 2 is True; Statement – 2 is NOT a correct explanation for Statement – 1.	Statement – 1 is True, Statement – 2 is False.	Statement – 1 is False, Statement – 2 is True.

75 **STATEMENT – 1**
The ligands nitro and nitrite are called ambidentate ligands.
STATEMENT – 2
These ligands give linkage isomers.

(A)	**(B)**	**(C)**	**(D)**
Statement – 1 is True, Statement – 2 is True; Statement – 2 is a correct explanation for Statement – 1.	Statement – 1 is True, Statement – 2 is True; Statement – 2 is NOT a correct explanation for Statement – 1.	Statement – 1 is True, Statement – 2 is False.	Statement – 1 is False, Statement – 2 is True.

76 **Which process of purification is represented by the following equation :**

$$\underset{\text{(Pure)}}{\text{Ti (impure)}} + 2I_2 \xrightarrow{250^\circ C} TiI_4 \xrightarrow{1400^\circ C} Ti + 2I_2$$

(A) Cupellation **(B)** Poling **(C)** Van-Arkel process **(D)** Zone refining

77 The protecting power of lyophilic colloidal sol is expressed in terms of

(A) coagulation value

(B) gold number

(C) critical micelle concentration

(D) oxidation number

78 **Consider the following statements :**
S_1 : In electrolytic refining, the impurities from the blister copper deposits anode mud which contains antimony, selenium, tellurium, silver , gold and platinum. (From copper pyrites)
S_2 : In Serpeck's process silica is removed by heating the bauxite to 1800ºC with coke in a current of N_2 .
S_3 : Chalcocite and azurite are ores of copper.
S_4 : The tin is obtained by the carbon reduction of black tin.
and arrange in the order of true/false.

(A) T F T T **(B)** F T F F **(C)** F F T T **(D)** T T T T

79 **The common impurities present in the bauxite ore are**

(A) Fe_2O_3 and CuO **(B)** Fe_2O_3 and PbO **(C)** Fe_2O_3 and SiO_2 **(D)** SiO_2 and CuO

80 **Which method of purification is represented by the equations ?**

$$\underset{\text{(impure)}}{Ti + 2I_2} \xrightarrow{500\ K} TiI_4 \xrightarrow{1675\ K} \underset{\text{(Pure)}}{Ti + 2I_2}$$

(A) Cupellation **(B)** Poling

(C) Van Arkel **(D)** Zone refining

81

Which one of the following method is commonly used method for destruction of colloid?

(A) Dialysis

(B) Condensation

(C) Filteration by animal membrane

(D) By adding electrolyte

82 **In the commercial electrochemical process for aluminum extraction, electrolyte used is:**

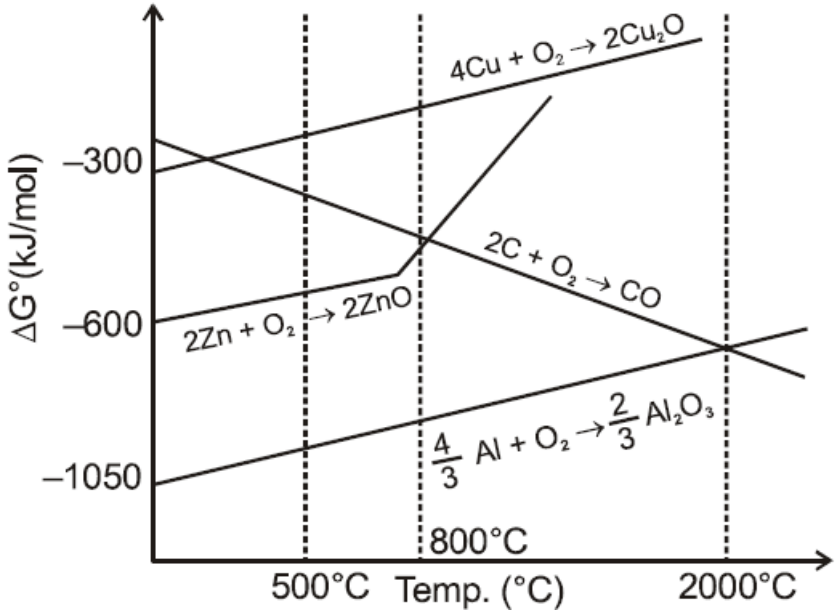
(A) $Al(OH)_3$ in NaOH solution

(B) an aqueous solution of $Al2(SO_4)_3$

(C) a molten mixture of Al_2O_3 and Na_3AlF_6

(D) a molten mixture of $Al2O_3$ and $Al(OH)_3$

83 **The correct statement regarding the given Ellingham diagram is :**



(A)
At 1400°C, Al can be used for the extraction of Zn from ZnO

(B)
At 500°C, coke can be used for the extraction of Zn from ZnO

(C)
Coke cannot be used for the extraction of Cu from Cu_2O

(D)
At 800°C, Cu can be used for the extraction of Zn from ZnO

84 **STATEMENT - 1**
Complex formation can be seen as a lewis acid-base reaction.
STATEMENT - 2
There occurs formation of co-ordinated covalent bond between empty orbitals of metals and filled orbital of ligands.

(A)
Statement – 1 is True, Statement – 2 is True; Statement – 2 is a correct explanation for Statement – 1.

(B)
Statement – 1 is True, Statement – 2 is True; Statement – 2 is NOT a correct explanation for Statement – 1.

(C)
Statement – 1 is True, Statement – 2 is False.

(D)
Statement – 1 is False, Statement – 2 is True.

85 **Manganese steel is used for making railway tracks because-**

(A)
it is hard with high percentage of Mn

(B)
it is solft with high percentage of Mn

(C)
it is hard with small concentration of manganese with impurities

(D)
it is soft with small concentration of manganese with impurities

86 **In the commerical extraction of lead from its sulphide ore, a metal is formed by reduction of PbO with :**

(A) CO

(B) $PbSO_4$

(C) PbS

(D) Carbon

87 **Which of the following is not a hydroxide ore**

(A) Bauxite **(B)** Azurite **(C)** Limonite **(D)** Cuprite

88

Match list I with list II and select the correct answer using the codes given below the lists .

	List I		List II
A	van Arkel method	**1.**	Manufacture of caustic sods
B	Solvay process	**2.**	Purification of titanium
C	Cupellation	**3.**	Manufacture of Na_2CO_3
D	Poling	**4.**	Purification of copper
		5.	Refining of silver

(A) 2 1 3 4 **(B)** 4 3 2 5 **(C)** 2 3 5 4 **(D)** 5 1 3 4

89 **In which of the following all salts are almost insoluble in water?**

(A) LiF, AgF, Li_2CO_3 **(B)** $Fe(OH)_3$,$PbCl_2$,MgF_2

(C) AgI,$KClO_4$, $BaSO_4$ **(D)** KCl,AgBr, ZnS

90 **Leaching of Ag_2S by NaCN solution is carried out in the presence of air it because :**

(A) $[Ag(CN)_2]^-$ complex is formed in a reversible reaction. **(B)** Oxidation of formed Na_2S into Na_2SO_4 and sulphur. **(C)** both (A) and (B) **(D)** None of the above

91 ***In zone refining method the molten zone***

(A) *Consist of impurities only* **(B)** *contains more impurity than the original metal* **(C)** *Contains the purified metal only* **(D)** *Moves to either side*

92 **STATEMENT – 1**
Wrought iron is prepared from cast iron by oxidisting impurities in a reverberatory furnace lined with haematite.
STATEMENT–2
Haematite oxidizes carbon to carbon monoxide

(A) STATEMENT–1 is True, STATEMENT–2 is True; STATEMENT–2 is a correct explanation forSTATEMENT–1

(B) STATEMENT–1 is True, STATEMENT–2 is True; STATEMENT–2 is a correct explanation forSTATEMENT–1

(C) STATEMENT–1 is True, STATEMENT–2 is True; STATEMENT–2 is a correct explanation forSTATEMENT–1

(D) STATEMENT–1 is False, STATEMENT–2 is True

93

84. For the reaction,

$$A + 2B \longrightarrow C + D, \frac{d[A]}{dt} = k[A][B]^2$$

the expression for $\frac{d[B]}{dt}$ will be:

(a) $2k[A][B]^2$ (b) $\frac{1}{2}k[A][B]^2$

(c) $k[A][B]^2$ (d) $k[A][B/2]^2$

(A) A **(B)** B

(C) C **(D)** D

94 **Thomas slag is**

(A) Calcium silicate **(B)** Calcium phosphate **(C)** Tricalcium phosphate and calcium silicate **(D)** Calcium ammonium phosphate

95 **In the alumina thermite process Al acts as**

(A) an oxidising agent **(B)** a flux **(C)** a reducing agent **(D)** a solder

96 **Poling process is used**

(A) for the removal of Cu_2O from Cu

(B) for the removal of Al_2O_3 from Al

(C) for the removal Fe_2O_3 from Fe

(D) in all the above.

97 **In the Hoop's process of aluminium extraction , the fused materials remain in three different layers . These layers remain separated even in electrolytic reduction , because :**

(A) upper layer is attracted by cathode and lower layer is attracted by anode

(B) cell has the arrangement for separating the layers

(C) all the layers have different densities

(D) all the layers are at different temperature

98 **STATEMENT-1 :**
Zinc is used for the recovery of Ag from the complex $[Ag(CN)_2]^-$
STATEMENT-2 :
Zinc is more electropositive than Ag.

(A) Statement – 1 is True, Statement – 2 is True; Statement – 2 is a correct explanation for Statement – 1.

(B) Statement – 1 is True, Statement – 2 is True; Statement – 2 is NOT a correct explanation for Statement – 1.

(C) Statement – 1 is True, Statement – 2 is False.

(D) Statement – 1 is False, Statement – 2 is True.

99 **Ferrous sulphate on heating gives:**

(A) SO_2 and SO_3

(B) SO_2 only

(C) SO_3 only

(D) SO_2 and O_2

100 **Identify the statement which is not correct regarding $CuSO_4$.**

(A) It reacts with KI to give iodine

(B) It reacts with NaOH and glucose to give Cu_2O

(C) It reacts with KCl to give Cu_2Cl_2

(D) It gives CuO on strong heating

101 **The following metal is purified by Zone refining**

(A) Ge

(B) Au

(C) Ag

(D) Pt

102 **STATEMENT-1**
The complex $[Co(NH_3)_3Cl_3]$ gives no precipitate with $AgNO_3$ solution.
STATEMENT-2
The given complex is non-ionizable.

(A) Statement – 1 is True, Statement – 2 is True; Statement – 2 is a correct explanation for Statement – 1.

(B) Statement – 1 is True, Statement – 2 is True; Statement – 2 is NOT a correct explanation for Statement – 1.

(C) Statement – 1 is True, Statement – 2 is False.

(D) Statement – 1 is False, Statement – 2 is True.

103 **$La(OH)_3$ is more basic than $Lu(OH)_3$ because :**

(A) La is more negative than Lu

(B) La^{3+} is larger in size than Lu^{3+}

(C) ionic character of bond in $Lu(OH)_3$ is high

(D) all of the above

104 **STATEMENT-1 :**
$ZnSO_4 . 7H_2O$ is white
STATEMENT-2 :
Zn^{2+} has filled $3d^{10}$ configuration.

(A) Statement – 1 is True, Statement – 2 is True; Statement – 2 is a correct explanation for Statement – 1.

(B) Statement – 1 is True, Statement – 2 is True; Statement – 2 is NOT a correct explanation for Statement – 1.

(C) Statement – 1 is True, Statement – 2 is False.

(D) Statement – 1 is False, Statement – 2 is True.

105 ***The most abundant metal in the earth's crust is***

(A) *Al*

(B) *Fe*

(C) *Ca*

(D) *Na*

106

आयरन के धातुकर्म के सम्बन्ध में वात्या भट्टी में नहीं होने वाली अभिक्रिया को पहचानिये :

(A)
$2Fe_2O_3 + 3C \rightarrow 4Fe + 3CO_2$

(B) $CO_2 + C \rightarrow 2CO$

(C) $FeO + SiO_2 \rightarrow FeSiO_3$

(D) $CaO + SiO_2 \rightarrow CaSiO_3$

107

एलुमिनियम के व्यवसायिक निष्कर्षण में उपयोग में आने वाला वैद्युत अपघट्य है :

(A) $Al(OH)_3$ in NaOH

(B) गलित माइका तथा CaF_2

(C)
Al_2O_3, Na_3AlF_6 व CaF_2 का गलित मिश्रण

(D) गलित पोटाश एलम

108

Measuring zeta potential is useful in determining which property of colloidal solution?

(A) Viscosity

(B) Solubility

(C)
Stability of the colloidal particles

(D) Size of the colloidal particles

109 **The metal extracted by leaching with cyanide is :**

(A) Mg

(B) Ag

(C) Cu

(D) Na

110

Identify the incorrect statement.

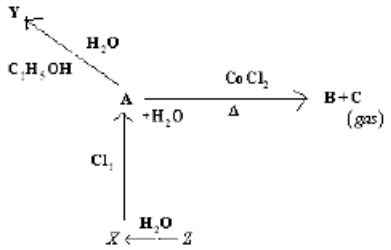
(A)
The scientific and technological process used for isolation of the metal from its ore is known as metallurgy.

(B)
Minerals are naturally occurring chemical substances in the earth's crust.

(C)
Ores are minerals that may contain a metal.

(D)
Gangue is an ore contaminated with undesired materials.

111



Y reacts with HNO_3 to form tear gas. If A is kept for long standing in open air , the important product formed is

(A) $CaCO_3$ **(B)** $CaSO_4$

(C) $MgCl_2$ **(D)** $Mg(NO_3)_2$

112 **Which one of the following cannot be obtained from B2H6**

(A) H_3BO_3 **(B)** $LiBH_4$

(C) BH_4^- ion **(D)** $B_2(CH_3)_6$

113 **Which of the following commonly used alloys is not a variety of steel, that is, it has no content of iron as such (less than 5%)?**

(A) Alnico **(B)** Invar

(C) Misch metal **(D)** Permalloy

114

$SO_3^{2-} + S^{2-} + \underset{(calculated\ \ amounts)}{I_2} \longrightarrow X + I^-$. '$X$' in the balanced equation is

(A) SO_4^{2-} **(B)** IO_3^-

(C) $S_2O_3^{2-}$ **(D)** IO_4^-

115 **Which of the following is the most basic oxide?**

(A) Ga_2O_3 **(B)** In_2O

(C) Tl_2O **(D)** Tl_2O_3

116 **Molecular shapes of SF_4, CF_4 and XeF_4 are:**

(A) the same, with 2, 0 and 1 lone pairs of electrons respectively **(B)** the same, with 1, 1 and 1 lone pairs of electrons respectively

(C) different with 0, 1 and 2 lone pairs of electrons respectively **(D)** different with 1, 0 and 2 lone pairs of electrons respectively

117 **Ozone is a diamagnetic gas having .... colour**

(A) No colour **(B)** Red colour **(C)** Dark blue colour **(D)** Brown colour

118 **Nitrogen is liberated by the thermal decomposition of -**

(A) NH_4NO_2 **(B)** NaN_3 **(C)** $(NH_4)_2Cr_2O_7$ **(D)** All the three

119 **The type of hybrid orbitals used by the chlorine atom in ClO_3^- is**

(A) sp^3 **(B)** sp^3d

(C) sp^3d^2 **(D)** sp^2

120

The electronic configurations of Eu (Atomic No. 63), Gd (Atomic No. 64) and Tb (Atomic No. 65) are

(A) $[Xe]4f^6 5d^1 6s^2$, $[Xe]4f^7 5d^1 6s^2$ and $[Xe]4f^8 5d^1 6s^2$

(B) $[Xe]4f^7\ 6s^2$, $[Xe]4f^7\ 5d^1\ 6s^2$ and $[Xe]4f^9\ 6s^2$

(C) $[Xe]4f^7\ 6s^2$, $[Xe]4f^8\ 6s^2$ and $[Xe]4f^8\ 5d^1\ 6s^2$

(D) $[Xe]4f^6\ 5d^1\ 6s^2$, $[Xe]4f^7\ 5d^1\ 6s^2$ and $[Xe]4f^9\ 6s^2$

121

A compound '*X*' upon reaction with H_2O produces a colourless gas '*Y*' with rotten fish smell. Gas '*Y*' is absorbed in a solution of $CuSO_4$ to give Cu_3P_2 as one of the products. Predict the compound '*X*'.

(A) Ca_3P_2

(B) NH_4Cl

(C) As_2O_3

(D) $Ca_3(PO_4)_2$

122 **The shape of the orbital designated by the wave function $\psi_{3,1,0}$ is**

(A) Spherical **(B)** Dumbell **(C)** Double dumbell **(D)** can't be predicted

123 **On passing H_2S through HNO_3, we get**

(A) Colloidal sulphur

(B) O_2

(C) O_3

(D) NO_3

124 **Copper metal on treatment with dilute HNO3 produces a gas (X). (X) when passed through acidic solution of stannous chloride, a nitrogen containing compound (Y) is obtained. (Y) on reaction with nitrous acid produces a gas (Z). Gas (Z) is:**

(A) NO **(B)** N_2 **(C)** NO_2 **(D)** N_2O

125 **There is no S–S bond in :**

(A) $S_2O_4^{2-}$ **(B)** $S_2O_5^{2-}$ **(C)** $S_2O_3^{2-}$ **(D)** $S_2O_7^{2-}$

126 **Ammonia react with excess of chlorine to form :**

(A) N_2 & NH_4Cl **(B)** NCl_3 & HCl **(C)** NH_4Cl & NCl_3 **(D)** N_2 & HCl

127 **The compound which does not obey the octet rule is –**

(A) OF_2 **(B)** SO_2 **(C)** PCl_3 **(D)** $SnCl_4$

128 Which of the following statements is not true for halogens?

(A) All form monobasic oxyacids.

(B) All are oxidizing agents.

(C) All but fluorine show positive oxidation states.

(D) Chlorine has the highest electron-gain enthalpy.

129 **In B_4H_{10}, the number of banana bonds are**

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

130 **Which of the following is a neutral oxide ?**

(A) N_2O_3 **(B)** NO

(C) SO_2 **(D)** SO_3

131 **What is not true for SiH_4 molecule -**

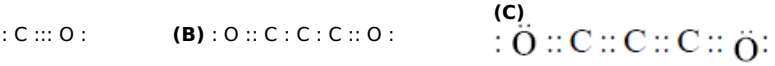
(A) Tetrahedral hybridisation **(B)** 109º28' angle **(C)** 4σ bond **(D)** 4-lone pair of electrons

132 **The solubility of noble gases in water shows the order :**

(A) He > Ar > Kr > Ne > Xe **(B)** He > Ne > Ar > Kr > Xe **(C)** Xe > Kr > Ar > Ne > He **(D)** none

133 **Lewis structure of carbon suboxide (C_3O_2) in ground state is**

(A) O : C : : : C : C ::: O : **(B)** : O :: C : C : C :: O :

(C) 

(D) : O :: C :: C :: C :: O :

134 **Which one of the following oxides is neutral ?**

(A) CO **(B)** SnO_2 **(C)** ZnO **(D)** SiO_2

135 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)**
(A) Sulphuric acid	(i) Haber's process
(B) Steel	(ii) Bessemer's process
(C) Sodium hydroxide	(iii) Leblanc process
(D) Ammonia	(iv) Contact process

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

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

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

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

136

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) $Zn(ClO_3)_2$

137

The basic strength of the hydrides of group 15 elements:
(a) decreases on moving down the group
(b) increases on moving down the group
(c) first decreases upto AsH_3 and then increases
(d) first increases upto AsH_3 and then decreases

(A)
(B)
(C)
(D)

138

STATEMENT-1: $SiCl_4$ reacts with water but CCl_4 does not react with water.
STATEMENT-2: $SiCl_4$ is ionic but CCl_4 is covalent.

(A) STATEMENT–1 is True, STATEMENT–2 is True; STATEMENT–2 is a correct explanation forSTATEMENT–1

(B) STATEMENT–1 is True, STATEMENT–2 is True; STATEMENT–2 is NOT a correct explanation for STATEMENT–1

(C) STATEMENT–1 is True, STATEMENT–2 is False

(D) STATEMENT–1 is False, STATEMENT–2 is True

139 **Which compound does not exist?**

(A) SF_6

(B) PbI_4

(C) PbF_4

(D) B_2Cl_4

140

The pair of species that has the same bond order in the following is

(A) CO, NO^+

(B) NO^-, CN^-

(C) O_2, N_2

(D) O_2, B_2

141 **Which of the following statements is false ?**

(A)

increasing order of oxygen–oxygen bond length in O_2, H_2O_2 and O_3 will be $O_2 < O_3 < H_2O_2$

(B)

$\bar{N}H_2^-$, $\bar{N}H_3$ and $\bar{N}H_4^+$ do not exhibit similarly in the number of lone pair of electrons

(C)

p characters in CH_4, CH_3^+ and CH_3^- are 75, 66.7 and 75 percent. respectively

(D) hybridisation state of S in SO_2 is sp

142

Identify the correct formula of oleum from the following :

(A) $H_2S_2O_7$

(B) H_2SO_3

(C) H_2SO_4

(D) $H_2S_2O_8$

143 **Which is the correct order of density**

(A) white phosphorus > Red phosphorus > black phosphorus

(B) $CO(g) > CO_2(g)$

(C) Graphite > diamond

(D) none of these

144 **Which of the following halide ion is not oxidised by MnO_2 ?**

(A) Cl^-

(B) Br^-

(C) F^-

(D) I^-

145 **When NH_4OH is added to copper sulphate solution, blue colour is obtained due to formation of :**

(A) $Cu(NH_3)_4SO_4$

(B) $Cu(NH_4SO_4)_2$

(C) $Cu(OH)_2$

(D) CuO

146 **Ionic reaction take place in –**

(A) liquid state

(B) solid state

(C) solution state

(D) gaseous state

147 **Molecular orbital is formed by theoverlap of two atomic orbitals. It will be called –**

(A) ionic bond

(B) covalent bond

(C) coordinate bond

(D) hydrogen bond

148

In which of the following compounds, nitrogen exhibits highest oxidation state?

(A) N_2H_4

(B) NH_3

(C) N_3H

(D) NH_2OH

149 **Sodium thiosulphate is prepared by :**

(A)
reducing Na_2SO_4 solution with H_2S

(B)
boiling Na_2SO_3 solution with S in alkaline medium

(C)
neutralising $H_2S_2O_3$ solution with NaOH

(D)
boiling Na_2SO_3 solution with S in acidic medium

150

The most stable hydride is :

(a) NH_3 (b) PH_3

(c) AsH_3 (d) SbH_3

(A)
(C)

(B)
(D)

151 **Assertion : H_3PO_3 and H_3PO_4 are tribasic acids as they contain three hydrogen atoms each.**
Reason : Both H_3PO_3 and H_3PO_4 are reducing in nature.

(A)
If both Assertion and Reason are True and the Reason is a correct explanation of the Assertion.

(B)
If both Assertion and Reason are True but Reason is not correct explanation of the Assertion

(C)
If Assertion is True but the Reason is False.

(D)
If both Assertion and Reason are false.

152 **Which of the two ions from the list given below have the geometry that is explained by the same hybridization of orbitals, NO_2^-, NO_3^-, NH_2^-, NH_4^+, SCN^- ?**

(A) NO_2^- and NO_3^-

(B) NH_2^- and NO_3^-

(C) SCN^- and NH_2^-

(D) NO_2^- and NH_2^-

153 **Among the following $MgCl_2$, NaCl , Na2S , MgS compound having least melting point and highest solubility respectively is :**

(A) MgS, NaCl

(B) NaCl, Na_2S

(C) $MgCl_2$, NaCl

(D) NaCl, MgS

154 **Which of the following hydrides of the oxygen family shows the lowest boiling point?**

(A) H_2O **(B)** H_2S **(C)** H_2Se **(D)** H_2Te

155 **The number of S–S bonds in sulphur trioxide trimer (S_3O_9) is :**

(A) three **(B)** two **(C)** one **(D)** zero

156 **First compound of inert gas was prepared by scientist Neil Barthlet in 1962. This compound is**

(A) $XePtF_6$ **(B)** XeO_3 **(C)** XeF_6 **(D)** $XeOF_4$

157

Zn gives H_2 gas with H_2SO_4 and HCl but not with HNO_3 because

(A)
Zn act as oxidising agent when react with HNO_3

(B)
HNO_3 is weaker acid than H_2SO_4 and HCl

(C)
in electrochemical series Zn is above hydrogen

(D)
NO_3^- is reduced in preference to hydronium ion.

158 **Arrange the molecules H_2,O_2, F_2 , N_2 in the order of increasing bond length**

(A) $N_2 < H_2 < O_2 < F_2$

(B) $H_2 < N_2 < O_2 < F_2$

(C) $N_2 < O_2 < F_2 < H_2$

(D) $O_2 < N_2 < H_2 < F_2$

159 **Among LiCl, $BeCl_2$, BCl_3 and CCl_4, covalent bond character follows the order:**

(A)
$LiCl > BeCl_2 > BCl_3 > CCl_4$

(B)
$LiCl < BeCl_2 < BCl_3 < CCl_4$

(C)
$LiCl > BeCl_2 > CCl_4 > BCl_3$

(D)
$LiCl < BeCl_2 < BCl_3 > CCl_4$

160 **Inorganic graphite is –**

(A) boron nitrate **(B)** boron nitride (BN) **(C)** boron carbonate **(D)** none of the above

161 **The compound which gives off oxygen on moderate heating is :**

(A) cupric oxide **(B)** mercuric oxide **(C)** zinc oxide **(D)** aluminium oxide

162

Among the following which is the strongest oxidising agent?

(A) Br_2

(B) I_2

(C) Cl_2

(D) F_2

163 **The correct sequence regarding the bond dissociation energy is**

(A) $Cl_2 > Br_2 > F_2 > I_2$

(B) $F_2 < Cl_2 < Br_2 < I_2$

(C) $I_2 > Br_2 > Cl_2 > F_2$

(D) $Cl_2 > Br_2 > I_2 > F_2$

164

The metal 'X' is prepared by the electrolysis of fused chloride. It reacts with hydrogen to form a colourless solid from which hydrogen is released on treatment with water. The metal is

(A) Al

(B) Ca

(C) Cu

(D) Zn

165 **Which of the fol lowing species is not a pseudohalide ?**

(A) CNO^-

(B) $RCOO^-$

(C) OCN^-

(D) N_3^-

166

The number of unpaired electrons in paramagnetic tetrachloromagnate (II) anion is:

(A) 5 (B) 2 (C) 3 (D) 6

(A) (A)

(B) (B)

(C) (C)

(D) (D)

167 **The correct arrangement of NH_3 , N_2H_4 , NH_2OH and CH_3NH_2 in the order of increasing base strength is :**

(A) $NH_3 < N_2H_4 < NH_2OH < CH_3NH_2$

(B) $CH_3NH_2 < NH_2OH < N_2H_4 < NH_3$

(C) $NH_2OH < NH_3 < N_2H_4 < CH_3NH_2$

(D) $NH_2OH < N_2H_4 < NH_3 < CH_3NH_2$

168 **The percentage of p-character in the orbitals forming P–P bonds in P_4 is**

(A) 25

(B) 33

(C) 50

(D) 75

169 **BF_3 & NF_3 are covalent compounds , but BF_3 is non-polar and NF_3 is polar because BF_3 is planar symmetrical , but when both will combine so what will be the hybridisation of B & N .**

(A) sp^3 - sp^2

(B) sp^3 - sp

(C) sp^2 - sp^2

(D) sp^3 - sp^3

170 **The valency of B in BCl_3 is 3. This is justified on the basis of –**

(A) resonance

(B) hybridisation

(C) electronic configuration

(D) shielding effect

171 **Which of the following overlap will always form π bond**

(A) When $p_x - p_x$ orbitals overlaps colaterally

(B) When $d_{xy} - d_{xy}$ orbitals overlaps colaterally

(C) when $s - p_x$ orbitals overlaps coaxially

(D) when $p_x - p_x$ orbitals overlaps coaxially

172 **Among the following, the pair in which the two species are not isostructural is**

(A) IO_3^- and XeO_3

(B) BH_4^- and NH_4^+

(C) PF_6^- and SF_6

(D) SiF_4 and SF_4

173 **Hydrogen bonding does not play central role in the following phenomenon**

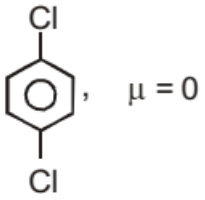
(A) Para-nitro phenol has higher boiling point than ortho-nitro phenol.

(B) Wood pieces are used to hold ice-cream.

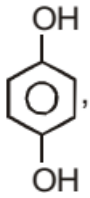
(C) $LiHCO_3$ does not exist in solid form.

(D) Urea is solid but acetone is liquid at room temperature

174 **Which one of the following is incorrectly given as per their dipole moments (m)?**

(A) 

, $\mu = 0$

(B) 

, $\mu \neq 0$

(C) $CHCl_3$, $\mu \neq 0$

(D) XeF_4, $\mu \neq 0$

175 **STATEMENT – 1: Bond length C-O bond decreases when CO forms the complex with Fe as $Fe(CO)_5$**
because
STATEMENT – 2: The non bonded pair of electrons of metal involves in back bonding with vacant antibonding molecular orbital of CO.

(A) STATEMENT–1 is True, STATEMENT–2 is True; STATEMENT–2 is a correct explanation for STATEMENT–1

(B) STATEMENT–1 is True, STATEMENT–2 is True; STATEMENT–2 is NOT a correct explanation for STATEMENT–1

(C) STATEMENT–1 is True, STATEMENT–2 is False

(D) STATEMENT–1 is False, STATEMENT–2 is True

176

Which one of the following molecules contains no π bond?

(A) SO_2

(B) NO_2

(C) CO_2

(D) H_2O

177

Which of the following compounds is non-polar:

(A) CH_3Cl (B) CH_2Cl_2 (C) $CHCl_3$ (D) CCl_4

(A) (A)

(B) (B)

(C) (C)

(D) (D)

178 **Which of the following statements is correct ?**

(A) bond order is a measure of the strength of the bond.

(B) bond order is equal to the number of bonds present in a molecule

(C) greater the bond order, more paramagnetic is the molecule

(D) none of the above

179 The difference between heats of reaction at constant pressure and constant volume for the reaction :
$2\,C_6H_6(l) + 15O_2(g) \rightarrow 12CO_2(g) + 6H_2O(l)$ at 25°C in kJ is

(A) -7.43 **(B)** +3.72

(C) -3.72 **(D)** +7.43

180 **Arrange the molecules O_2, F_2 , N_2 in the order of increasing bond length**

(A) $N_2 < O_2 = F_2$ **(B)** $N_2 < O_2 < F_2$ **(C)** $F_2 < O_2 < N_2$ **(D)** $O_2 < N_2 < F_2$

181 **Which of the following statements are true ?**
(i) Gas (A) is used in Holme's signal
(ii) When calcium carbide and calcium phosphide reacts with water produces acetylene and gas (A) is obtained.
(iii) Mixture of acetylene and gas (B) catches fire.
(iv) Acetylene produces a non luminous flame

(A) i, ii, iii **(B)** i, ii, iv

(C) ii, iii, iv **(D)** i, iii, iv

182 **Which one of the following molecules the central atom does not have sp^3 hybridization ?**

(A) NH_4^+ **(B)** CH_4

(C) SF_4 **(D)** BF_4^-

183 **All the following substances react with water.The pair that gives the same gaseous product is**

(A) K and KO_2 **(B)** Na and Na_2O_2

(C) Ca and CaH_2 **(D)** Ba and BaO_2

184 **Among LiCl, RbCl, $BeCl_2$ and $MgCl_2$, the compounds with the greatest and the least ionic character respectively are :**

(A) LiCl and RbCl **(B)** RbCl and $BeCl_2$. **(C)** RbCl and $MgCl_2$ **(D)** MgCl2 and $BeCl_2$

185 **Which statement regarding benzene and borazine is incorrect ?**

(A) Both are isostructural and isoelectronic **(B)** Both have same no. of sp^2 hybridised atoms **(C)** Reactivity of both towards HCl is same **(D)** Both have 12σ and 3π bonds in them

186 **HCl molecule in the vapour state in an example of –**

(A) non-polar bond **(B)** ionic bond **(C)** polar covalent bond **(D)** pure covalent bond

187 **Hybridisation of phosphorus in pyrophosphoric acid will be :**

(A) sp^3 **(B)** sp^2

(C) sp **(D)** 2.5

188

Which reason explains the less basic nature of $(CH_3)_3$ NOH than $(CH_3)_4$ NOH in aqueous medium.

(A) Hydrogen bonding

(B) Dipole induced dipole interaction

(C) London dispersion forces

(D) Coordinate bond formation.

189 **Which of the following statement is CORRECT?**

(A) H_2O and OF_2 both are linear in shape

(B) H_2O is linear whereas OF_2 is bent molecule

(C) both H_2O and OF_2 have a bent structure

(D) H_2O is bent whereas OF_2 has a linear structure

190

Consider the following species : CN^+, CN^-, NO and CN. Which one of these will have the highest bond order?

(A) NO

(B) CN^-

(C) CN^+

(D) CN

191

Amongst NH_3, $BeCl_2$, CO_2 and H_2O, the non-linear molecules are :

(A) $BeCl_2$ and H_2O (B) $BeCl_2$ and CO_2 (C) NH_3 and H_2O (D) NH_3 and CO_2

(A) (A)

(B) (B)

(C) (C)

(D) (D)

192

In which of the following change bond order and magnetic moment both increases ?

(A) O_2 O_2^+

(B) N_2 N_2^-

(C) B_2 B_2^+

(D) C_2 C_2^-

193 **STATEMENT – 1**
BF_3 has greater dipole moment than H_2S
STATEMENT – 2
Fluorine is more electronegative than sulphur.

(A) Statement – 1 is True, Statement – 2 is True; Statement – 2 is a correct explanation for Statement – 1.

(B) Statement – 1 is True, Statement – 2 is True; Statement – 2 is NOT a correct explanation for Statement – 1.

(C) Statement – 1 is True, Statement – 2 is False.

(D) Statement – 1 is False, Statement – 2 is True.

194 **Which of the following molecular species has unpaired electron (s) ? [JEE 2002]**

(A) N_2

(B) F_2

(C) O_2^-

(D) O_2^{2-}

195

Which one of the following molecules has highest dipole moment:

(A) H_2S (B) CO_2 (C) CCl_4 (D) BF_3

(A) (A)

(B) (B)

(C) (C)

(D) (D)

196 **Which of the following has minimum energy ?**

(A) σ bond **(B)** π bond **(C)** ionic bond **(D)** hydrogen bond

197 The electronegativity difference between N and F is greater than that between N and 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 as well as in NF_3, the atomic dipole and bond dipole are in the same direction

(B) in NH_3, the atomic dipole and bond dipole are in the same direction whereas in NF_3 these are in opposite directions

(C) in NH_3 as well as NF_3, the atomic dipole and bond dipole are in opposite directions

(D) in NH_3 the atomic dipole and bond dipole are in the opposite directions whereas in NF_3 these are in the same directions

198 **Inert pair effect is prominent characteristic of :**

(A) s-block **(B)** p-block **(C)** d-block **(D)** f-block

199 **STATEMENT-1:**
PCl5 is covalent in gaseous and liquid states but ionic in solid state
STATEMENT-2:
PCl_5 in solid state consists of tetrahedral PCl_4^+ and octahedral PCl_6^- anion.

(A) Statement – 1 is True, Statement – 2 is True; Statement – 2 is a correct explanation for Statement – 1.

(B) Statement – 1 is True, Statement – 2 is True; Statement – 2 is NOT a correct explanation for Statement – 1.

(C) Statement – 1 is True, Statement – 2 is False.

(D) Statement – 1 is False, Statement – 2 is True.

200 **KF combines with HF to form KHF_2. The compounds contains the species**

(A) K^+, F^-, H^+ **(B)** K^+, F^- and HF **(C)** K^+ and HF_2^- **(D)** $[KHF]^+$ and F2