AIPMT - 2006

1. Al_2O_3 can be converted to anhydrous $AlCl_3$ by heating
(1) Al_2O_3 with Cl_2 gas
(2) Al_2O_3 with HCl gas
(3) Al_2O_3 with NaCl in solid state
(4) A mixture of Al_2O_3 and carbon in dry Cl_2 gas

AIPMT - 2007

2. Which one of the following anions is present in the chain structure of silicates
(1) SiO_4^{4-} (2) $Si_2O_7^{6-}$
(3) $(Si_2O_5^{2-})_n$ (4) $(SiO_3^{2-})_n$

AIPMT - 2009

3. The straight chain polymer is formed by :-
(1) Hydrolysis of $(CH_3)_2SiCl_2$ followed by condensation polymerisation
(2) Hydrolysis of $(CH_3)_3SiCl$ followed by condensation polymerisation
(3) Hydrolysis of CH_3SiCl_3 followed by condensation polymerisation
(4) Hydrolysis of $(CH_3)_4$ Si by addition polymerisation

AIPMT Pre.- 2011

4. Name the type of the structure of silicate in which one oxygen atom of $[SiO_4]^{4-}$ is shared?
(1) Linear chain silicate
(2) Sheet silicate
(3) Pyrosilicate
(4) Three dimensional

AIPMT Mains - 2011

5. Which of the following oxide is amphoteric :-
(1) CO_2 (2) SnO_2
(3) CaO (4) SiO_2

NEET-UG 2013

6. Which of the following is electron-deficient ?
(1) PH_3 (2) $(CH_3)_2$
(3) $(SiH_3)_2$ (4) $(BH_3)_2$

7. Which of the following structure is similar to graphite?
(1) B_2H_6 (2) BN
(3) B (4) B_4C

8. The basic structural unit of silicates is :-
(1) SiO_4^{2-} (2) SiO^-
(3) SiO_4^{4-} (4) SiO_3^{2-}

9. Which of these is not a monomer for a high molecular mass silicone polymer ?
(1) $PhSiCl_3$ (2) $MeSiCl_3$
(3) Me_2SiCl_2 (4) Me_3SiCl

Re-AIPMT 2015

10. The stability of +1 oxidation state among Al, Ga, In and Tℓ increases in the sequence :
(1) Tℓ < In < Ga < Al (2) In < Tℓ < Ga < Al
(3) Ga < In < Al < Tℓ (4) Al < Ga < In < Tℓ

NEET-I 2016

11. Among the following, the correct order of acidity is
(1) $HClO_3 < HClO_4 < HClO_2 < HClO$
(2) $HClO < HClO_2 < HClO_3 < HClO_4$
(3) $HClO_2 < HClO < HClO_3 < HClO_4$
(4) $HClO_4 < HClO_2 < HClO < HClO_3$

NEET-II 2016

12. Boric acid is an acid because its molecule
(1) accepts OH^- from water releasing proton
(2) combines with proton from water molecule
(3) contains replaceable H^+ ion
(4) gives up a proton

13. In context with beryllium, which one of the following statements is **incorrect** ?
(1) Its salts rarely hydrolyze.
(2) Its hydride is electron-deficient and polymeric.
(3) It is rendered passive by nitric acid.
(4) it forms Be_2C.

NEET(UG) 2017

14. It is because of inability of ns^2 electrons of the valence shell to participate in bonding that:-

(1) Sn^{2+} is oxidising while Pb^{4+} is reducing

(2) Sn^{2+} and Pb^{2+} are both oxidising and reducing

(3) Sn^{4+} is reducing while Pb^{4+} is oxidising

(4) Sn^{2+} is reducing while Pb^{4+} is oxidising

NEET(UG) 2018

15. The correct order of N-compounds in its decreasing order of oxidation states is

(1) HNO_3, NO, N_2, NH_4Cl

(2) HNO_3, NO, NH_4Cl, N_2

(3) HNO_3, NH_4Cl, NO, N_2

(4) NH_4Cl, N_2, NO, HNO_3

NEET(UG) 2020

16. Which of the following is **not** correct about carbon monoxide?

(1) It is produced due to incomplete combustion

(2) It forms carboxyhaemoglobin

(3) It reduce oxygen carrying ability of blood

(4) The carboxyhaemoglobin (haemoglobin bound to CO) is less stable than oxyhaemoglobin.

17. Match the following and identify the correct option.

(a) $CO(g) + H_2(g)$	(i) $Mg(HCO_3)_2 + Ca(HCO_3)_2$
(b) Temporary hardness of water	(ii) An electron deficient hydride
(c) B_2H_6	(iii) Synthesis gas
(d) H_2O_2	(iv) Non-planar structure

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

18. Identify the **correct** statements from the following:

(a) $CO_2(g)$ is used as refrigerant for ice-cream and frozen food.

(b) The structure of C_{60} contains twelve six carbon rings and twenty five carbon rings.

(c) ZSM-5, a type of zeolite, is used to convert alcohols into gasoline.

(d) CO is colorless and odourless gas.

(1) (c) and (d) only

(2) (a) and (b) and (c) only

(3) (a) and (c) only

(4) (b) and (c) only

NEET(UG) 2021

19. The bonds present in borazole are

(1) 12σ, 3π (2) 9σ, 6π

(3) 6σ, 6π (4) 9σ, 9π

20. Which is/are correct statements about P_4O_6 and P_4O_{10}?

(1) Both form oxoacids H_3PO_3 and H_3PO_4 respectively

(2) In P_4O_6 each P is joined to three O and in P_4O_{10} each P is linked to four O atoms.

(3) Both (1) and (2)

(4) None of the above

21. In SiF_6^{2-} and $SiCl_6^{2-}$ which one is known and why?

(1) SiF_6^{2-} because of small size of F

(2) SiF_6^{2-} because of large size of F

(3) $SiCl_6^{2-}$ because of small size of Cl

(4) $SiCl_6^{2-}$ because of large size of Cl

22. The structures of beryllium chloride in solid state and vapour phase, are:

(1) Chain and dimer, respectively

(2) Linear in both

(3) Dimer and Linear, respectively

(4) Chain in both

NEET(UG) 2022

23. Choose the correct statement :

(1) Diamond is covalent and graphite is ionic.

(2) Diamond is sp^3 hybridised and graphite is sp^2 hybridized.

(3) Both diamond and graphite are used as dry lubricants.

(4) Diamond and graphite have two dimensional network.

24. Which of the following statement is **not** correct about diborane ?

(1) The four terminal B-H bonds are two centre two electron bonds.

(2) The four terminal Hydrogen atoms and the two Boron atoms lie in one plane.

(3) Both the Boron atoms are sp^2 hybridised

(4) There are two 3-centre-2-electron bonds.

25. Match List-I with List-II :

	List-I (Compounds)		**List-II (Molecular formula)**
(a)	Borax	(i)	$NaBO_2$
(b)	Kernite	(ii)	$Na_2B_4O_7.4H_2O$
(c)	Orthoboric acid	(iii)	H_3BO_3
(d)	Borax bead	(iv)	$Na_2B_4O_7.10H_2O$

Choose the **correct answer** from the options given below :

(1) (a) – (iv), (b) – (ii), (c) – (iii), (d) – (i)

(2) (a) – (ii), (b) – (iv), (c) – (iii), (d) – (i)

(3) (a) – (iii), (b) – (i), (c) – (iv), (d) – (ii)

(4) (a) – (i), (b) – (iii), (c) – (iv), (d) – (ii)

26. $Na_2B_4O_7 \xrightarrow{heat} X + NaBO_2$

in the above reaction the product "X" is :

(1) H_3BO_3 (2) B_2O_3

(3) $Na_2B_2O_5$ (4) NaB_3O_5

EXERCISE-II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**4**	**4**	**1**	**3**	**2**	**4**	**2**	**3**	**4**	**4**	**2**	**1**	**1**	**4**	**1**
Question	16	17	18	19	20	21	22	23	24	25	26				
Answer	**4**	**2**	**1**	**1**	**3**	**1**	**1**	**2**	**3**	**1**	**2**				

1. Given below are two statements :

Statement-I : BCl_3 is more state than $TlCl_3$.

Statement-II : Boric acid is a protic acid.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Statement-I and Statement-II are correct.

(2) Statement-I is correct but Statement-II is incorrect.

(3) Both Statement-I and II are incorrect.

(4) Statement-I is incorrect but Statement-II is correct.

2. Given below are two statements :

Statement-I : Aq. solution of Borax is alkaline to litmus paper.

Statement-II : Diamond is thermodynamically more stable than graphite.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Statement-I and Statement-II are correct.

(2) Statement-I is correct but Statement-II is incorrect.

(3) Both Statement-I and II are incorrect.

(4) Statement-I is incorrect but Statement-II is correct.

3. Given below are two statements :

Statement-I : Chain length of Silicon polymer can be controlled by adding $(CH_3)_2SiCl_2$.

Statement-II : Silica gel is used as a drying agent.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Statement-I and Statement-II are correct.

(2) Statement-I is correct but Statement-II is incorrect.

(3) Both Statement-I and II are incorrect.

(4) Statement-I is incorrect but Statement-II is correct.

4. Given below are two statements :

Statement-I : Graphite has layered structure in which layers are held by Vander wall's force.

Statement-II : In fullerene a six member ring is fused with six and five membered ring but a five membered ring can only fused with six membered ring.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Statement-I and Statement-II are correct.

(2) Statement-I is correct but Statement-II is incorrect.

(3) Both Statement-I and II are incorrect.

(4) Statement-I is incorrect but Statement-II is correct.

5. Given below are two statements :

Statement-I : In B_2H_6 bridge bonds are stronger than terminal bonds.

Statement-II : In Diborane all atoms can lie in the same plane.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Statement-I and Statement-II are correct.

(2) Statement-I is correct but Statement-II is incorrect.

(3) Both Statement-I and II are incorrect.

(4) Statement-I is incorrect but Statement-II is correct.

6. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason(R)** .

Assertion : Boric acid is considered as a weak acid.

Reason : It is not able to release $H^{\oplus}$ ions on its own.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
(2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
(3) (A) is correct but (R) is not correct.
(4) (A) is not correct but (R) is correct.

7. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason(R)** .

Assertion : Aluminium wire is used to make transmission cables.

Reason : Aluminium has a high electrical and thermal conductivity and due to its low cost & light weight.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
(2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
(3) (A) is correct but (R) is not correct.
(4) (A) is not correct but (R) is correct.

8. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason(R)** .

Assertion : (B–F) Bond lengths in BF_3 and BF_4^- is different.

Reason : In both BF_3 and BF_4^- $P_\pi - P_\pi$ back bonding is present.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
(2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
(3) (A) is correct but (R) is not correct.
(4) (A) is not correct but (R) is correct.

9. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason(R)** .

Assertion : Stability of +5 O.S. state decreases and that of +3 oxidation state increases down the group in group 15.

Reason : Inert pair effect is more prone in case of heavier members of p-block.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
(2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
(3) (A) is correct but (R) is not correct.
(4) (A) is not correct but (R) is correct.

10. Match the column :

Column-I		Column-II	
(A)	Borax $\xrightarrow{\Delta}$	(i)	BN
(B)	$B_2H_6 + H_2O \rightarrow$	(ii)	B_2H_6
(C)	$B_2H_6 + NH_3$ (excess) $\rightarrow$	(iii)	H_3BO_3
(D)	$BCl_3 + LiAlH_4 \rightarrow$	(iv)	$NaBO_2 + B_2O_3$

(1) A - iii, B - iv, C - ii, D - i
(2) A - ii, B - i, C - iv, D - iii
(3) A - i, B - ii, C - iii, D - iv
(4) A - iv, B - iii, C - i, D - ii

11. Match the column :

Column-I		Column-II (Basic unit)	
(A)	Ortho Silicate	(i)	SiO_2
(B)	Pyro Silicate	(ii)	$\left(Si_2O_5^{-2}\right)_\eta - \eta X$
(C)	2-D Silicate	(iii)	$Si_2O_7^{-6}$
(D)	3-D Silicate	(iv)	$\left(SiO_4^{-4}\right)$

(1) A - iv, B - iii, C - ii, D - i
(2) A - ii, B - iii, C - i, D - iv
(3) A - iii, B - ii, C - iv, D - i
(4) A - iv, B - i, C - iii, D - ii

12. Match the column :

Column-I		**Column-II**	
(A)	Borax	(i)	Form complex with haemoglobin
(B)	Diborane	(ii)	used as a fire extinguisher
(C)	Carbon mono oxide	(iii)	Swell's up on heating
(D)	Carbon dioxide	(iv)	Catches fire spontaneously

(1) A - i, B - iii, C - ii, D - iv
(2) A - ii, B - i, C - iv, D - iii
(3) A - iii, B - iv, C - i, D - ii
(4) A - iv, B - ii, C - iii, D – i

13. In which of the following terminal ($2C - 2e^-$) bond and bridge bond are not lying in the same plane ?
(1) B_2H_6
(2) Solid $BeCl_2$
(3) Al_2Cl_6
(4) I_2Cl_6

14. SiO_2 reacts with :-
(1) HF (2) NaOH
(3) HCl (4) CO_2

15. Which of the following compound produce oxy acid of central atom on hydrolysis ?
(1) BF_3 (2) SF_4
(3) PCl_5 (4) NCl_3

EXERCISE-III (Analytical Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**2**	**2**	**4**	**1**	**2**	**1**	**1**	**3**	**1**	**4**	**1**	**3**	**1**	**2**	**1**