

Chapter 11

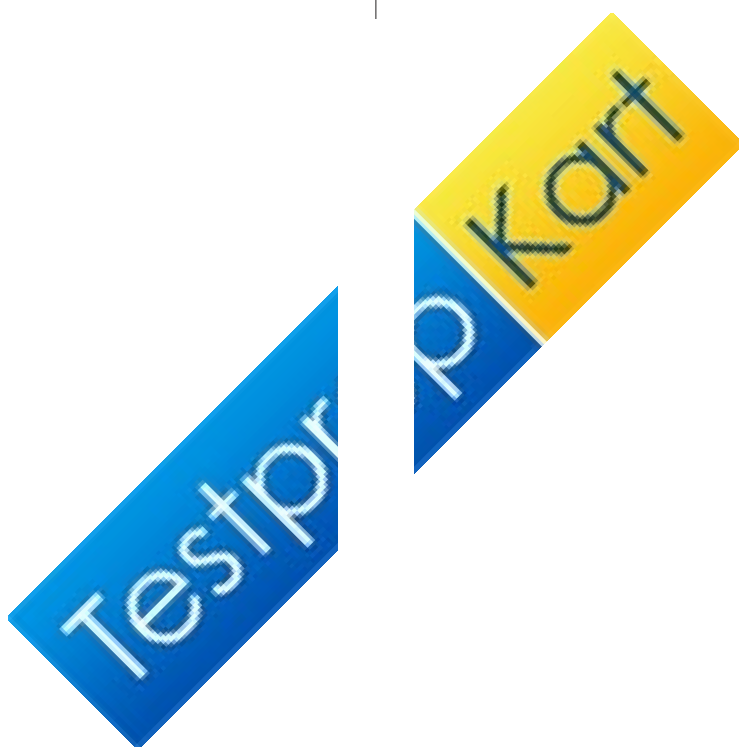
p-Block Elements (Group 13 and 14)

- It is because of inability of ns^2 electrons of the valence shell to participate in bonding that
 - Sn^{2+} is oxidising while Pb^{4+} is reducing
 - Sn^{2+} and Pb^{2+} are both oxidising and reducing
 - Sn^{4+} is reducing while Pb^{4+} is oxidising
 - Sn^{2+} is reducing while Pb^{4+} is oxidising. (NEET 2017)
- Boric acid is an acid because its molecule
 - contains replaceable H^+ ion
 - gives up a proton
 - accepts OH^- from water releasing proton
 - combines with proton from water molecule. (NEET-II 2016)
- AlF_3 is soluble in HF only in presence of KF. It is due to the formation of
 - $\text{K}_3[\text{AlF}_6]$
 - $\text{K}_2[\text{AlF}_6]$
 - AlH_3
 - $\text{K}[\text{AlF}_6]$. (NEET-II 2016)
- The stability of +1 oxidation state among Al, Ga, In and Tl increases in the sequence
 - $\text{Al} < \text{Ga} < \text{In} < \text{Tl}$
 - $\text{Tl} < \text{In} < \text{Ga} < \text{Al}$
 - $\text{In} < \text{Tl} < \text{Ga} < \text{Al}$
 - $\text{Ga} < \text{In} < \text{Al} < \text{Tl}$. (2015, 2009)
- Which of the following structure is similar to graphite?
 - B_4C
 - B_2H_6
 - BN
 - B. (NEET 2013)
- Which of these is not a monomer for a high molecular mass silicone polymer?
 - Me_3SiCl
 - PhSiCl_3
 - MeSiCl_3
 - Me_2SiCl_2 . (NEET 2013)
- The basic structural unit of silicates is
 - SiO_3^{2-}
 - SiO_4^{2-}
 - SiO^-
 - SiO_4^{4-} . (NEET 2013)
- Which statement is wrong?
 - Beryl is an example of cyclic silicate.
 - Mg_2SiO_4 is orthosilicate.
 - Basic structural unit in silicates is the SiO_4 tetrahedron.
 - Feldspars are not aluminosilicates. (Karnataka NEET 2013)
- Name the two type of the structure of silicate in which one oxygen atom of $[\text{SiO}_4]^{4-}$ is shared?
 - Linear chain silicate
 - Sheet silicate
 - Pyrosilicate
 - Three dimensional. (2011)
- Which of the following statements is incorrect?
 - Pure sodium metal dissolves in liquid ammonia to give blue solution.
 - NaOH reacts with glass to give sodium silicate.
 - Aluminium reacts with excess NaOH to give $\text{Al}(\text{OH})_3$.
 - NaHCO_3 on heating gives Na_2CO_3 . (Mains 2011)
- Which of the following oxide is amphoteric?
 - SnO_2
 - CaO
 - SiO_2
 - CO_2 . (Mains 2011)
- Which one of the following molecular hydrides acts as a Lewis acid?
 - NH_3
 - H_2O
 - B_2H_6
 - CH_4 . (2010)
- The tendency of BF_3 , BCl_3 and BBr_3 to behave as Lewis acid decreases in the sequence
 - $\text{BCl}_3 > \text{BF}_3 > \text{BBr}_3$
 - $\text{BBr}_3 > \text{BCl}_3 > \text{BF}_3$
 - $\text{BBr}_3 > \text{BF}_3 > \text{BCl}_3$
 - $\text{BF}_3 > \text{BCl}_3 > \text{BBr}_3$. (2010)
- The straight chain polymer is formed by
 - hydrolysis of CH_3SiCl_3 followed by condensation polymerisation
 - hydrolysis of $(\text{CH}_3)_4\text{Si}$ by addition polymerisation
 - hydrolysis of $(\text{CH}_3)_2\text{SiCl}_2$ followed by condensation polymerisation
 - hydrolysis of $(\text{CH}_3)_3\text{SiCl}$ followed by condensation polymerisation. (2009)

15. Which of the following oxidation states are the most characteristic for lead and tin respectively?
 (a) +2, +4 (b) +4, +4
 (c) +2, +2 (d) +4, +2. (2007)
16. Which of the following anions is present in the chain structure of silicates?
 (a) $(\text{Si}_2\text{O}_5^{2-})_n$ (b) $(\text{SiO}_3^{2-})_n$
 (c) SiO_4^{4-} (d) $\text{Si}_2\text{O}_7^{6-}$ (2007)
17. Which of the following is the most basic oxide?
 (a) SeO_2 (b) Al_2O_3
 (c) Sb_2O_3 (d) Bi_2O_3 (2006)
18. The correct order regarding the electronegativity of hybrid orbitals of carbon is
 (a) $sp < sp^2 < sp^3$ (b) $sp > sp^2 < sp^3$
 (c) $sp > sp^2 > sp^3$ (d) $sp < sp^2 > sp^3$ (2006)
19. Which one of the following statements about the zeolite is false?
 (a) They are used as cation exchangers.
 (b) They have open structure which enables them to take up small molecules.
 (c) Zeolites are aluminosilicates having three dimensional network.
 (d) Some of the SiO_4^{4-} units are replaced by AlO_4^{5-} and AlO_6^{9-} ions in zeolites. (2004)
20. Which one of the following compounds is not a protonic acid?
 (a) $\text{B}(\text{OH})_3$ (b) $\text{PO}(\text{OH})_3$
 (c) $\text{SO}(\text{OH})_2$ (d) $\text{SO}_2(\text{OH})_2$ (2003)
21. Which compound is electron deficient?
 (a) BeCl_2 (b) BCl_3
 (c) CCl_4 (d) PCl_5 (2000)
22. Which of the following does not show electrical conduction?
 (a) Diamond (b) Graphite
 (c) Potassium (d) Sodium (1999)
23. The type of hybridisation of boron in diborane is
 (a) sp^3 -hybridisation (b) sp^2 -hybridisation
 (c) sp -hybridisation (d) sp^3d^2 -hybridisation (1999)
24. Percentage of lead in lead pencil is
 (a) 80 (b) 20
 (c) zero (d) 70 (1999)
25. In graphite, electrons are
 (a) localised on each C-atom
 (b) localised on every third C-atom
 (c) spread out between the structure
 (d) present in anti-bonding orbital. (1997, 1993)
26. Boron compounds behave as Lewis acids, because of their
 (a) ionisation property
 (b) electron deficient nature
 (c) acidic nature
 (d) covalent nature. (1996)
27. Aluminium (III) chloride forms a dimer because aluminium
 (a) belongs to 3rd group
 (b) can have higher coordination number
 (c) cannot form a trimer
 (d) has high ionization energy. (1995)
28. The BCl_3 is a planar molecule whereas NCl_3 is pyramidal because
 (a) nitrogen atom is smaller than boron atom
 (b) BCl_3 has no lone pair but NCl_3 has a lone pair of electrons
 (c) B—Cl bond is more polar than N—Cl bond
 (d) N—Cl bond is more covalent than B—Cl bond. (1995)
29. Method used for obtaining highly pure silicon, used as a semiconductor material, is
 (a) crystallization (b) zone refining
 (c) oxidation (d) electro-chemical. (1994)
30. Carbon and silicon belong to (IV) group. The maximum coordination number of carbon in commonly occurring compounds is 4, whereas that of silicon is 6. This is due to
 (a) availability of low lying *d*-orbitals in silicon
 (b) large size of silicon
 (c) more electropositive nature of silicon
 (d) both (b) and (c). (1994)
31. Which of the following statements about H_3BO_3 is not correct?
 (a) It has a layer structure in which planar BO_3 units are joined by hydrogen bonds.
 (b) It does not act as proton donor but acts as a Lewis acid by accepting hydroxyl ion.
 (c) It is a strong tribasic acid.
 (d) It is prepared by acidifying an aqueous solution of borax. (1994)
32. Na^+ , Mg^{2+} , Al^{3+} and Si^{4+} are isoelectronic, their ionic size will follow the order
 (a) $\text{Na}^+ > \text{Mg}^{2+} < \text{Al}^{3+} < \text{Si}^{4+}$
 (b) $\text{Na}^+ < \text{Mg}^{2+} < \text{Al}^{3+} < \text{Si}^{4+}$
 (c) $\text{Na}^+ > \text{Mg}^{2+} > \text{Al}^{3+} > \text{Si}^{4+}$
 (d) $\text{Na}^+ < \text{Mg}^{2+} > \text{Al}^{3+} < \text{Si}^{4+}$ (1993)
33. Which of the following types of forces bind together the carbon atoms in diamond?
 (a) Ionic (b) Covalent
 (c) Dipolar (d) van der Waals (1992)

p-Block Elements (Group 13 and 14)

- 34.** Water gas is produced by
(a) passing steam through a red hot coke bed
(b) saturating hydrogen with moisture
(c) mixing oxygen and hydrogen in the ratio of 1 : 2
(d) heating a mixture of CO_2 and CH_4 in petroleum refineries. (1992)
- 35.** Which of the following is an insulator?
(a) Graphite (b) Aluminum
(c) Diamond (d) Silicon (1992)
- 36.** Glass is a
(a) liquid (b) solid
(c) supercooled liquid
(d) transparent organic polymer. (1991)
- 37.** The ability of a substance to assume two or more crystalline structures is called
(a) isomerism (b) polymorphism
(c) isomorphism (d) amorphism. (1990)
- 38.** The substance used as a smoke screen in warfare is
(a) SiCl_4 (b) PH_3
(c) PCl_5 (d) acetylene. (1989)



Answer Key

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- 1.** (d) **2.** (c) **3.** (b) **4.** (a) **5.** (c) **6.** (a) **7.** (d) **8.** (d) **9.** (c) **10.** (c)
11. (a) **12.** (c) **13.** (b) **14.** (c) **15.** (a) **16.** (b) **17.** (d) **18.** (c) **19.** (d) **20.** (a)
21. (b) **22.** (a) **23.** (a) **24.** (c) **25.** (b) **26.** (b) **27.** (b) **28.** (b) **29.** (b) **30.** (a)
31. (c) **32.** (c) **33.** (b) **34.** (a) **35.** (c) **36.** (c) **37.** (b) **38.** (a)
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