INORGANIC CHEMISTRY

DPP
DAILY PRACTICE PROBLEMS

DPP No. 17

Total Marks : 25

Max. Time : 26 min.

Topic : Chemical Bonding

Type of Questions		M.M., Min.
Single choice Objective ('–1' negative marking) Q.1 to Q.7	(3 marks, 3 min.)	[21, 21]
Subjective Questions ('–1' negative marking) Q.8	(4 marks, 5 min.)	[4, 5]

1. Diamond is a hard substance because :
(A) it has ionic bond.
(B) it has planar arrangement of carbon atoms.
(C) it has sp^3 hybridized carbon atoms which are arranged tetrahedrally in a cross-network structure.
(D) it has sp^2 hybridized carbon atoms arranged in a planar geometry.

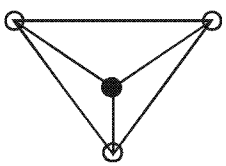
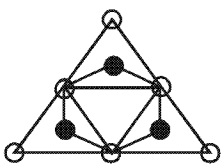
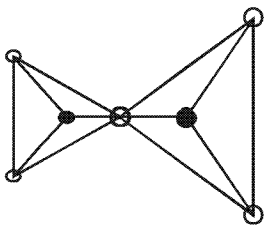
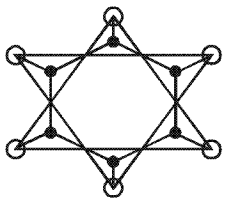
2. Graphite is a good conductor of heat and electricity, while diamond is not because :
(A) graphite has ionic bonds and diamond has covalent bonds.
(B) graphite has covalent bonds and diamond has ionic bonds.
(C) graphite has delocalized electrons whereas diamond has not.
(D) graphite has sp^3 hybridized carbon atoms and diamond has sp^2 hybridized carbon atoms.

3. Most recently developed carbon allotrope 'C-60' Buckminster Fullerene has shape of :
(A) football (B) thin sheet of steel (C) diamond (D) none of these

4. Two types of carbon-carbon covalent bond lengths are present in :
(A) diamond (B) graphite (C) C_{60} (D) benzene

5. The fundamental unit found in silicates is :
(A) SiO_2 (B) SiO_4^{4-} (C) SiO_3 (D) $Si_2O_5^{2-}$

6. Which of the following represents a pyrosilicate structure :
○ — Oxygen ● — Silicon

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

7. On the basis of structure of graphite, which of the following is/are true for it :
(A) It is a diamagnetic substance.
(B) It behaves like metallic conductor as well as semiconductor upon changes in temperature.
(C) It is less dense than diamond.
(D) All C–C bond lengths are same and intermediate between single and double bonds.

8. Answer the following questions.
(i) What is the hybridisation of B and N in inorganic benzene ?
(ii) How many position isomers are possible for dichloro substituted inorganic benzene ?
(iii) How many B–H bonds are there in inorganic benzene ?
(iv) How many N–B bonds are there in inorganic benzene ?

Answer Key

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1.	(C)	**2.**	(C)	**3.**	(A)	**4.**	(C)	**5.**	(B)
6.	(C)	**7.**	(ABCD)	**8.**	**(i)** sp^2	**(ii)** 4	**(iii)** 3	**(iv)** 6	

Hints & Solutions

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4. diamond (1.54 Å)
graphite (1.42 Å) . ($\perp^r$ to the sheets there is no covalent bonding)
C_{60} (1.45 Å and 1.38 Å)
benzene (1.36 Å).