Chapter - 4

Carbon and Its Compounds

(Assertion and Reasoning Questions)

Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

Q.1. Assertion(A) : Carbon is the only element that can form large number of compounds.

Reason (R) : Carbon is tetravalent and shows the property of catenation.

Q.2. Assertion(A) : If the first member of a homologous series is methanal, its third member will be propanal.

Reason (R) : All the members of a homologous series show similar chemical properties.

Q.3. Assertion(A) : Diamond and graphite are allotropes of carbon.

Reason (R) : Some elements can have several different structural forms while in the same physical state. These forms are called allotropes.

Q.4. Assertion(A) : Soaps are not suitable for washing purpose when water is hard.

Reason (R) : Soaps have relatively weak cleansing action.

Q.5. Assertion(A) : Carbon compounds can form chain, branched and ring structures.

Reason (R) : Carbon exhibits the property of catenation.

Q.6. Assertion (A) : Carbon monoxide is extremely poisonous in nature.

Reason (R) : Carbon monoxide is formed by complete combustion of carbon.

Q.7. Assertion (A) : Cooking oil decolourises bromine water.

Reason (R) : Cooking oil is a saturated compound.

Q.8. Assertion (A) : In a candle, wax vapours burn in sufficient supply of oxygen, which leads to blue flame.

Reason (R) : When the oxygen supply is sufficient, then fuels burn completely producing a blue flame.

Q.9. Assertion (A) : Alkanes give addition reaction.

Reason (R) : Addition reactions are a characteristic property of unsaturated hydrocarbons.

Q.10. Assertion(A): n-butane and iso-butane are examples of isomers.

Reason (R) : Isomerism is possible only with hydrocarbons having 4 or more carbon atoms.

Q.11. Assertion(A): Saturated hydrocarbons are chemically less reactive.

Reason (R) : All the valencies of carbon atom are satisfied by single covalent bonds.

Q.12. Assertion(A): Diamond and graphite do not have the same crystal structure.

Reason (R) : Diamond is crystalline while graphite is amorphous.

Q.13. Assertion(A): Graphite is soft and slippery to touch.

Reason (R) : Graphite has sheet like layered structure.

Q.14. Assertion(A): Both aldehydes and ketones contain carbonyl group.

Reason (R) : In aldehydes, the functional group is attached to atleast one hydrogen atom.

Q.15. Assertion(A): In alkanes, alkenes and alkynes the valency of carbon is always four.

Reason (R) : All hydrocarbons except alkanes contain double bonds.

Q.16. Assertion(A): Graphite is a good conductor of electricity.

Reason (R) : It has one free valence electron.

Q.17. Assertion(A): The functional group present in alcohols is – OH.

Reason (R) : It is the same group as present in water, hence water and alcohol have similar properties.

Q.18. Assertion(A): Ethanol is first member of the alcohol homologous series.

Reason (R) : A homologous series can be represented by a general formula.

Q.19. Assertion(A): Carbon and its compounds can be used as fuels.

Reason (R) : They are highly inflammable and have high calorific value.

Q.20. Assertion(A): Covalent compounds are generally poor conductor of electricity.

Reason (R) : They consist of molecules and not ions which can transfer charge.

Q.21. Assertion(A): Diamond is not good conductor of electricity.

Reason (R): It has no free electrons.

Q.22. Assertion(A): Olefins have the general formula C_nH_{2n+1}

Reason (R) : There is at least one double bond between two carbon atoms in their molecules.

Q.23. Assertion(A): Carbon possesses property of catenation.

Reason (R) : Carbon atoms form double as well as triple bonds during catenation.

Q.24. Assertion(A): Two members of a homologous series have similar chemical properties.

Reason (R) : Propane and butane are members of same homologous series.

Q.25. Assertion(A): Diamond is the hardest natural known substance.

Reason (R) : Diamond is used for cutting marble, granite and glass.

-x-x-x-

ANSWER KEY

Q.1 : (d)	**Q.2** : (b)	**Q.3** : (a)	**Q.4** : (b)
Q.5 : (a)	**Q.6** : (c)	**Q.7** : (b)	**Q.8** : (a)
Q.9 : (d)	**Q.10** : (b)	**Q.11** : (a)	**Q.12** : (c)
Q.13 : (a)	**Q.14** : (b)	**Q.15** : (c)	**Q.16** : (a)
Q.17 : (c)	**Q.18** : (d)	**Q.19** : (a)	**Q.20** : (a)
Q.21 : (a)	**Q.22 :** (d)	**Q.23 :** (b)	**Q.24 :** (b)
Q.25 : (b)			