SmartKalike

CBSE Class 10 · Science

Carbon and its Compounds

10 most probable questions for Boards 2027

Q1. 0.5 marks · Very short answer

What happens to the melting and boiling points as molecular mass increases in a homologous series?

Answer

The melting and boiling points increase with increasing molecular mass in any homologous series.

Q2. 1 mark · Multiple choice

Which statement correctly describes unsaturated carbon compounds?
(A) They contain only single bonds between carbon atoms.
(B) They contain double or triple bonds between carbon atoms.
(C) They have all their valencies satisfied by single bonds only.
(D) They are normally less reactive than saturated compounds.

Answer

(B) They contain double or triple bonds between carbon atoms — compounds of carbon having double or triple bonds between their carbon atoms are known as unsaturated carbon compounds and they are more reactive than the saturated carbon compounds.

Q3. 2 marks · Short answer

What did the vital-force theory propose about organic compounds, and how did Friedrich Wöhler disprove it in 1828?

Answer

The vital-force theory proposed that organic compounds could be formed only within a living system and required a ‘vital force’ for synthesis. Friedrich Wöhler disproved the theory in 1828 by preparing urea from ammonium cyanate.

Q4. 3 marks · Medium answer

Explain how tetravalency and catenation together lead to a large number of carbon compounds. What variation in carbon chains can occur among compounds that have the same non-carbon atom or group attached?

Answer

1. Carbon’s tetravalency allows it to form four covalent bonds with carbon and other atoms.
2. Catenation, the ability of carbon to form bonds with other carbon atoms, produces stable long chains, branched chains and rings with single, double or triple bonds.
3. The same non-carbon atom or group can attach to carbon chains of varying lengths and arrangements, giving many compounds.

Q5. 5 marks · Long answer

Compare saturated and unsaturated carbon compounds. Explain how the structures of ethane and ethene satisfy carbon's valency, and describe the bonding between carbon atoms in ethyne.

Answer

1. Carbon–carbon bonding — Saturated compounds contain carbon atoms linked by single bonds only; unsaturated compounds contain double or triple bonds between carbon atoms.
2. Valency — In saturated compounds, single bonds satisfy all carbon valencies; in unsaturated compounds, double or triple carbon–carbon bonds satisfy the remaining valencies.
3. Ethane — C_2H_6 has a single bond between its two carbon atoms, and each carbon is bonded to three hydrogen atoms, satisfying all valencies.
4. Ethene and ethyne — C_2H_4 has a carbon–carbon double bond, with each carbon bonded to two hydrogen atoms; C_2H_2 has a carbon–carbon triple bond. These bonds satisfy carbon valencies.
5. Reactivity — Saturated compounds are normally not very reactive; unsaturated compounds are more reactive than saturated compounds.

Q6. 1 mark · Very short answer

What type of bond is present in an unsaturated hydrocarbon classified as an alkene?

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/science/carbon-and-its-compounds

Q7. 2 marks · Short answer

What makes a carbon compound saturated, and what is generally true of its reactivity?

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Q8. 3 marks · Medium answer

State the molecular formula of benzene. Then list the names and molecular formulae of the saturated hydrocarbons containing one to six carbon atoms.

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Q9. 5 marks · Long answer

Explain what structural isomers are. Describe the possible straight-chain, branched-chain and ring arrangements of carbon compounds, and state the formula of cyclohexane.

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Q10. 1 mark · Multiple choice

Which feature identifies an alkyne?
(A) It is a saturated hydrocarbon.
(B) It contains one or more double bonds.
(C) It contains one or more triple bonds.
(D) It contains oxygen in its carbon chain.

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