

**QB365 Question Paper Software**  
**11th Standard - Chemistry**  
**Hydrocarbons Assertion and reason**

Exam Time: 00:20 Hrs

Date: 2025-10-11

Total Marks: 10

**Questions:**

**Assertion and reason**

1. **Assertion** : Acetylene is acidic in nature.

**Reason** : Acetylene is sp hybridised.

**Codes:**

- (a) Assertion and reason both are correct statements and reason is correct explanation for assertion.
- (b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.
- (c) Assertion is correct statement but reason is wrong statement.
- (d) Assertion is wrong statement but reason is correct statement.

2. **Assertion** : Sodium acetate on Kolbe's electrolysis gives methane.

**Reason** : Methyl free radical is formed at anode.

**Codes:**

- (a) Assertion and reason both are correct statements and reason is correct explanation for assertion.
- (b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.
- (c) Assertion is correct statement but reason is wrong statement.
- (d) Assertion is wrong statement but reason is correct statement.

3. **Assertion** : Methane cannot be obtained by Wurtz reaction.

**Reason** : Wurtz reaction leads to the formation of symmetrical alkane having an even number of carbon atoms

**Codes:**

- (a) Assertion and reason both are correct statements and reason is correct explanation for assertion.
- (b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.
- (c) Assertion is correct statement but reason is wrong statement.
- (d) Assertion is wrong statement but reason is correct statement.

4. **Assertion** : Saturated hydrocarbons are chemically less reactive.

**Reason** : All isomeric paraffins have same parent name.

**Codes:**

- (a) Assertion and reason both are correct statements and reason is correct explanation for assertion.
- (b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.
- (c) Assertion is correct statement but reason is wrong statement.
- (d) Assertion is wrong statement but reason is correct statement.

5.**Assertion:** Pyrrole is an aromatic heterocyclic compound.

**Reason:** It has a cyclic, delocalised  $6\pi$  electrons.

**Codes:**

- A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
- B) If both assertion and reason are true but reason is not the correct explanation of the assertion.
- C) If assertion is true but reason is false.
- D) If the assertion and reason both are false.
- E) If assertion is false but reason is true

6.**Assertion:** Isobutane on oxidation with  $\text{KMnO}_4$  gives tert-butyl alcohol.

**Reason:** Oxidising agents have no effect on alkanes.

**Codes:**

- A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
- B) If both assertion and reason are true but reason is not the correct explanation of the assertion.
- C) If assertion is true but reason is false.
- D) If the assertion and reason both are false.
- E) If assertion is false but reason is true.

7.**Assertion:** Knocking lowers the efficiency of the engine.

**Reason:** Fuel with minimum knocking property is preferred.

**Codes:**

- A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
- B) If both assertion and reason are true but reason is not the correct explanation of the assertion.
- C) If assertion is true but reason is false.
- D) If the assertion and reason both are false.
- E) If assertion is false but reason is true.

8.**Assertion:** The presence of  $\text{Ag}^+$  enhances the solubility of alkenes in water.

**Reason:** Alkenes are weakly polar in nature.

**Codes:**

- A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
- B) If both assertion and reason are true but reason is not the correct explanation of the assertion.
- C) If assertion is true but reason is false.
- D) If the assertion and reason both are false.
- E) If assertion is false but reason is true.

9.**Assertion:** Benzene is a solvent for the Friedel Craft's alkylation of bromobenzene.

**Reason:** Friedel Craft's reaction is used to introduced on alkyl or acyl group in benzene nucleus.

**Codes:**

- A) If both assertion and reason are true and the reason is the correct explanation of the

assertion.

B) If both assertion and reason are true but reason is not the correct explanation of the assertion.

C) If assertion is true but reason is false.

D) If the assertion and reason both are false.

E) If assertion is false but reason is true.

10. **Assertion:** Rates of nitration of benzene and hexa deuterobenzene are different.

**Reason:** C-H bond is stronger than C-D bond

**Codes:**

A) If both assertion and reason are true and the reason is the correct explanation of the assertion.

B) If both assertion and reason are true but reason is not the correct explanation of the assertion.

C) If assertion is true but reason is false.

D) If the assertion and reason both are false.

E) If assertion is false but reason is true.

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## Answers Key:

### Assertion and reason

1. (b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.

**Explanation:**

The acidic nature in acetylene is described on the basis of higher electronegativity of sp hybridized carbon atom which pulls the C - H bond pair more effectively to lose H<sup>+</sup>.

2. (d) Assertion is wrong statement but reason is correct statement.

**Explanation:**

Sodium acetate on Kolbe's electrolysis gives ethane. It is formed at anode.

3. (a) Assertion and reason both are correct statements and reason is correct explanation for assertion.

**Explanation:**

Wurtz reaction involves the formation of alkanes by heating alkyl halide with sodium in ether. In this reaction two alkyl radicals join together to form an alkane. The net result in this reaction is the formation of symmetrical alkane (R-R) having an even number of carbon atoms.

4. (c) Assertion is correct statement but reason is wrong statement.

**Explanation:**

Less reactivity of saturated hydrocarbons is due to the presence of single bonds between carbon atoms. Paraffins (alkanes) may have straight chain or branched chain isomers which have different parent names.

5. A) If both assertion and reason are true and the reason is the correct explanation of the assertion.

**Explanation:**

Pyrrole is a heterocyclic compound having five membered ring. It has 6 $\pi$  electrons. As 4 $\pi$  electrons in the ring and 2 $\pi$  electrons donated by nitrogen atom present in the ring.

6. B) If both assertion and reason are true but reason is not the correct explanation of the assertion.

7.

B) If both assertion and reason are true but reason is not the correct explanation of the assertion.

**Explanation:**

Knocking involves the production of metallic sound due to irregular burning of the fuel. This irregular burning lowers the efficiency of the engine.

8. C) If assertion is true but reason is false.

9. E) If assertion is false but reason is true.

**Explanation:**

During alkylation of bromobenzene, if benzene is used as solvent, alkylation of benzene will take place because benzene is more reactive for SE reactions than bromo benzene, benzene is not used as a solvent for this reaction.

10. B) If both assertion and reason are true but reason is not the correct explanation of the assertion.

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