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Chemistry Grade 10 — Chapter 9

Hydrocarbons

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Independent practice MCQs from the supplied Class 10 Chemistry notes pack. Total: 49 questions.

A. Important / Main Topics

1. Hydrocarbons are compounds containing:

(A) Carbon and hydrogen only
(B) Carbon and oxygen only
(C) Hydrogen and oxygen only
(D) Carbon, hydrogen, and oxygen only

Correct Answer: A

Explanation: Hydrocarbons are compounds containing Carbon and hydrogen only.

2. Saturated hydrocarbons are also called:

(A) Alkenes
(B) Alkanes
(C) Alkynes
(D) Aromatics

Correct Answer: B

Explanation: Saturated hydrocarbons are also called alkanes.

3. The general formula of alkanes is:

(A) C_nH□n
(B) C_nH□n□□
(C) C_nH□n□□
(D) C_nH_n

Correct Answer: C

Explanation: The general formula of alkanes is C_nH□n□□.

4. Alkenes have the general formula:

(A) C_nH□n□□
(B) C_nH□n□□
(C) C_nH_n
(D) C_nH□n

Correct Answer: D

Explanation: Alkenes have the general formula C_nH□n.

5. Alkynes have the general formula:

(A) C_nH□n□□
(B) C_nH□n□□
(C) C_nH□n
(D) C_nH_n

Correct Answer: A

Explanation: Alkynes have the general formula C_nH□n□□.

6. Which of the following is the simplest alkene?

(A) Ethane
(B) Ethene
(C) Ethyne
(D) Propene

Correct Answer: B

Explanation: Ethene — this correctly answers the question.

7. Which of the following is the simplest alkyne?

(A) Ethene
(B) Ethane
(C) Ethyne
(D) Propene

Correct Answer: C

Explanation: Ethyne — this correctly answers the question.

8. The process of breaking large alkane molecules into smaller hydrocarbons is called:

(A) Dehydration
(B) Hydrogenation
(C) Esterification
(D) Cracking

Correct Answer: D

Explanation: Cracking is the process of breaking large alkane molecules into smaller hydrocarbons.

9. The test used to distinguish between saturated and unsaturated hydrocarbons is:

(A) Bromine water test
(B) Litmus test
(C) Limewater test
(D) Flame test

Correct Answer: A

Explanation: The bromine water test is used to distinguish between saturated and unsaturated hydrocarbons.

10. Which of the following is a fossil fuel?

(A) Wood
(B) Coal
(C) Biogas
(D) Hydrogen

Correct Answer: B

Explanation: Coal — this correctly answers the question.

11. Alkenes are classified as:

(A) Saturated hydrocarbons
(B) Aromatic hydrocarbons
(C) Unsaturated hydrocarbons
(D) None of the above

Correct Answer: C

Explanation: Alkenes are unsaturated hydrocarbons.

12. The type of bond present between the carbon atoms in alkynes is:

(A) Single covalent bond
(B) Double covalent bond
(C) Saturated covalent bond
(D) Triple covalent bond

Correct Answer: D

Explanation: The type of bond present between the carbon atoms in alkynes is Triple covalent bond.

13. Cracking of large alkane molecules requires:

(A) High temperature and catalyst
(B) Low temperature and pressure
(C) Low temperature and catalyst
(D) High temperature and high pressure

Correct Answer: A

Explanation: Cracking of large alkane molecules requires High temperature and catalyst.

14. Which of the following is a product of cracking large alkane molecules?

(A) Carbon dioxide
(B) Alkenes
(C) Water
(D) Hydrogen

Correct Answer: B

Explanation: Alkenes — this correctly answers the question.

15. The chemical test to distinguish between alkanes and alkenes involves:

(A) Limewater
(B) Litmus paper
(C) Bromine water
(D) Universal indicator

Correct Answer: C

Explanation: The chemical test to distinguish between alkanes and alkenes involves Bromine water.

16. Ethyne is commonly used for:

(A) Cooking
(B) Fuel for cars
(C) Heating
(D) Welding

Correct Answer: D

Explanation: Ethyne is commonly used for welding.

17. Fractional distillation separates petroleum into fractions based on:

(A) Boiling point
(B) Density
(C) Viscosity
(D) Solubility

Correct Answer: A

Explanation: Fractional distillation separates petroleum into fractions based on Boiling point.

18. Which property increases as you move from the bottom to the top of the fractionating column?

(A) Chain length
(B) Volatility
(C) Boiling point
(D) Viscosity

Correct Answer: B

Explanation: Volatility increases from bottom to top of the fractionating column.

19. The gasoline/petrol fraction from petroleum is primarily used for:

(A) Jet fuel
(B) Heating
(C) Car fuel
(D) Chemical feedstock

Correct Answer: C

Explanation: The gasoline/petrol fraction is used for car fuel.

20. Doubly bonded carbon atoms form which type of bond with two other atoms?

(A) Double
(B) Triple
(C) Non-covalent
(D) Single

Correct Answer: D

Explanation: Doubly bonded carbon atoms form a single bond with two other atoms.

21. Describe the bonding in alkenes.

(A) Double covalent bond
(B) Single covalent bond
(C) Triple covalent bond
(D) Ionic bond

Correct Answer: A

Explanation: "Double covalent bond" is correct: it matches the idea asked in the question ("Describe the bonding in alkenes"), while the other choices do not.

22. What are the conditions required for the cracking of alkanes?

(A) Low temperature and pressure
(B) High temperature and high pressure
(C) High temperature and pressure
(D) Low temperature and catalyst

Correct Answer: B

Explanation: High temperature and high pressure — this correctly answers the question.

23. Why is the cracking of large alkane molecules important in the petroleum industry?

(A) It produces carbon dioxide
(B) It produces water
(C) It produces smaller, more useful hydrocarbons
(D) It produces hydrogen

Correct Answer: C

Explanation: It produces smaller, more useful hydrocarbons — this correctly answers the question.

24. How can you test for the presence of an unsaturated hydrocarbon?

(A) Add limewater; if it turns milky, it is unsaturated
(B) Add litmus paper; if it turns red, it is unsaturated
(C) Add universal indicator; if it turns green, it is unsaturated
(D) Add bromine water; if it decolourises, it is unsaturated

Correct Answer: D

Explanation: Add bromine water; if it decolourises, it is unsaturated — this correctly answers the question.

B. Less Important / Secondary Topics

25. Write the symbol equation for the preparation of ethene from ethanol.

(A) CH□CH□OH → CH□ = CH□ + H□O
(B) CH□CH□OH → CH□CH□ + H□O
(C) CH□CH□OH → CH□CHO + H□
(D) CH□CH□OH → CH□ + CO

Correct Answer: A

Explanation: "CH□CH□OH → CH□ = CH□ + H□O" is correct: it matches the idea asked in the question ("Write the symbol equation for the preparation of ethene from ethanol"), while the other choices do not.

26. What type of bond is present in alkenes?

(A) Single covalent bond
(B) Double covalent bond
(C) Triple covalent bond
(D) Ionic bond

Correct Answer: B

Explanation: Double covalent bond — this correctly answers the question.

27. Name two uses of ethyne.

(A) Cooking and heating

(B) Fuel for cars and jet fuel
(C) Welding and artificial ripening of fruits
(D) Chemical feedstock and lubricants

Correct Answer: C

Explanation: Ethyne is used for welding and artificial ripening of fruits.

28. What is the principle behind the fractional distillation of petroleum?

(A) Differences in density
(B) Differences in viscosity
(C) Differences in solubility
(D) Differences in boiling points

Correct Answer: D

Explanation: Differences in boiling points — this correctly answers the question.

29. How does the boiling point of fractions change from the bottom to the top of the fractionating column?

(A) Boiling point decreases
(B) Boiling point increases
(C) Boiling point remains the same
(D) Boiling point fluctuates

Correct Answer: A

Explanation: Boiling point decreases from bottom to top of the fractionating column.

30. List two uses of the naphtha fraction obtained from petroleum.

(A) Fuel for cars and jet fuel
(B) Chemical feedstock and making drugs, plastics, and other chemicals
(C) Lubricants and waxes
(D) Paving roads and roofing materials

Correct Answer: B

Explanation: Naphtha is used as a chemical feedstock for making drugs, plastics, and other chemicals.

31. How can you distinguish between propane and propene?

(A) Limewater test
(B) Litmus test
(C) Bromine water test
(D) Flame test

Correct Answer: C

Explanation: Bromine water test — this correctly answers the question.

32. In a refinery, large alkane molecules are cracked to produce smaller alkenes and other hydrocarbons.

(A) Write conditions for cracking.
(B) Write the symbol equation for the cracking of decane to produce ethene and octane.
(C) Why cracking of large alkanes is necessary in the petroleum industry. E. Propose a method to increase the efficiency of the cracking process.
(D) Explain why alkenes are considered unsaturated hydrocarbons.

Correct Answer: D

Explanation: Alkenes are unsaturated hydrocarbons because they contain a carbon-carbon double bond.

33. Ethyne (acetylene) is a hydrocarbon, used as a fuel for welding and in artificially ripening fruits.

(A) Explain why ethyne is considered an unsaturated hydrocarbon.
(B) Explain why ethyne is an effective fuel for welding. Correct Answer: A. It contains a carbon-carbon triple bond Explanation: Ethyne is considered an unsaturated hydrocarbon because it contains a carbon-carbon triple bond. --- ### MCQ 34 What is the commercial importance of ethyne? A. Used in welding and cutting metals B. Used as a fuel for cars
(C) Used in cooking

(D) Used in heating

Correct Answer: A

Explanation: Ethyne is commonly used in cutting and welding metals.

34. What is the temperature of the oxy-acetylene flame?

(A) 1000^circ C
(B) 3200^circ C
(C) 2000^circ C
(D) 5000^circ C

Correct Answer: B

Explanation: The temperature of the oxy-acetylene flame is about 3200^circ C.

35. Which of the following statements about the rate of reaction is correct?

(A) The rate of reaction is constant throughout the reaction
(B) The rate of reaction is slowest at the beginning and speeds up over time
(C) The rate of reaction is fastest at the beginning and slows down over time
(D) The rate of reaction does not change with time

Correct Answer: C

Explanation: The rate of reaction is fastest at the beginning and slows down over time.

36. In a chemical reaction, bonds between atoms are broken and new bonds are formed. This process is explained by:

(A) Stoichiometry
(B) Electrochemistry
(C) Thermodynamics
(D) Collision theory

Correct Answer: D

Explanation: In a chemical reaction, bonds between atoms are broken and new bonds are formed. This process is explained by Collision theory.

37. A catalyst provides an easier pathway for a reaction by:

(A) Decreasing the activation energy
(B) Increasing the activation energy
(C) Increasing the temperature
(D) Decreasing the concentration

Correct Answer: A

Explanation: A catalyst provides an easier pathway for a reaction by Decreasing the activation energy.

38. In a Maxwell-Boltzmann curve, the area under the curve represents:

(A) The activation energy
(B) The total number of particles
(C) The reaction rate
(D) The temperature

Correct Answer: B

Explanation: In a Maxwell-Boltzmann curve, the area under the curve represents The total number of particles.

39. Which of the following is an example of a reaction that is fast at room temperature?

(A) Fermentation of glucose
(B) Digestion of food
(C) Acid-base neutralization
(D) Rusting of iron

Correct Answer: C

Explanation: Acid-base neutralization is a fast reaction, taking only a few microseconds.

40. In the Haber process, a catalyst is used to:

(A) Increase the yield of ammonia

(B) Decrease the yield of ammonia
(C) Change the equilibrium position
(D) Speed up the reaction

Correct Answer: D

Explanation: A catalyst is used to speed up the reaction, not to change the yield or equilibrium position.

41. A catalyst does NOT:

(A) Get consumed in the reaction
(B) Lower the activation energy
(C) Speed up the reaction
(D) Provide an easier pathway

Correct Answer: A

Explanation: A catalyst is not consumed in the reaction.

42. In a reaction between H□ and Cl□ to form HCl, the activated complex is:

(A) The final product
(B) A temporary, high-energy state
(C) A stable intermediate
(D) The reactant

Correct Answer: B

Explanation: The activated complex is a temporary, high-energy state.

43. The rate of a reaction can be increased by:

(A) Decreasing the temperature
(B) Decreasing the concentration of reactants
(C) Increasing the surface area of a solid reactant
(D) Adding a catalyst that increases activation energy

Correct Answer: C

Explanation: The rate of a reaction can be increased by Increasing the surface area of a solid reactant.

44. Which of the following is NOT a characteristic of enzymes?

(A) They are proteins
(B) They are highly specific
(C) They speed up reactions in living organisms
(D) They are consumed in the reaction

Correct Answer: D

Explanation: Enzymes are not consumed in the reaction.

45. Why is it important for a catalyst to remain unchanged at the end of a reaction?

(A) So it can be reused
(B) So it can change the outcome
(C) So it can increase the activation energy
(D) So it can stop the reaction

Correct Answer: A

Explanation: A catalyst is not consumed and can be recovered and reused.

46. Which of the following is a biological catalyst?

(A) Iron
(B) Enzyme
(C) Platinum
(D) Vanadium pentaoxide

Correct Answer: B

Explanation: Enzyme — this correctly answers the question.

47. The rate of reaction between two specific time intervals is called the:

(A) Instantaneous rate

(B) Initial rate
(C) Average rate
(D) Final rate

Correct Answer: C

Explanation: The rate of reaction between two specific time intervals is called the average rate of reaction.

48. Which of the following statements about the rate of reaction is correct?

(A) The rate of reaction is constant throughout the reaction
(B) The rate of reaction is slowest at the beginning and speeds up over time
(C) The rate of reaction does not change with time
(D) The rate of reaction is fastest at the beginning and slows down over time

Correct Answer: D

Explanation: The rate of reaction is fastest at the beginning and slows down over time.

49. In a chemical reaction, bonds between atoms are broken and new bonds are formed. This process is explained by:

(A) Collision theory
(B) Stoichiometry
(C) Electrochemistry
(D) Thermodynamics

Correct Answer: A

Explanation: In a chemical reaction, bonds between atoms are broken and new bonds are formed. This process is explained by Collision theory.