Unit 9: Hydrocarbons

52 MCQs. Correct option in bold. 1 mark each.

1. Hydrocarbons are compounds containing
A. carbon, hydrogen and nitrogen
B. hydrogen and oxygen only
C. carbon and hydrogen only
D. carbon and oxygen only

2. Hydrocarbons whose carbon-carbon bonds are all single bonds are called
A. unsaturated hydrocarbons
B. alkynes
C. aromatic hydrocarbons
D. saturated hydrocarbons

3. Hydrocarbons containing carbon-carbon multiple bonds are called
A. unsaturated hydrocarbons
B. esters
C. saturated hydrocarbons
D. alkanes

4. Which of the following is an unsaturated hydrocarbon?
A. CH_3CH_3
B. $CH_3CH{=}CH_2$
C. $CH_3CH_2CH_3$
D. CH_4

5. The type of bond present between the carbon atoms in alkynes is
A. ionic bond
B. single covalent bond
C. double covalent bond
D. triple covalent bond

6. Alkenes can be prepared industrially by the
A. fermentation
B. cracking of large alkane molecules
C. burning of alkanes
D. electrolysis

7. Cracking is the breaking of
A. alkenes into alkanes
B. water into hydrogen and oxygen
C. large alkane molecules into smaller hydrocarbons
D. small molecules into large ones

8. Cracking of large alkane molecules requires
A. high temperature and a catalyst
B. low temperature and pressure
C. low temperature and catalyst
D. no heat

9. Which of the following is a product of cracking large alkane molecules?
A. Water
B. Carbon dioxide
C. Oxygen
D. Alkenes

10. Cracking is important because it produces smaller hydrocarbons that are
A. more volatile and better fuels
B. solid at room temperature
C. less useful
D. less volatile

11. When decane ($C_{10}H_{22}$) is cracked, it can give octane and
A. ethane
B. propane
C. ethene
D. methane

12. Dehydration of an alcohol means
A. gain of oxygen
B. loss of water
C. gain of water
D. loss of hydrogen halide

13. Dehydration of ethanol gives
A. ethanal
B. ethyne
C. ethene
D. ethane

14. Dehydration of alcohols is an example of an
A. elimination reaction
B. neutralisation
C. substitution reaction
D. addition reaction

15. Dehydrohalogenation means loss of
A. oxygen
B. water
C. hydrogen
D. hydrogen halide

16. Halogenoalkanes on heating with alcoholic KOH give
A. carboxylic acids
B. alkenes
C. alkanes
D. alcohols

17. Ripening fruits and vegetables give off
A. ethane
B. ethyne
C. ethene
D. methane

18. When bromine water is added to an alkene, the reddish-brown colour
A. becomes darker
B. turns blue
C. does not change
D. disappears

19. The reaction of ethene with bromine gives
A. 1,2-dibromoethane
B. bromoethane only
C. ethanol
D. ethane

20. The test used to distinguish saturated from unsaturated hydrocarbons is the
A. limewater test
B. bromine water test
C. litmus test
D. flame test

21. Saturated hydrocarbons (alkanes) with bromine water
A. decolourise it
B. turn it green
C. turn it blue
D. do not react; the solution stays orange-brown

22. Baeyer's test uses
A. bromine water
B. cold dilute alkaline aqueous $KMnO_4$
C. limewater
D. litmus

23. The reaction of ethene with $KMnO_4$ gives
A. ethane
B. ethanoic acid
C. ethylene glycol
D. ethanol

24. Which compound will discharge the pink colour of $KMnO_4$ solution and be oxidised?
A. Ethene
B. Ethane
C. Butane
D. Methane

25. The addition of hydrogen to an alkene is called
A. dehydration
B. hydration
C. halogenation
D. hydrogenation

26. Hydrogenation of alkenes takes place in the presence of finely divided
A. nickel catalyst at 200–300 °C
B. vanadium oxide
C. water only
D. iron at 450 °C

27. Hydration of an alkene is addition of
A. oxygen
B. hydrogen
C. steam (water)
D. bromine

28. Hydration of ethene with steam using phosphoric acid catalyst gives
A. ethyne
B. ethanol
C. ethanoic acid
D. ethane

29. Alkynes are hydrocarbons with at least one
A. ionic bond
B. single bond
C. double bond between carbon atoms
D. triple bond between carbon atoms

30. Ethyne is commonly used for
A. welding and cutting metals
B. fuel for cars
C. cooking
D. heating homes

31. The oxy-acetylene flame has a temperature of about
A. 320 °C
B. 3200 °C
C. 1000 °C
D. 100 °C

32. Ethyne gas for ripening fruits is produced when _____ comes in contact with moisture.
A. calcium carbonate
B. calcium oxide
C. calcium carbide
D. calcium chloride

33. Fossil fuels include
A. coal, natural gas and petroleum
B. uranium and thorium
C. solar energy and wind
D. wood, coal and hydrogen

34. Fossil fuels are
A. unlimited sources
B. renewable energy sources
C. man-made sources
D. non-renewable energy sources

35. The main constituent of natural gas is
A. ethane
B. propane
C. methane
D. butane

36. Crude oil is separated into fractions by
A. crystallisation
B. fractional distillation
C. electrolysis
D. filtration

37. Fractional distillation of petroleum separates fractions on the basis of
A. density
B. solubility
C. boiling point
D. viscosity

38. From bottom to top of the fractionating column, the chain length
A. increases
B. stays the same
C. doubles
D. decreases

39. From bottom to top of the column, the volatility
A. increases
B. stays the same
C. becomes zero
D. decreases

40. Which property increases from the bottom to the top of the fractionating column?
A. Boiling point
B. Volatility
C. Viscosity
D. Chain length

41. The fraction with the shortest chain, lowest boiling point and highest volatility is

A. fuel oil
B. bitumen
C. refinery gas (LPG)
D. lubricating oil

42. The fraction with the longest chain, highest boiling point and highest viscosity is

A. bitumen
B. kerosene
C. refinery gas
D. petrol

43. Refinery gas (LPG) contains molecules with

A. 10 to 16 carbon atoms
B. more than 70 carbon atoms
C. 5 to 10 carbon atoms
D. 1 to 4 carbon atoms

44. The refinery gas fraction is used as

A. road surfacing
B. cylinder gas for cooking and heating
C. fuel for cars
D. lubricant

45. The petrol (gasoline) fraction is mainly used as

A. fuel for cars
B. road paving
C. jet fuel
D. lubricant

46. The naphtha fraction is mainly used as

A. road surface
B. lubricant
C. chemical feedstock
D. ship fuel

47. The kerosene fraction is used as

A. lubricant
B. chemical feedstock for polymers only
C. road paving
D. jet fuel

48. The diesel fraction is used as fuel for

A. roads
B. diesel engines of buses, trucks and trains
C. jet planes
D. waxes

49. The fuel oil fraction is used for

A. ships, power stations and home heating
B. polishes
C. jet planes
D. cooking gas

50. The lubricating oil fraction is used for

A. road making
B. fuel for cars
C. cooking
D. lubricants, waxes and polishes

51. The bitumen fraction is used for

A. jet fuel
B. paving roads
C. fuel for cars
D. cooking

52. The refinery gas fraction is more volatile than fuel oil because it has

A. higher boiling point
B. stronger intermolecular forces
C. weaker intermolecular forces
D. longer chains