24. Which among the following is heterocyclic aromatic compound?

a) 
b) 
c) 
d) 

25. Identify heterocyclic compound from following.

a) Napthalene b) Cyclobutane c) Cyclohexane d) Thiophene

Homologous series and Naming of organic compounds, Functional groups in organic compounds

[MHT-CET 2019]

26. The IUPAC name of $C_6H_5-\underset{\underset{CH_3}{|}}{C}=CH-CHO$ is

a) 2 - phenylbut - 2 - en - 4 - al
b) 3 - methyl - 3 - phenylprop - 1 - en
c) 3 - phenylbut- 2 - enal
d) 3 - methyl - 3 - phenylprop - 2 -

27. The IUPAC name of

$$CH_3-\underset{\underset{O}{\|}}{C}-CH_2-CH_2-CHO$$

a) 1- Formylbutane - 3 - one
b) 2 - oxopentanal
c) 4 - Formylbutan - 2 - one
d) 4 - oxopentanal

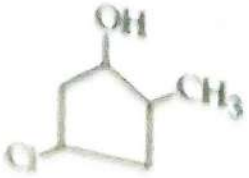
[MHT-CET 2020]

28. IUPAC name of the following compound is

$$CH_3-\underset{\underset{C_2H_5}{|}}{CH}-\underset{\underset{Br}{|}}{CH}-CH_2-\underset{\underset{C_2H_5}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_3$$

a) 4 - bromo - 2 - ethyl - 2, 5 - dimethylheptane
b) 4 - bromo - 3, 6, 6 - trimethyl octane
c) 3 - bromo - 2, 5 - diethyl - 5 - methylhexane
d) 5 - bromo - 3, 3, 6 - trimethyl octane

29. What is the IUPAC name of following compound?



Multiple Choice Questions

[MHT-CET 2015]

1. Chlorination of ethane is carried out in presence of
   a) Anhydrous $AlBr_3$
   b) Mercuric chloride
   c) Ultraviolet light
   d) Zinc chloride

[MHT-CET 2019]

2. How many chain isomers are possible for an alkane having molecular formula C_5H_{12} ?
   a) 2 b) 4 c) 5 d) 3

3. In the reaction $2n\ R - X \xrightarrow[\text{Dry ether}]{+ZnNa}$ Product. The product obtained is
   a) n sodium halide b) n alkane c) n alcohol d) 2n alkene

4. How many grams of sodium (atomic mass 23 u) is required to prepared one mole of ethane from methyl chloride by Wurtz reaction ?
   a) 2 b) 11.5 c) 23 d) 46

5. Which of the following compounds has the highest boiling point ?
   a) n-Hexane
   b) Neo-hexane
   c) Iso-hexane
   d) 2, 3 dimethylbutane

[MHT-CET 2020]

6. Identify the decreasing order of boiling point of alkanes.
   i) n-pentane ii) isopentane iii)neopentane
   a) Isopentane > n-pentane > neopentane
   b) n-pentane > isopentane > neopentane
   c) neopentane > isopentane > n-pentane
   d) Isopentane > neopentane > n-pentane

7. How many moles of ethene are required to prepare 6.0 g ethane by hydrogenation process ?
   a) 0.2 mole b) 1.0 mole c) 4.0 mole d) 0.1 mole

8. When HCl is treated with propene in presence of sodium peroxide, the major product obtained is
   a) 2, 2-dichloropropane
   b) 1, 2-dichloropropane
   c) 1-chloropropane
   d) 2-chloropropane

9. Identify the catalyst X used in following reaction.
   $CH_3CH_2Br + 2[H] \xrightarrow{X} CH_3 - CH_3 + HB$
   a) $KMnO_4$
   b) CaO, Δ
   c) Zn-Cu couple in alcohol
   d) $K_2Cr_2O_7$

10. What is difference in molar mass of any two neighbouring alkanes ?
    a) 10 g mol^{-1} b) 14 g mol^{-1} c) 12 g mol^{-1} d) 15 g mol^{-1}

11. What is the total number of chain isomers exhibited by hexane ?
    a) 5 b) 4 c) 3 d) 9

12. Which of the following compounds is NOT obtained in thermal decomposition of propane in absence of air ?
a) dihydrogen b) propene c) ethane d) methane

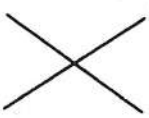
13. Which among the following on chlorination yields only one monochloro derivative ?
a) Isopentane b) Neopentane
c) n-pentane d) 2, 3-dimethyl pentane

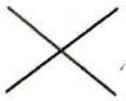
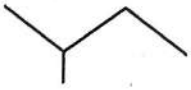
14. What is the torsion angle in staggered conformation of ethane ?
a) 180° b) 60° c) 0° d) 45°

15. What is the torsion angle in eclipsed conformation of ethane by Newman projection formula ?
a) 0° b) 30° c) 45° d) 60°

16. Which among the following compounds has lowest boiling point ?
a) Isopentane b) Isobutane c) Neopentane d) n-pentane

17. What is the number of carbon atoms present in liquid alkanes at room temperature ?
a) greater than C_{30} b) C_2 to C_{30} c) C_1 to C_4 d) C_5 to C_{17}

18. Which of the following compounds on bromination yields  ?

a)  b)  c)  d) 

19. If a mixture of iodomethane and iodoethane is treated with sodium metal in presence of dry ether it forms
a) ethane, propane and butane b) propane and ethane
c) propane and butane d) ethane and butane

[MHT-CET 2021]

20. Identify A in following reaction, $A + H_2O \xrightarrow{\text{dry ether}} CH_3-CH_2-CH_3 + Mg\begin{matrix} I \\ OH \end{matrix}$
a) $CH_3-CH_2-CH_2-MgI$ b) CH_3-CH_2-MgI
c) $CH_3-(CH_2)_3-MgI$ d) $CH_3-\underset{\underset{MgI}{|}}{C}-(CH_3)_2$

21. Which major product is formed when excess of methane is treated with chlorine in presence of U.V. light ?
a) Dichloromethane b) Chloromethane
c) Tetrachloromethane d) Trichloromethane

22. Identify the product 'C' formed in the following series of reactions.

$$\text{Bromoethane} \xrightarrow[\text{dry ether}]{Mg} A \xrightarrow[\text{dry ether}]{HOH} B \xrightarrow[Br_2\ (\text{limit})]{\text{U.V. light}} C$$

a) Ethyl magnesium bromide b) Bromoethane
c) Ethane d) Ethene

23. Which of the following is obtained when ethyl bromide is reacted with metallic sodium in dry ether ?
a) n-butane b) ethane c) propane d) isobutane

24. Identify the reactivity order of halogens towards alkane.
a) $I_2 > Cl_2 > Br_2$ b) $Cl_2 > Br_2 > I_2$ c) $I_2 > Br_2 > Cl_2$ d) $Br_2 > I_2 > Cl_2$

25. When 2-methyl but-2-ene is treated with hydrogen chloride, the major product obtained is
a) 2-chlorobutane
b) 2-chloro-2-methyl butane
c) 3-chloro-2-methyl butane
d) 2-chloro-3-methyl butane

26. Identify the reagent R used in following reaction :

$$CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_3 \xrightarrow{R} CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2Br$$

a) HBr/UV light b) HBr c) Br_2 d) Br_2/UV light

27. Identify 'A' in the following reaction, A $\xrightarrow{Na\,/\,dry\ ether}$ 3, 4-diethyl-3, 4-dimethyl hexane + 2 NaCl
a) 3-chloro-3-methyl pantane
b) 3-chloro-2-methyl pentane
c) 2-chloro-3-methyl pentane
d) 2-chloro-2-methyl pentane

28. The reaction of propane with bromine in presence of UV light predominantly forms
a) 2-bromopropane
b) 1, 2-dibromopropane
c) 1, 3-dibromopropane
d) 1-bromopropane

29. Which of the following is NOT formed when a mixture of methyl bromide and n-propyl bromide is treated with sodium metal in dry ether ?
a) Butane b) Propane c) Ethane d) Hexane

30. Which among the following molecules exhibits London forces ?
a) Neo-pentane b) n-pentane c) Iso-butane d) iso pentane

31. Which isomer of C_6H_{14} has highest boiling point ?
a) Hexane
b) 3-methyl pentane
c) 2-methyl pentane
d) 2, 2-dimethyl butane

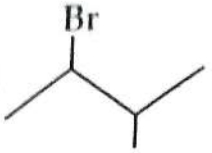
32. Which of the following is NOT obtained when a mixture of bromomethane and bromoethane is treated with sodium in dry ether ?
a) propane b) butane c) methane d) ethane

33. If an alkane contains 'n' number of carbon atoms, the number of oxygen molecules required for combustion of alkane are
a) $\frac{3n+1}{2}$ b) $2n + 1$ c) $\frac{2n+1}{2}$ d) n

34. Which of the following alkyl chlorides forms 2, 2, 5, 5-tetramethyl hexane by Wurtz reaction ?
a) $CH_3-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-Cl$
b) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-Cl$
c) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{\overset{\displaystyle CH_3}{\overset{|}{C}}}}-CH_2-Cl$
d) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-\overset{\displaystyle CH_3}{\overset{|}{CH}}-Cl$

[MHT-CET 2022]

35. What is the amount of water formed by combustion of 1.6 g methane ?
a) 3.2 g b) 3.6 g c) 6.2 g d) 16 g

36. IUPAC name of the compound  is

a) 1-bromo-3-methyl butane b) 2-bromopentane
c) 2-bromo-3-methyl butane d) 3-bromo-2-methyl butane

37. Which of the following alkanes is used for road surfacing ?
a) $C_{15}H_{74}$ and $C_{19}H_{40}$ b) $C_{10}H_{22}$ to $C_{12}H_{26}$
c) $C_{36}H_{74}$ and above d) $C_{20}H_{42}$ to $C_{24}H_{50}$

38. Which among the following statements is not true about aliphatic compounds ?
a) These are easily attacked by oxidising agent.
b) Saturated aliphatic compounds undergo substitution reactions.
c) These burn with sooty flame.
d) Unsaturated aliphatic compounds undergo addition reaction easily.

39. Identify product 'C' in the following reaction:

1, 2-dibromoethane $\xrightarrow[\Delta]{Zn}$ A $\xrightarrow[CCl_4]{O_3}$ B $\xrightarrow[H_2O]{CCl_4}$ C

a) Ethanol b) 1, 2-Dichloroethane
c) Ethene d) Methanal

Alkene

[MHT-CET 2019]

40. When propene reacts with HCl in presence of peroxide, the product is
a) 2-chloropropane b) 1, 2-dichloropropane
c) 1-chloropropane d) 1, 1-dichloropropane

41. α-butylene when subjected to hydroboration oxidation reaction, yields
a) tert-butyl alcohol b) iso-butyl alcohol
c) n-butyl alcohol d) sec-butyl alcohol

[MHT-CET 2020]

42. Which of the following alcohols is prepared by acid catalysed hydration of alkenes ?
a) butan-1-ol b) methanol c) propan-1-ol d) ethanol

43. Which of the following is a major product obtained in the reaction of isobutylene with hydrogen bromide ?
a) Iso-butyl bromide b) Tert-butyl bromide
c) sec-butyl bromide d) n-butyl bromide

44. In which of the following molecules, 2π bonds are present ?
a) C_2H_6 b) C_2H_4 c) C_2H_2 d) C_3H_6

[MHT-CET 2022]

56. Identify the product of ozonolysis of but-1-ene.
a) acetone only
b) formaldehyde + acetaldehyde
c) acetaldehyde only
d) propanal + formaldehyde

57. Which among the following compounds does not exhibit cis-trans isomerism ?
a) $R-CH=CHR$ b) $H_2C=C(R)_2$ c) $R_1CH=CR_1R_2$ d) $R_1R_2C=CR_1R_2$

58. What is the product formed when $CH_3-CH=CH_2$ is treated with B_2H_6 followed by action of H_2O_2 ?
a) $CH_3CH_2CH_3$ b) $CH_3CH_2CH_2OH$ c) CH_3CH_2CHO d) $CH_3CH(OH)CH_3$

59. Identify the correct decreasing order of ease of dehydrohalogenation of alkyl halides
a) $2° > 3° > 1°$ b) $1° > 3° > 2°$ c) $1° > 2° > 3°$ d) $3° > 2° > 1°$

60. Which from the following pairs of compounds is an example of position isomerism
a) but-1-ene and but-2-ene
b) 2-methylprop-1-ene and but-1-ene
c) but-2-ene and methyl prop-1-ene
d) but-2-ene and cis but-2-ene

61. Which among the following reagents is used for the conversion of alkenes into alcohols
a) B_2H_6/H_2O_2 b) Aq. NaOH c) H_2/Ni d) $KMnO_4/OH^-$

Alkene and Benzene

[MHT-CET 2012]

62. $C_6H_6 + CH_3Cl \xrightarrow{\text{Anhy. } AlCl_3} C_6H_5CH_3 + HCl$, the name of the above reaction is
a) Gatterman b) Reimer-Tiemann c) Friedel-craft d) Cannizzaro

[MHT-CET 2013]

63. Some meta-directing substituents in aromatic substitution are given. Which one is the most deactivating ?
a) $-C \equiv N$ b) $-SO_3H$ c) $-COOH$ d) $-NO_2$

64. Arenes on treatment with chlorine in presence of ferric chloride as a catalyst undergo what type of reaction ?
a) Electrophilic substitution
b) Nucleophilic substitution
c) Electrophilic addition
d) Nucleophilic addition

65. Conversion of hexane into benzene involves the reaction :
a) Hydration b) Hydrolysis c) Hydrogenation d) Dehydrogenation

66. Identify the product X obtained in following reaction :

$$CH_3-(CH_2)_4-CH_3 \xrightarrow[773K,\ 10-20atm]{Cr_2O_3} X$$

a) $2CH_3-CH=CH_2 + H_2$
b) $CH_3-(CH_2)_3-CH=CH_2 + H_2$
c) $CH_3-CH=CH-CH_3 + CH_2=CH_2 + H_2$
d) $C_6H_6 + 4H_2$

67. Which of the following molecules has shortest C – C bond length ?
a) C_3H_6 b) C_2H_2 c) C_2H_6 d) C_2H_4

68. Which of the following reagents is used in Friedel craft reaction ?
a) Zn and dry ether b) Anhydrous $AlCl_3$ c) Cl_2 sunlight d) Zn / HCl