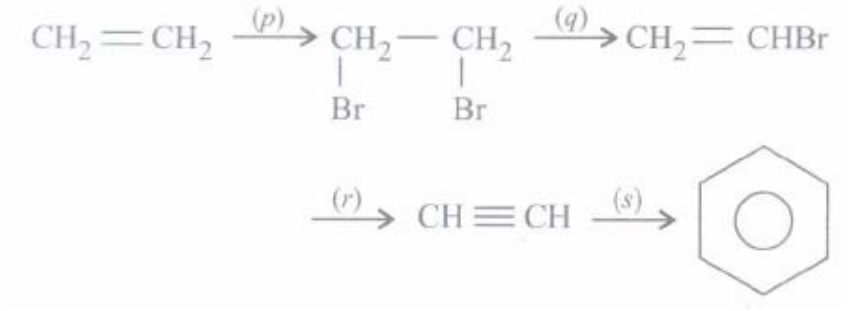
NEET CHEMISTRY PRACITCE PAPER

Time : 60 Mins **10 HYDROCARBONS 1** **Marks : 200**

1. Choose the correct reagents used in the conversion.



a)

p	q	r	s
Br_2	alc.KOH	NaOH	Al_2O_3

b)

p	q	r	s
HBr	alc.KOH	CaC_2	$KMnO_4$

c)

p	q	r	s
HBr	alc.KOH	$NaNH_2$	red hot iron tube

d)

p	q	r	s
Br_2	alc.KOH	$NaNH_2$	red hot iron tube

2. Products of the following reaction $CH_3C \equiv C\ CH_2CH_3 \xrightarrow{\text{(i)}O_3,\ \text{(ii) hydrolysis}}$ are:

a) $CH_3COOH + CO_2$ b) $CH_3COOH + HOOCCH_2CH_3$ c) $CH_3CHO + CH_3CH_2CHO$
d) $CH_3COOH + CH_3COCH_3$

3. Coal tar is the main source of:
a) aromatic compounds b) alicyclic compounds c) aliphatic compounds d) nitro compounds.

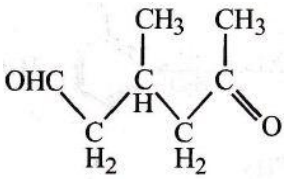
4. Which of the following reactions of methane is incomplete combustion?
a) $2C_4 + O_2 \xrightarrow{Cu/523K/100atm} 2CH_3OH$ b) $CH_4 + O_2 \xrightarrow{Mo_2O_3} HCHO + H_2O$
c) $CH_4 + O_2 \longrightarrow C_{(s)} + 2H_2O_{(l)}$ d) $CH_4 + 2O_2 \longrightarrow CO_{2(g)} + 2H_2O_{(l)}$

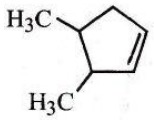
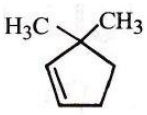
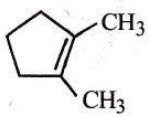
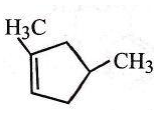
5. Presence of unsaturation in organic compounds can be tested with:
a) Fehling's reagent b) Tollens'reagent c) Baeyer's reagent d) Fittig's reaction.

6. Which of the compounds with molecular formula C_5H_{10} yields acetone on ozonolysis?
a) 3-methane-1-butene b) cyclopentane c) 2-methyl-l-butene d) Cyclopentane

7. In commercial gasolines the type of hydrocarbons which are more desirable is:
a) branched hydrocarbon b) straight chain hydrocarbon c) linear, unsaturated hydrocarbon d) toluene

8. A single compound of the structure is obtainable from ozonolysis of which of the following cyclic compounds?

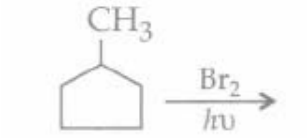


a)  b)  c)  d) 

9. When l-butyne undergoes oxymercuration with the help of $HgSO_4 + H_2SO_4$, the product(s) formed is/are:

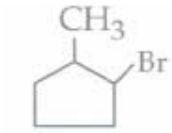
a) $CH_3CH_2COOH + HCOOH$ b) $CH_3CH_2COCH_3$ c) $CH_3CH_2CH_2COOH$ d) $CH_3CH_2CH_2CHO$

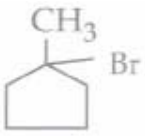
10. Which of the following alkane cannot be made in good yield by Wurtz reaction?
    a) n-Butane b) n-Hexane c) 2, 3-Dimethylbutane d) n-Heptane
11. Which of the following compounds will not undergo Friedel - Craft's reaction easily?
    a) Cumene b) Xylene c) Nitrobenzene d) Toluene
12. The pair of electrons in the given carbanion, $CH_3C \equiv C^-$ is present in which of the following orbitals?
    a) sp^2 b) sp c) 2p d) sp^3
13. Which of the following isomeric heptanes can yield seven different monochlorinated products upon free radical chlorination?
    a) 2,2- Dimethylpentane b) 2- Methylhexane c) 3-Methylhexane d) 2,4-Dimethylpentane
14. Geometrical isomers differ in:
    a) position of functional group b) position of atoms c) spatial arrangement of atoms
    d) length of carbon chain
15. The shortest C - C bond distance is found in:
    a) acetylene b) diamond c) ethane d) benzene
16. What is the order of reactivity of hydrogen atoms attached to the carbon atom in an alkane for free radical substitution?
    a) 3°>1°>2° b) 2°>1°>3° c) 3°>2°>1° d) 1°>2°>3°
17. Benzene easily shows
    a) ring fission reactions since it is unstable b) addition reactions since it is unsaturated.
    c) electrophilic substitution reactions due to stable ring and high π electron density.
    d) nucleophilic substitution reactions due stable ring and minimum electron density.
18. In the following reaction,

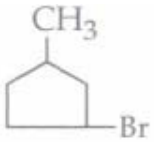


    the major product obtained is

a) 

b) 

c) 

d) 

19. Reaction of HBr with propene in the presence of peroxide gives:
    a) iso - propyl bromide b) 3 - bromo propane c) allyl bromide d) n - propyl bromide
20. **Assertion**: Cyclopentadienyl anion is aromatic in nature.
    Reason: Cyclopentadienyl anion has six π electrons.
    a) If both assertion and reason are true and reason is the correct explanation of assertion.
    b) If both assertion and reason are true but reason is not the correct explanation of assertion.
    c) If assertion is true but reason is false. d) If both assertion and reason are false.
21. Which of the following alkynes is most acidic?
    a) $CH_3C \equiv CH$ b) $CH_3C \equiv CCH_3$ c) $CH_3CH_2C \equiv CH$ d) $CH \equiv CH$
22. Among the following compounds one that is most reactive towards electrophilic nitration is:
    a) benzoic acid b) nitrobenzene c) toluene d) benzene
23. Mark the incorrect statement from the following.
    a) Benzene has a planar structure
    b) Benzene is an unsaturated hydrocarbon and shows addition reactions like alkenes

c) In benzene carbon uses two p-orbitals for hybridisation.
d) Aromatic hydrocarbons contain high percentage of carbon hence burn with sooty flame.

24. The correct order of reactivity towards electrophilic substitution is
a) benzene> phenol> benzoic acid> chlorobenzene b) phenol> benzene> chlorobenzene > benzoic acid
c) chlorobenzene > benzoic acid> phenol> benzene d) benzoic acid> chlorobenzene > benzene> phenol.

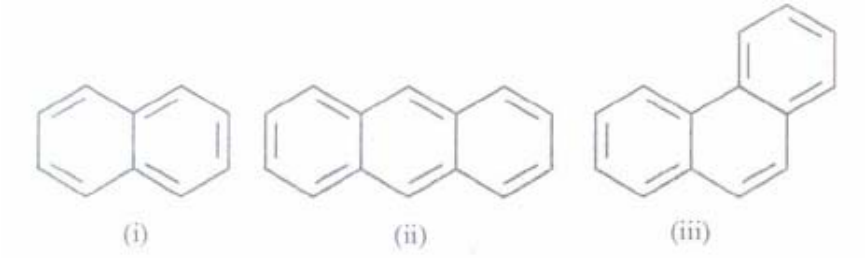
25. Which of the following reactions does not show the acidic nature of ethyne?
a) Acetylene reacts with sodamide to form sodium acetylides
b) When passed through ammoniacal cuprous chloride solution, a red precipitate is formed
c) Acetylene reacts with chlorine in the dark to form di or tetrachlorides
d) Acetylene when passed through ammoniacal silver nitrate gives a white precipitate.

26. Kerosene is a mixture of:
a) aromatic hydrocarbons b) aliphatic hydrocarbons c) unsaturated hydrocarbons
d) saturated hydrocarbons

27. Assertion: Wurtz reaction is not preferred for the preparation of alkanes containing odd number of carbon atoms.
Reason : It is not possible to prepare alkanes with odd number of carbon atoms through Wurtz reaction
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false. d) If both assertion and reason are false

28. An organic compound C_6H_{12} (X) on reduction gives C_6H_{14} (Y). X on ozonolysis gives two aldehydes C_2H_4O (I) and C_4H_8O (II). Identify the compounds X, Y and aldehydes (I) and (II).
a) X = $CH_3CH = CHCH_2CH_2CH_3$, Y = $CH_3(CH_2)_4CH_3$,(I) = CH_3CHO, (II) = $CH_3(CH_2)_2CHO$
b) X = $CH_3CH_2CH = CHCH_2CH_3$, Y = $CH_3(CH_2)_4CH_3$,(I) = CH_3CHO, (II) = CH_3CHO
c) X = $CH_3CH_2CH_2CH_2CH = CH_2$, y = $CH_3(CH_2)_3CH_3$, (I) = HCHO, (II) = $CH_3(CH_2)_2CHO$
$X = CH_3CH_2 - \underset{\underset{CH_3}{|}}{C} = CH - CH_3$,Y=$CH_3(CH_2)_3CH_3$
d) (I) = CH_3CHO, (II) = CH_3CH_2CHO

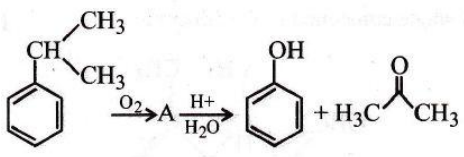
29. Identify the polynuclear aromatic compound which is aromatic.

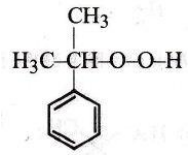
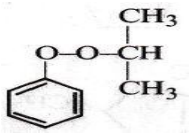
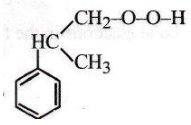
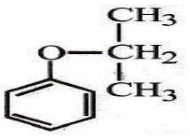


a) (i) and (ii) b) (ii) and (iii) c) (i), (ii) and (iii) d) (i) and (iii)

30. Although benzene is highly unsaturated it does not undergo addition reactions. The explanation of this can be suggested as
a) π-electrons of benzene ring are delocalised
b) since π-electrons are present inside the ring, addition cannot take place
c) cyclic structures do not show addition reactions d) benzene is not a reactive compound.

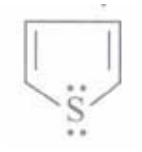
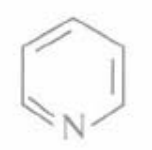
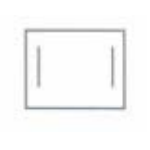
31. The structure of intermediate A in the following reaction, is:



a)  b)  c)  d) 

32. Assertion: Sodium salt of butanoic acid on heating with soda lime gives butane.
Reason : Decarboxylation reaction yields alkanes havingsamenumber of carbon atoms as the parent acid
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false. d) If assertion is true but reason is false.

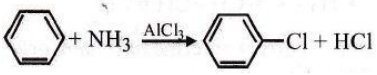
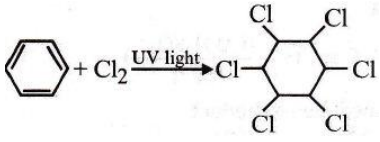
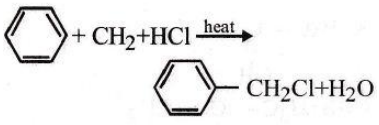
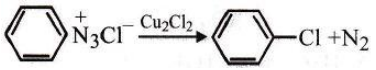
33. In Friedel-Craft's alkylation, besides $AlCl_3$ the other reactants are:
a) $C_6H_6 + NH_2$ b) $C_6H_6 + CH_4$ c) $C_6H_6 + CH_3Cl$ d) $C_6H_6 + CH_3COCl$

34. Which of the following species does not show aromaticity?
a)  b)  c)  d) 

35. Which of the following reactions does not show the correct products of the reaction?
a) $CH_3\text{-}CH{=}CH_2 \xrightarrow[peroxide]{HBr} CH_3\text{-}CH_2\text{-}CH_2Br$ b) $CH_3 - CH = CH_2 \xrightarrow[peroxide]{HCl} CH_3\text{-}CH_2\text{-}CH_2Cl$
c) $CH_3 - CH = CH_2 \xrightarrow{HBr} CH_3 - \underset{Br}{CH} - CH_3$
d) $CH_3 - CH = CH_2 \xrightarrow{HCl} CH_3 - \underset{Cl}{CH} - CH_3$

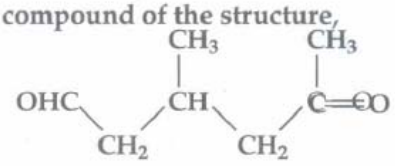
36. 2-Bromopentane is treated with alcoholic KOH solution. What will be the major product formed in this reaction and what is the type of elimination called?
a) Pent-1-ene,β-Elimination b) Pent -2-ene, β - Elimination c) Pent-l-ene, Nucleophilic substitution
d) Pent-2-ene, Nucleophilic substitution

37. The compound that will react most readily with gaseous bromine has the formula is:
a) C_3H_6 b) C_2H_6 c) C_4H_{10} d) C_2H_4

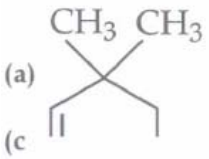
38. Among the following, the reaction that proceeds through an electrophilic substitution, is _____ .
a)  b)  c) 
d) 

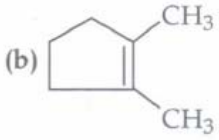
39. Assertion: Iodination of alkanes is carried out in the presence of oxidising agents like HIO_3 or HNO_3.
Reason : Iodination of alkanes is an irreversible reaction.
a) If both assertion and reason are true but reason is not the correct explanation of assertion
b) If assertion is true but reason is false. c) If both assertion and reason are false
d) If both assertion and reason are true and reason is the correct explanation of assertion.

40. A single compound of the structure,



is obtainable from ozonolysis of which of the following cyclic compounds?





A (predominantly) is :

a) $CH_3-\underset{CH_3}{CH}-CH_2-CH_2Br$ b) $CH_3-\underset{CH_3}{\overset{Br}{C}}-CH_2CH_2$ c) $CH_3-\underset{Br}{CH}-\underset{CH_3}{CH}-CH_3$

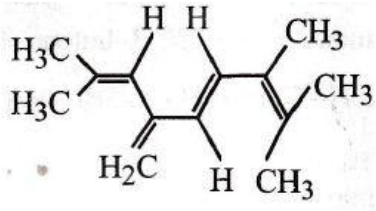
d) $CH_3-\underset{CH_3}{CH}-\underset{Br}{CH}-CH_3$

41. Which of the following compounds will react with Na to form 4,5-diethyloctane?

a) $CH_3CH_2CH_2CH_2Br$ b) $CH_3CH_2CH_2-\underset{CH_3}{CH}-CH_2CH_2Br$

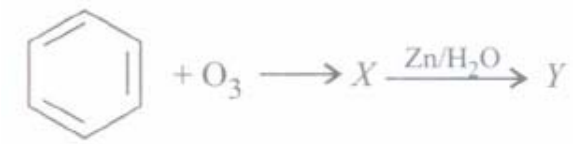
c) $CH_3CH_2CH_2CH_2-\underset{Br}{CH}-CH_3$ d) $CH_3CH_2CH_2-\underset{Br}{CH}-CH_2CH_3$

42. The total number of π-bond electrons in the following structure is:



a) 8 b) 12 c) 16 d) 4

43. Similar to alkenes and alkynes benzene also undergoes ozonolysis. In the sequence of the given reaction identify X and Y.



a) X = Triozonide, Y = Glyoxal b) X = Diozonide, Y = Succinic acid c) X = Monoozonide, Y = Benzoic acid

d) X = Triozonide, Y = Benzaldehyde.

44. In the reaction,

H - C ≡ CH $\xrightarrow[(i)\quad NaNH_2/liq.NH_3]{(ii)\quad CH_3CH_2Br} X \xrightarrow[(i)\quad NaNH_2/liq.NH_3]{(ii)\quad CH_3CH_2Br} Y$ X and Y are:

a) X = 2-butyne, Y = 2-hexyne b) X = 1-butyne, Y = 2-hexyne c) X = 1-butyne, Y = 3-hexyne

d) X = 2-butyne, Y = 3-hexyne

45. The distance between two adjacent carbon atoms is largest in:

a) benzene b) ethene c) butane d) ethyne

46. Which is the correct symbol relating the hetero Kekule structure of benzene?

a) ⇌ b) ⟶ c) ≡ d) ↔

47. The alkene that exhibits geometrical isomerism is
    a) propene b) 2-methylpropene c) 2-butene d) 2-methyl-2-butene.
48. In the free-radical chlorination of methane, the chain-initiating step involves the formation of:
    a) chlorine radical b) hydrogen chloride c) methyl radical d) chloromethyl radical
49. Ozonolysis of 2,3-dimethylbut-l-ene followed by reduction with zinc and water gives
    a) methanal and hexanoic acid b) methanoic acid and butanone c) methanal and 3-methylbutan-2-one
    d) butanoic acid and 2,3-dimethylbutanoic acid.
50. Arrange the following carbanions in order of their decreasing stability.
    (I) $H_3C\text{-}C{\equiv}C^-$
    (II) $H\text{-}C{\equiv}C^-$
    (III) $H_3C\text{ - }CH_2^-$
    a) I > II > III b) II > I> III c) III > II > I d) III > I > II