CHEMISTRY

BOOKS - A N EXCEL PUBLICATION

HYDROCARBONS

Question Bank

1. Which of the following compunds exhibit gemetrical isomerism? Draw their cis-trans isomers (i) $CH_3 - CH = CCl_2$(ii)

$CH_3 - CH = CHCl$(iii)$ClCH = CHCl$(IV)

$CH_3 - CH_2 - CH = CH_2$

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2. Ozonolysis of an alkene gave two molecules of ethanal (acetaldehyde). Give the structure of the alkene.

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3. Ozonolysis of an alkence gave propanone (acetone) and ethanal. Give the structure and IUPAC name of the alkene.

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4. How do you account for formation of ethane during chlorination of methane?

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5. Write the IUPAC names of the products obtained by the ozonolysis of the following compouds : Pent-2-ene

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6. Write the IUPAC names of the products obtained by the ozonolysis of the following compouds : 3,4 Dimethyl hept-3-ene

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7. Write the IUPAC names of the products obtained by the ozonolysis of the following compouds :2-Ethyl but-l-ene

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8. Write the IUPAC names of the products obtained by the ozonolysis of the following compouds : l-phenyl but-1-ene

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9. An alkene on ozonolysis gives a mixture of ethanal and pentan-3-one. Write the structure and IUPAC name of the alkene.

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10. An alkene 'A' contains 3 $C-C, 8C-H\sigma$ bonds and $1C-C\pi$ bond. 'A' on ozonolysis gives two moles of an aldehyde of molar mass 44u. Write the IUPAC name of 'A'

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11. Why is benzene extraordinarily stable though it contains three double bonds

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12. What are the necessary conditions for any compound to show aromaticaly?

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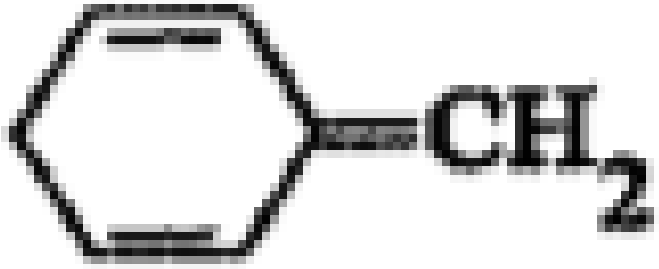
13. Explain why the follwing system is not aromatic:



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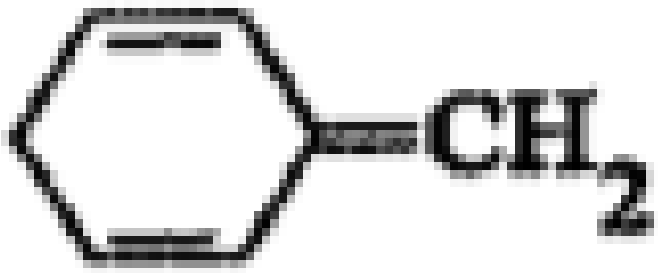

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15. Explain why the follwing systems are not aromatic:

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16. What effect does branching of an alkane chain has on its melting point?

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17. Arrange benzene, n-hexane and ethyne in the decreasing order of acidic behaviour. Also give reason for this behaviour.

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18. Why does benzene undergo electrophilic substitution reactions easily and nucleophilic substitution with difficulty?

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19. Which of the following will undergo nitration most easily? Why? Benzene, m-Dinitrobenzene, toluene.

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20. Why HCl and HI do not show the peroxide effect?

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21. A spacial arrangements of atoms which can be converted into one another by rotation arround a C-C single bond are called conformations.

i) Represent Sawhorse and Newman projection formulae of staggered and eclipsed conformation of ethane.

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22. A spacial arrangements of atoms which can be converted into one another by rotation arround a C-C single bond are called conformations.

ii) Comapare the stabilities of staggered and eclipsed conformations.

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23. Two groups of students were studying the reaction of HBr on alkenes. The first group treated but-1-ene with HBr and the other treated but-1-ene with HBr in presence of benzoyl peroxide: What would be the main products obtined by each group. Write equations for the reactions.

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24. Two groups of students were studying the reaction of HBr on alkenes. The first group treated but-1-ene with HBr and the other treated but-1-ene with HBr in presence of benzoyl peroxide:What would have been the product obtained if they had used HCl instead of HBr. Explain.

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25. The modern theory of aromaticity was advanced by E. Huckel : Explain Huckel's rule of aromaticity.

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26. The modern theory of aromaticity was advanced by E. Huckel : Give one example of heterocyclic aromatic compound and two examples of cyclic icons which are aromatic

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27. Hydrocarbons are organic compounds compounds containing carbon and hydrogen only Analyse the following reaction: $CH_3 - CH = CH_2 + H - Br \rightarrow 'A' + 'B'$ If 'A' is major poroduct and 'B' is the minor product, identify 'A' and 'B'. Also name the related rule.

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28. Name the following reactions:

$C_6H_{14} \rightarrow C_4H_8 + C_2H_6$

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29. Naphthalene is an aromatic compound. Explain its aromaticity using Huckel's rule.

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30. Free rotation is possible with respect to a C-C bond in the case of alkanes.

a) The repulsive interaction between the adjacent bonds in a conformation is called.....

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31. Free rotation is possible with respect to a C-C bond in the case of alkanes.

b) Draw Newman's projections of the two

conformers of ethane. Which among these is more stable? Justify.

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32. Free rotation is possible with respect to a C-C bond in the case of alkanes.

c) An alkene on ozonolysis followed by reduction of the ozonide formed with zinc and water gave a mixture of ethanal and methanal.

i) Identify the alkene

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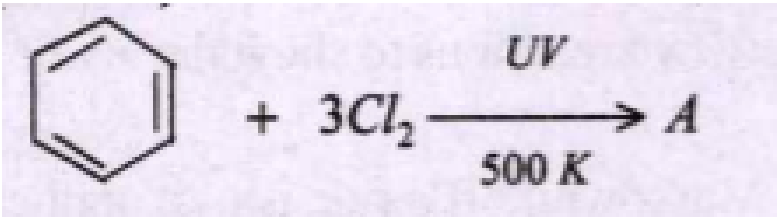
33. Name the product A.



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34. Draw the Newman's projections of the eclipsed and staggered conformations of n-butane.

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35. What is Baeyer's reagent? Write the chemical equation of its reaction with ethylene

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36. An alkene 'A' on ozonolysis gave two molecules of formaldehyde. Write the name of 'A' and the chemical equation of ozonolysis.

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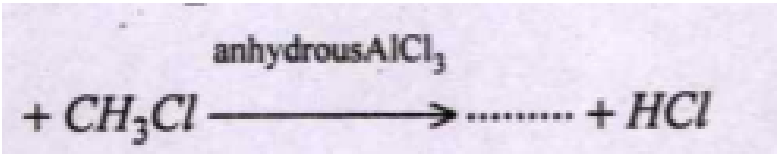
37. Complete the following chemical equations:



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38. Explain geometrical isomerism taking 2-Butene as an example.

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39. Controlled oxidation of alkanes in the presence of suitable catalysts give a variety of products.

Free rotation about a carbon - carbon single bond is permitted in an alkane molecule.

What are conformers? Draw the structure of the eclipsed and staggered conformers of ethane in Sawhorse and Newman projection and explain their relative stability.

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40. 1- alkynes are weakly acidic in nature. Give any two reactions to show the acidic character of ethyne.

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41. From the following, select the one in which Markownikoff's rule is best applicable

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42. Hydrocarbons exhibit isomerism.

i) Name the type of isomerism exhibited by 2-Butene.

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43. Hydrocarbons exhibit isomerism.

Draw the structure of the isomers of 2-Butene

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