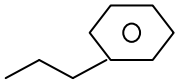
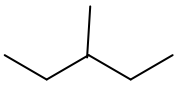
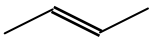
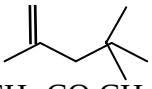
INDIAN SCHOOL MUSCAT
DEPARTMENT OF CHEMISTRY
CLASS – 11
ORGANIC CHEMISTRY
SOME BASIC PRINCIPLES AND TECHNIQUES

1. The Lassaigne's extract is boiled with dil. HNO_3 before testing for halogens because
   (a) Silver halides are soluble in HNO_3
   (b) Na_2S and NaCN are decomposed by HNO_3
   (c) Ag_2S is soluble in HNO_3
   (d) AgCN is soluble is HNO_3
2. Homolytic cleavage of covalent bond produces_____
3. Assertion –Reason type questions:
   In the following questions a statement of assertion followed by a statement of reason is given,Choose the correct answer from the following choices.
   (a) Both assertion and reason are correct statements and the reason is a correct explanation for assertion.
   (b) Both assertion and reason are correct but reason is not a correct explanation for assertion.
   (c) Assertion is correct but reason is incorrect.
   (d) Assertion is wrong but reason is correct.
   i. Assertion:But-1-ene and 2_methylprop-1-ene are position isomers.
      Reason: Position isomers have same molecular formula but different arrangement of carbon atoms

   ii. Assertion: Tert-butyl carbanion is less stable than methyl carbanion.
      Reason: The +I effect of CH_3 group tends to stabilize tert-butylcarbanion.
4. Write the bond line formula for a) Propan-2-ol b) Pentan-2-one
   c) 3-Formyl hexane-1,6-dioic acid d) 2,3-dimethyl butanal.
5. Write the structural formula of the following
   a. 2,3-Dibromo-1-phenylpentane
   b. 6-Hydroxyheptanal
   c. p-Nitroaniline
   d. Cyclohex-2-en-1-ol
   e. 4-Ethyl-1-fluoro-2-nitrobenzene
   f. Pent-4-en-2-ol
   g. 3,4-Dimethylphenol
   h. 3-Nitrocyclohexene
   i. m-Nitrophenol
6. Are the following IUPAC names correct? If not write the correct names.
   a) 2,2-dimethyl pentane b) 2,5,7-trimethyloctane c) 4-chloro-2-methylpentane d) but-4-ol-1-yne e) 1-hydroxyethanoic acid f) Propan-2-ol g) 2-Ethylpent-2-ene h) Hexa-1,6-diene i) 4-ethyl-3-methylhexane j) Pent-4-ene

7. Write IUPAC names for

a)  b)  c)  d) 

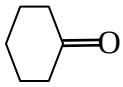
e)  f) $(CH_3)_3C\text{-}CH_2\text{-}CHO$ g) $HO\text{-}CH_2\text{-}CH_2\text{-}COOH$

h) $CH_3\ CO\ CH_2\ CHO$ i) $(CH_3)_3C\ CH\ (C_2H_5)\ CH_3$ j) $CH_2 = CH\ CH_2\ CH = CH_2$

k) $HOOC\ CH\ (CH_3)\ CH_2\ CH_2\ CH_3$ l) $CH_3\ CH_2\ CH_2\ NO_2$ m) $HO\ CH\ (CH_3)\ CH_2\ CHO$

n) $H_2N\ CH{=}CH\text{-}COOH$ o) $CH_3\ CO\ CO\ C_2H_5$ p) $CH_3\ CH_2\ CH_2\ COO\ C_2H_5$

q) $CH_3\ CH\ Cl_2$ r) $HOOC\text{-}COOH$ s) $CH_2 = CH\ CH_2\ C{\equiv}C\ CH_3$ t) $I\text{-}(CH_2)_3\ COOH$

u) $CH_3\ CO\ COOH$ v)  w) $(CH_3)_2\ CH\ CH\ (C_2H_5)\ CH_3$

x) $CH_3CH(CH_3)CH_2CH_2CH{=}CH_2$ y) $CH_3C(CH_3)_2CH_2CH_2CH_2CH(C_2H_5)CH_3$.

8. Which is more stable and why?

a) $NO_2\ CH_2\ CH_2\ O^-$ or $CH_3\ CH_2\ CH_2\ O^-$ b) $CH_3CH_2^+$ or $(CH_3)_2\ CH^+$

9. Explain with examples

a) Resonance effect b) Inductive effect c) Electromeric effect d) Hyperconjugation

10. Distinguish between the following with examples

a) Nucleophile and Electrophile b) Heterolytic and Homolytic fissions

11. What is the difference between distillation, distillation under reduced pressure and steam distillation?

12. Discuss the principle behind the following techniques taking an example in each case.

a) Crystallization b) Chromatography c) Sublimatiom d) Differential Extraction

13. Give reason:

a) Metallic sodium is used to prepare Lassaigne's extract.

b) Lassaignes extract is boiled with dil HNO_3 before testing for halogens.

14. Arrange the following in the increasing order of their stabilities:

a) $(CH_3)_3C^+$, $CH_3CH_2CH_2^+$, $CH_3CH^+CH_2CH_3$

b) $(CH_3)_2CH^-$, $(CH_3)_3C^-$, $CH_3CH_2^-$, CH_3^-

15. Write one chemical test to detect the presence of the following elements in a given organic compound.

a) Nitrogen b) Sulphur c) Phosphorous d) Chlorine e) Bromine f) Iodine

16. Explain the principle behind

a) Carius method of estimation of halogens

b) Kjeldahl's method of estimation of nitrogen

c) Liebeg's method of estimation of carbon and hydrogen

17. Define isomerism. Draw the structural isomers of C_5H_{12} and C_4H_{10}

18. Give a pair of functional isomers of

a) $C_2H_4O_2$ b) C_3H_6

19. Write short note on the following with the help of an example:

a) Metamerism b) Position isomerism c) functional isomerism

d) Chain isomerism

20. Draw the resonating structures of

a) Aniline ($C_6H_5NH_2$) c) Nitrobenzene($C_6H_5NO_2$)

b) Nitromethane d) Prop-2-enal