

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIFTH SEMESTER EXAMINATION, DECEMBER 2015

THIRD YEAR [BATCH 2013-16]

INDUSTRIAL CHEMISTRY [Hons]

Date : 18/12/2015

Time : 11 am – 1 pm

Paper : V

Full Marks : 50

Group – B

[Use a separate Answer Book for each Unit]

Unit – I

Answer **any four** questions

[4×5]

1. Mention the major sources of CFCs. Give a brief account of the devices generally used for the management of particulate matters. Mention how ground water is being polluted. [1+2+2]
2. State the function of an anaerobic digester. Name the major compound which was the key-factor behind Bhopal Tragedy. Briefly illustrate the importance of Biosensor. [1+1+3]
3. Enumerate the potential health effect of 2-propanol exposure. State the difference between infiltration and subsurface flow. [2.5+2.5]
4. Discuss how ozone is being depleted in Antarctica to result in ozone hole. Does the depletion of ozone affect the atmospheric circulation? [3+2]
5. Distinguish between bioaccumulation and biomagnification. Discuss how DDT is getting biomagnified. [2+3]
6. What is Non-purgeable Organic Carbon (NOC)? Name different physical, chemical and biological indicators of drinking water. [2+3]

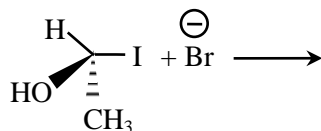
Unit – II

Answer **any four** questions :

7. a) Draw the Newman projections of most and least stable conformation of 2-methylpropane. [2]
b) What is plane polarized light? [1]
c) Draw the most stable conformation of trans-1-tert-butyl-3-ethylcyclohexane. [1]
d) Arrange the following conformation of cyclohexane in order of increasing energy. [1]
(i) chair form, (ii) boat form, (iii) twist boat form, (iv) half-chair form
8. a) Provide a Newman presentation of the gauche conformer of butane and most stable conformer of 1,2-dichloroethane and 1,2-dihydroxyethane. [3]
b) Arrange the following cycloalkane in order of increasing molar heat of combustion per CH₂ group.
(i) Cyclohexane, (ii) cyclopentane, (iii) cyclobutane, (iv) cyclopropane [1]
c) What is the energy difference between the axial and equatorial conformers of methylcyclohexane? [1]
9. a) Draw the stable conformation of 4-tert-butyl cyclohexanol and explain its optical activity. [3]
b) Describe the source of angle strain present in cyclopropane. [1]
c) Draw the most stable conformation of cis-1-ethyl-4-isopropylcyclohexane. [1]

10. a) Indicate the product and mechanism involved in the following reaction :

[2]



b) Draw the most stable conformation of cis and trans-1,2-dimethylcyclohexane. Which one of them is more stable and why?

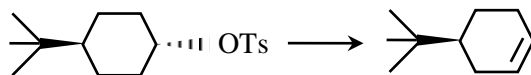
[3]

11. a) Between gauche and staggered form of n-butane which one is more stable and why?

[2]

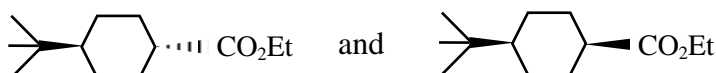
b) Complete the following conversion with mechanism :

[3]



12. a) Which one of the following isomer hydrolyzes in faster rate and why?

[2]



b) Draw the most stable conformation of 1-methyl-1-phenylcyclohexane and account the reason behind its stability.

[1+2]

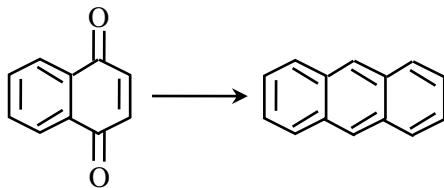
Answer **any two** questions :

13. a) Naphthalene contains two benzene ring— Proved it by proper evidence.

[3]

b) Suggest a mechanism for this transformation :

[2]

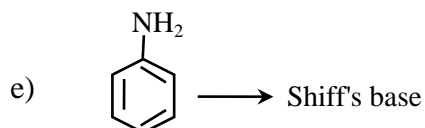
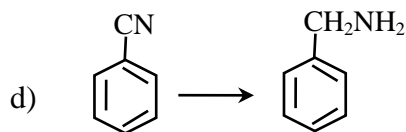
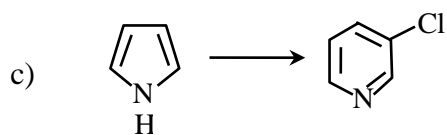
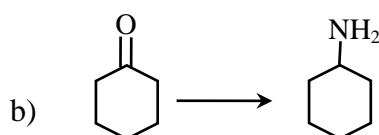
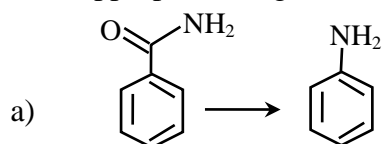


14. Name the reagents involved to synthesis phenanthrene by Bardhan-Sengupta process and also explain how it has been formed.

[2+3]

15. Give appropriate reagent(s) for the following transformation :

[5×1]



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