11

1B4A24148 (Pages : 2) Reg. No:..... .....

Name: ....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester B.Sc Chemistry Degree Examination, April 2024

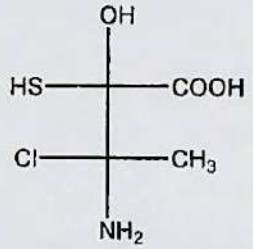
BCH4B04 – Organic Chemistry – I

(2022 Admission onwards)

Time: 2 hours Max. Marks : 60

Section A (Short answers)
(Answer questions up to 20 marks. Each question carries 2 marks)

1. *para*-Anisidine is more basic than aniline. Give reason
2. Compare the hyperconjugation in toluene and tertiary butylbenzene.
3. Identify the hybridization of carbon in dichlorocarbene.
4. Describe a method for the trapping of benzyne intermediate.
5. Explain the term '*meso* compound' with an example.
6. Identify R/S for the given chiral compound.



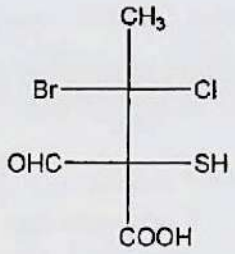
7. Mark the axial and equatorial hydrogens in the chair form of cyclohexane.
8. Identify the product/products on oxymercuration-reduction and hydroboration-oxidation on 3,3-dimethyl-1-butene.
9. Describe one method for the preparation of *trans*-2-butene from 2-butyne.
10. Draw the dipolar structure of azulene.
11. Naphthalene is aromatic but [10] annulene is not. Give reason.
12. What are diatropic molecules? **[Ceiling of marks: 20]**

Section B (Paragraph)

(Answer questions up to 30 marks. Each question carries 5 marks)

13. Distinguish between electromeric and mesomeric effect.

14. Convert the following Fischer form to Sawhorse and Newman projection.



15. The benzene ring in nitrobenzene is electron deficient. Justify

16. Describe the effect of solvent polarity on the course of S_N1 and S_N2 reactions.

17. Describe the nature of aromaticity, stability and structure of cyclooctatetraene.

18. Describe two laboratory methods for the identification of C=C in an organic compound.

19. Explain the racemization of lactic acid in basic medium.

[Ceiling of marks: 30]

Section C (Essay)

(Answer any one. Each question carries 10 marks)

20. a) Compare the energy profile diagram of E1 and E2 reactions.

    b) Conversion of chlorobenzene to phenol is difficult but trinitrochlorobenzene easily converts to picric acid. Explain. (6+4)

21. Write note on

    a) Optical isomerism in allenes and biphenyls

    b)Partial and absolute asymmetric synthesis. (6+4)

[1 x 10 = 10]

12

1B4A24149 (Pages : 2) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester B.Sc Degree Examination, April 2024

BCH4C04 – Physical and Applied Chemistry

(2022 Admission onwards)

Time: 2 hours Max. Marks : 60

Section A (Short answers)
(Answer questions up to 20 marks. Each question carries 2 marks)

1. What are associated colloids?
2. Explain why lyophilic sols show weak Tyndall effect
3. What is quantum confinement?
4. What are green solvents? Give two examples.
5. Comment on the stationary and mobile phases in paper chromatography.
6. State the Born -Oppenheimer approximation.
7. Define normal modes of vibration. How many normal modes of vibrations are possible for CO_2 ?
8. How PTFE is synthesized? Mention any two applications of it.
9. Differentiate between BOD and COD.
10. What is analgesics? Give any two examples.
11. What is VAT dye ? Give one example.
12. Give any two examples of natural preservative.

[Ceiling of marks: 20]

Section B (Paragraph)
(Answer questions up to 30 marks. Each question carries 5 marks)

13. Write a short note on the optical properties of colloids.
14. Discuss briefly about the electrical and catalytic properties of nanomaterials.
15. Draw the different types of electronic transition in molecule. Arrange them in the increasing order of energy.

16. Write a short note on biodegradable polymer.

17. What are the causes and consequences of ozone depletion ?

18. Explain the principles and application of thin layer chromatography.

19. Write a short note on the manufacture of cement.

[Ceiling of marks: 30]

Section C (Essay)

(Answer any one. Each question carries 10 marks)

20. (a) Discuss the terms chemical shift and spin - spin coupling.

    (b) Draw the PMR spectrum of propanal and explain the splitting of signals.

21. (a) What are dyes? Explain the requirement of a good dye.

    (b) Give the important uses of LPG and CNG

    (c) Define the term octane number.

[1 x 10 = 10 marks]