

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester B.Sc Chemistry Degree Examination, April 2025

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. Which is more acidic, Formic acid or acetic acid. Why?
2. Compare the basic nature of p-nitroaniline and p-anisidine
3. What are nitrenes? Write a reaction showing them as an intermediate
4. How will you convert benzene to acetophenone
5. Provide the steps in the mechanism of E1 elimination reaction
6. How will you convert Propene to (i) 2-bromopropane and (ii) 1-bromopropane
7. Convert the following structure into flying wedge and Saw horse representations



8. How will you synthesize butane from ethyl bromide ?
9. How will you convert 2-phenyl ethanol to styrene?
10. Compare the acidity of alkynes, alkenes and alkanes. Give your reasoning.
11. How will you convert 2-Butyne to (i) Z-2-butene and (ii) E-2-butene
12. Give the product obtained when 3-pentanone is treated with hydrazine in the presence of alkali.

[Ceiling of marks: 20]

Section B (Paragraph)

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

13. Define hyperconjugation. Discuss its effect on the stability of propene, ethyl carbocation and ethyl free radical.
14. What is mesomeric effect? Discuss the +M and -M effect with suitable examples.
15. Discuss the optical isomerism in biphenyls and allenes.
16. Discuss the conformational analysis of n-Butane.
17. Discuss the resolution methods for the separation of racemic mixture.
18. Discuss the optical isomerism in tartaric acid.
19. Write a note on
 - i) Saytzeff's rule
 - ii) Markownikov addition

[Ceiling of marks: 30]

Section C (Essay)

(Answer any one. Each question carries 10 marks)

20. (a) Discuss the mechanism, stereochemistry and effect of substrate in the SN2 reactions.
(b) Discuss the formation, structure and stability of carbocations.
21. Discuss the orientation effect in Aromatic electrophilic substitution reaction.

[1 x 10 = 10 marks]

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Reg. No:.....

Name:

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester B.Sc Degree Examination, April 2025

BCH4C04 – Physical & 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. Define Gold number.
2. What do you mean by zeta potential? How is it developed?
3. Explain 1D nano materials with an example.
4. What is atom economy in green chemistry?
5. Define R_f value in chromatography.
6. Draw the NMR spectrum of acetone.
7. Arrange different electronic transitions in the order of increasing energy level
8. Write the structure and any two applications of Buns-S.
9. What do you mean by bio accumulation?
10. Comment on the statement -Taj Mahal is losing its beauty due to atmospheric pollution.
11. What is the principle of paper chromatography ?
12. Define cetane number

[Ceiling of marks: 20]

Section B (Paragraph)

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

13. Explain the theories of colour and constitution of dyes
14. Explain the term green synthesis and illustrate it by discussing the synthesis of ibuprofen.
15. What is meant by Chemical shift?
16. Differentiate between thermoplastics and thermosetting plastics. Give two examples for each.
17. Explain any two methods for purification of colloids.
18. Mention advantages and limitations of adsorption chromatography.
19. Define and give an example of antipyretics, analgesics, antibiotics, antacids and antiseptics.

[Ceiling of marks: 30]

Section C (Essay)

(Answer any one. Each question carries 10 marks)

20. (a) Write a short note on glass about their types and uses.
(b) State and explain Beer-Lambert law
21. Explain in details the causes and consequences of water pollution.

[1 X 10 = 10]