

D 111940

(Pages : 2)

Name.....

Reg. No.....

**THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2024**

Chemistry, Industrial Chemistry, Polymer Chemistry

CHE 3C 03—ORGANIC CHEMISTRY

(2019—2023 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A (Short Answers)

*Answer up to 20 marks.
Each question carries 2 marks.*

1. Explain homolysis and heterolysis of bond with example.
2. What is an inductive effect ? Name one group showing + I effect.
3. What are electrophiles ? Give two examples.
4. What are enantiomers ? Give examples.
5. What is a denatured spirit ?
6. Give methods for the preparation of Grignard reagent. Mention one synthetic use of Grignard reagent.
7. Draw the cyclic structure of two anomeric glucose.
8. Mention the differences between fibrous protein and globular protein. Give examples.
9. Give advantages of vulcanization of rubber.
10. State the isoprene rule.
11. What are nucleosides and nucleotides ?
12. Give the significance of Luca's test. What is Luca's reagent ?

(Ceiling 20 marks)

Section B (Paragraph)

*Answer questions up to 30 marks.
Each question carries 5 marks.*

13. Explain mesomeric effects using suitable examples.
14. Discuss the stability of different conformational isomers of cyclohexane.

Turn over

15. State Huckel's rule. Explain aromaticity in non-benzenoid aromatic compounds
16. Compare the acidity of phenol, p-nitrophenol and methoxy phenol
17. Discuss the classification of amino acids
18. Explain the mechanism of SN reactions of alkyl halides commenting on the effect of substrate and stereochemistry.
19. Discuss the stability and hybridisation in carbocations and carbanions.

(Ceiling 30 marks)

Section C (Essay)

Answer any one question.

The question carries 10 marks.

20. (a) Explain the mechanism of electrophilic substitution reactions with halogenation and sulphonation as examples.
(b) Give the preparation, structure and uses of phenolphthalein.
21. (a) Give one preparation each for carboxylic acid and aldehyde.
(b) Discuss the structure and stability of benzene.

(1 × 10 = 10 marks)

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Chemistry/Industrial Chemistry/Polymer Chemistry

CHE 3C 03—ORGANIC CHEMISTRY

(2019—2022 Admissions)

Time : Two Hours

Maximum : 60 Marks

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

1. What are elimination reactions ? Give one example.
2. Draw the stable geometrical isomer of but-2-ene-1,4-dioic acid and explain the reason for its stability.
3. State and explain Huckel's rule with an example.
4. What are Enantiomers ? Depict the enantiomers of lactic acid.
5. How is propanoic acid prepared from Grignard reagent ?
6. What are free radicals and how are they formed ?
7. Compare the basicity of ammonia and methylamine.
8. What is iodoform test ? Give an example of a compound giving iodoform test.
9. Write on the harmful effects of ethanol on human body.
10. Explain vulcanisation and its advantages.
11. Write any *two* uses of citral and sandalwood oil.
12. What are Monosaccharides ? Give an example.

(Ceiling of marks : 20)

Turn over

Section B (Paragraph)

Answer questions up to 30 marks.

Each question carries 5 marks.

13. Describe the mechanism and stereochemistry of S_N2 reaction.
14. Briefly explain Luca's test for the distinction of alcohols.
15. What is Electromeric effect ? Give an example each for reactions involving + E effect and – E effect.
16. Explain Friedel-Craft's alkylation reaction with mechanism.
17. Write a short note on the conformations of cyclohexane.
18. Explain for the following :
 - (a) Chloroacetic acid is stronger than acetic acid ; and
 - (b) 2-butene is more stable than 1-butene.
19. What are Carbocations ? Discuss the structure and stability of carbocations.

(Ceiling of marks : 30)

Section C (Essay)

*Answer any **one** question.*

The question carries 10 marks.

20. Discuss in detail the preparation and applications of benzene diazonium chloride.
21. Briefly explain the structure of proteins.

(1 × 10 = 10 marks)

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**THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2022**

Chemistry, Industrial Chemistry, Polymer Chemistry

CHE 3C 03—ORGANIC CHEMISTRY

(2019 Admission onwards)

Time : Two Hours

Maximum : 60 Marks

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

1. What are electrophiles ? Give two examples.
2. Among ethyl and isopropyl carbocation, which is more stable ? Why ?
3. What do you mean by chirality?
4. What are meso compounds ?
5. Using Huckel's rule predict the aromaticity of pyrrole.
6. Which is more acidic, phenol or *p*-nitrophenol ? Why ?
7. What is Sandmeyer reaction ?
8. How will you prepare amines from nitro compounds ?
9. Aniline is less basic than methyl amine. Why ?
10. What are nucleotides ?
11. What is vulcanisation ? What is its advantage ?
12. What are alkaloids ? Give examples.

(Ceiling of marks : 20)

Section B (Short Answers)*Answer questions up to 30 marks.**Each question carries 5 marks.*

13. Discuss the optical isomerism in lactic acid and tartaric acid.
14. Explain the mechanism of Friedel Craft's alkylation of benzene.

Turn over

15. Discuss the molecular orbital description for the structure of benzene.
16. Discuss the mechanism of S_N^1 reaction of alkyl halides.
17. How phenolphthalein is prepared? What is its use?
18. Explain the preparation of methyl orange. What is its use?
19. What is Hofmann's carbylamine reaction?

(Ceiling of marks : 30)

Section C (Essay)

*Answer any **one** question.
The question carries 10 marks.*

20. What are electron displacement effects? Using suitable examples, explain in detail these effects.
21. (a) Write notes on 1°, 2°, and 3° and quaternary structure of proteins.
(b) What do you mean by denaturation of proteins?

(1 × 10 = 10 marks)

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Name.....

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THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION, NOVEMBER 2021

Chemistry/Industrial Chemistry/Polymer Chemistry

CHE 3C 03—ORGANIC CHEMISTRY

(2019—2020 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A (Short Answers)*Answer at least **eight** questions.**Each question carries 3 marks.**All questions can be attended.**Overall Ceiling 24.*

1. What are free radicals ? How are they formed ?
2. Which is more acidic, acetic acid or chloroacetic acid ? Why ?
3. What are enantiomers ?
4. Write the possible conformations of ethane. Which is more stable ?
5. What is Wurtz reaction ?
6. How will you prepare phenol from chlorobenzene ?
7. Which is more basic, ammonia or methyl amine ? Why ?
8. What are zwitter ions ? Give examples.
9. What are enzymes ? Give examples.
10. What do you mean by 1° structure of a protein ?
11. What is isoprene rule ?
12. Write the structure of citral and menthol.

(8 × 3 = 24 marks)

Section B (Short Answers)*Answer at least **five** questions.**Each question carries 5 marks.**All questions can be attended.**Overall Ceiling 25.*

13. What is inductive effect ? What are its characteristics ?
14. What are geometrical isomers ? How are they distinguished ?

Turn over

15. State Huckel's rule. Apply Huckel's rule to predict the aromaticity of benzene and naphthalene.
16. How will you prepare 1°, 2° and 3° alcohols using Grignard reagent ?
17. Explain Lucas test for distinguishing 1°, 2° and 3° alcohols.
18. What is Hofmann's Bromamide reaction ?
19. Explain the difference between DNA and RNA.

(5 × 5 = 25 marks)

Section C (Essay)

*Answer any **one** question.*

The question carries 11 marks.

20. How benzene diazonium chloride is prepared ? Discuss the synthetic applications of benzene diazonium chloride.
21. Discuss the mechanism of the following aromatic electrophilic substitutions
Halogenation
Nitration
Sulphonation
Friedel Craft's alkylation.

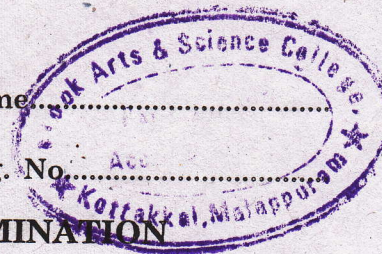
(1 × 11 = 11 marks)

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**THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2020**

Chemistry/Industrial Chemistry/Polymer Chemistry

CHE 3C 03—ORGANIC CHEMISTRY

Time : Two Hours

Maximum : 60 Marks

Section A (Short Answer)

Answer at least eight questions.

Each question carries 3 marks.

All questions can be attended.

Overall Ceiling 24.

1. What are carbanions ? What is its hybridization ?
2. Name two groups which show + I effect.
3. What are diastereoisomers ?
4. Why anthracene is aromatic ?
5. What is denatured spirit?
6. What is the chemistry of methanol poisoning ?
7. How will you convert acetic acid to methanol ?
8. How will you prepare ethyl amine from nitroethane ?
9. Draw the cyclic structure of glucose and fructose.
10. What are polypeptides? How are they prepared ?
11. State Isoprene rule.
12. Give the structure of coniine and nicotine.

(8 × 3 = 24 marks)

Turn over

Section B (Short Essay)

Answer at least five questions.

Each question carries 5 marks.

All questions can be attended.

Overall Ceiling 25.

13. What is hyper conjugation ? Explain with examples.
14. What is Steric effect ? How it influences the rate of chemical reactions ?
15. What is geometrical isomerism ? Explain the geometrical isomerism in maleic acid and fumaric acid.
16. Write the mechanism for the nitration of benzene.
17. What is the effect of substituents on aromatic electrophilic substitution ?
18. Discuss the difference between DNA and RNA.
19. What is isoelectric point of an amino acid ? What are its features ?

(5 × 5 = 25 marks)

Section C (Essay)

Answer any one question.

The question carries 11 marks.

20. (a) How will you prepare alcohols from Grignard reagents ?
(b) What is iodoform test ?
21. Write notes on :
 - (a) Dow's process.
 - (b) Kolbe's electrolysis.
 - (c) Sandmeyer reaction.
 - (d) Hofmann's Carbylamine reaction.

(1 × 11 = 11 marks)