D 31786 (Pages : 2) Name.....

Reg. No.....

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 meant 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_N1 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 meant by denaturation of proteins ?

(1 × 10 = 10 marks)

D 12004 **(Pages : 2)** **Name.....**

Reg. No.....

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 meant 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)

D 51728 **(Pages : 2)** **Name.....**

Reg. No.....

THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION NOVEMBER 2023

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 Griguard 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)

D 91729 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION NOVEMBER 2020

Chemistry

CHE 3C 03—ORGANIC CHEMISTRY

Time : Three Hours Maximum : 64 Marks

Section A (One Word)

Answer **all** *the questions.*
Each question carries 1 *mark.*

1. The isomerism exhibited by alkanes is ————————.
2. The hybridization of carbon atoms in ethyne is ————————.
3. CH_3 group exhibits ———————— inductive effect.
4. The number of possible conformations of ethane is ————————.
5. The reagents used for nitration of benzene are ————————.
6. The product of Wurtz reaction of bromoethane is ————————.
7. The reagent used for idoform test is ————————.
8. Lucas reagent is ————————.
9. Urotropine is prepared from ————————.
10. IUPAC name of picric acid is ————————.

(10 × 1 = 10 marks)

Section B (Short Answer)

Answer any **seven** *questions.*
Each question carries 2 *marks.*

11. What is Hyperconjugation ?
12. Draw Newman projection formula of eclipsed and staggered conformations of ethane.
13. What is racemic mixture ?
14. Write Huckels rule.

15. Write two examples of non benzenoid aromatic compounds.
16. What is Denatured spirit ?
17. How will you prepare anisole by Williamsons synthesis.
18. Suggest a method to convert propanoic acid to 2-Bromopropanoic acid.
19. Aniline is less basic than ammonia Why ?
20. Write two examples of essential amino acids.

(7 × 2 = 14 marks)

Section C (Paragraph)

Answer any **four** *questions.*
Each question carries 5 *marks.*

21. Explain Saponification ? How is it important industrially.
22. Write four differences between DNA and RNA.
23. What is Mutarotation ?
24. Write any *five* reactions of Benzene diazonium chloride with equations.
25. How will you convert ethanol to propanoin acid ?
26. Explain nucleophilic addition reactions with any *four* examples.

(4 × 5 = 20 marks)

Section D (Essay)

Answer any **two** *questions.*
Each question carries 10 *marks.*

27. Explain the formation, stability and reactions of carbocations, carbanions and free radicals
28. Write an essay on a) optical isomerism of lactic acid and tartaric acid.
29. Explain the reaction and mechanism of any four electrophilic aromatic substitution.
30. Explain the effect of substrate structure and stereochemistry of S_N1 and S_N2 reactions.

(2 × 10 = 20 marks)

D 71669 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER B.A./B.Sc. DEGREE EXAMINATION NOVEMBER 2019

(CUCBCSS—UG)

Chemistry

CHE 3C 03—ORGANIC CHEMISTRY

Time : Three Hours Maximum : 64 Marks

Section A (One Word)

Answer **all** *questions.*
Each question carries 1 *marks.*

1. Tertiary butyl carbonium ion is ——— stable than isopropyl carbonium ion.
2. Particles resulting from bond homolysis is called ———.
3. The different spatial arrangement of atoms or groups in a molecule that arises from free rotation about a single bond is called ———.
4. The d-form and meso form of tartaric acid are ———.
5. Phenol + $CHCl_3$ + KOH ——————→ ?
6. R-COOH + NH_3 ——————→ A + B A = ———, B = ———.
7. Alkaloids occur chiefly in ———.
8. The specific rotation of β-D glucose is ———.
9. Draw peptide linkage.
10. The degree of unsaturation of fat or oil is measured by its ———.

(10 × 1 = 10 marks)

Section B (Short Answer)

Answer any **seven** *questions.*
Each question carries 2 *marks.*

11. What is the difference between Inductive effect and Mesomeric effect.
12. Why is aniline less basic than ammonia ?
13. State and explain Huckel rule of aromaticity.
14. Distinguish racemization and resolution.

Turn over

15. Distinguish primary, secondary and tertiary alcohols.
16. Is tropylium anion aromatic. Justify.
17. What is isoprene rule ?
18. What is Tollens reagent ?
19. What is Zwitter ion ?
20. What are crown ethers ?

(7 × 2 = 14 marks)

Section C (Paragraph)

Answer any **four** *questions.*
Each question carries 5 *marks.*

21. What is hyperconjugation? Explain its significance. How does it influence stability of cations ?
22. Draw different conformations of cyclohexane. Which is more stable ? Why ?
23. Explain mechanism of nitration and bromination of benzene.
24. What happens when methyl chloride is treated with metallic sodium. Name the reaction.
25. Give an account of addition reactions of aldehyde and ketone.
26. Write note on extraction of alkaloids.

(4 × 5 = 20 marks)

Section D (Essay)

Answer any **two** *questions.*
Each question carries 10 *marks.*

27. What is optical activity ? Discuss optical isomerism of tártaric acid.
28. Give a detailed account of the group already present in aryl ring in directing incoming group in an electrophilic substitution reaction.
29. Give the preparation and synthetic applications of benzene diazonium Chloride.
30. Discuss following : (a) Hofmanns bromamide reaction ; (b) Mutarotation ; (c) Geometrical isomerism in but-2-ene ; (d) Haloform test ; and (e) Preparation and use of phenolphthalein.

(2 × 10 = 20 marks)

D 92249 (Pages : 3) Name.....

Reg. **No.....**

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2015

(CUCBCSS–UG)

Core Course—Chemistry

CHE 3B 03—PHYSICAL CHEMISTRY – I

Time : Three Hours Maximum : 80 Marks

Section A (One word)

Answer all questions.
Each question carries 1 mark.

1. The temperature above which a gas cannot be liquefied by applying pressure is called _____
2. _____ systems can exchange both energy and matter with the surroundings.
3. The entropy change of the system during an adiabatic process is
4. For an isothermal process, the work done is at the expense of _____
5. The standard enthalpy of a pure element is taken as _____
6. According to _____ law, thermochemical equations can be added or multiplied.
7. The heat of neutralisation of a strong acid by a strong base is always _____
8. At the normal B.P. of a liquid its vapour pressure will become equal to _____
9. The S.I. unit of surface tension is _____
10. Chemical equilibrium is _____ in nature.

(10 x 1 = 10 marks)

Section B (Short answer)

Answer any **ten** *questions.*
Each question carries 2 marks.

11. Calculate the r.m.s. velocity of H_2 molecule at 27°C.
12. Write the vander Waals' equation for 'n' moles of a gas and explain the terms.
13. Differentiate between extensive and intensive properties.
14. Calculate the work done during the isothermal reversible expansion of **10** moles of an ideal gas from 10 dm^3 to 20 dm^3 at 27°C.
15. The vander Waals' constants 'a' and 'b' for a gas are 1.40 x 10^{-1} Nm^4 mot^{-2} and 3.9 x $10^{-5}m^3$ mol^{-1}, respectively at 27°C. Calculate the inversion temperature of the gas.

Turn over

16. The standard enthalpy of a compound is the same as its standard heat of formation. Illustrate with an example.

17. The heat of formation of CO_2 and CO are – 393.5 kJ and – 110.3 kJ respectively. Calculate the heat of combustion of CO.

18. What is meant by residual entropy ? Explain with example.

19. Write any *four* factors that affect the viscosity of a liquid.

20. The viscosity of an oil of density 0.97 gcm^{-3} is 5 x 10^{-2} Nm^{-2} at 27°C. Calculate the time required for a given volume of the oil to flow through a viscometer, if the same volume of water takes 50 seconds to flow through the viscometer. The coefficient of viscosity and density of water respectively are 8.9 x 10^{-1} Nm^{-2} and 1 gcm^{-3}.

21. What are heterogeneous equilibria ? Give example.

22. For the reaction $2\,NO_{(g)} + Cl_{2(g)} \rightleftharpoons 2NOCl_{(g)}$, the value of Kp is 2 x 10^3 a.t.m. at 27°C. Calculate the value of Kc.

(10 x 2 = 20 marks)

Section C (Paragraph)

Answer any five *questions.*
Each question carries 6 *marks.*

23. What are the features of Maxwell's distribution of molecular velocities ? Explain the effect of temperature in the distribution.

24. What is meant by compressibility factor of a gas ? Explain its significance.

25. State and formulate the first law of thermodynamics, Mention the important limitations of the law. How could the second law of thermodynamics overcome these limitations ?

26. Derive the Clausius-Clapeyron equation for the liquid ⇌ vapour equilibrium. Give any *two* applications of the law.

27. What is meant by thermodynamic probability ? Deduce the relation between entropy and probability of a system.

28. What is parachor ? How is it used to elucidate the structure of compounds ? Illustrate with an example.

29. State and explain Le-Chatelier principle. Discuss the effect of temperature and pressure in the equilibrium $2SO_2$ (g) + O_2 (g) ⇌ $2SO_3$ (g) ΔH = -192.5 kJ.

30. Derive the equilibrium constant Kc for the reaction $aA + bB \rightleftharpoons cC + dD$. How is the value of Kc related to Kp ?

(5 X 6 = 30 marks)

Section D (Essay)

Answer any two questions.
Each question carries **10** *marks.*

31. (i) What are critical constants ? How are they related to vander Waals' constants ? (6 marks)

(ii) Explain the determination of critical volume of a gas. (4 marks)

32. (i) Describe the different strokes in the Carnot cycle and show that the efficiency of a heat engine depends only on the temperatures of the source and the sink.

(6 marks)

(ii) Derive the Gibb's–Duhem equation. (4 marks)

33. (i) What is Joule-Thompson coefficient ? Derive an equation for the Joule Thomson coefficient of a gas.

(6 marks)

(ii) The free energy -change of a reaction at 27°C and 37°C are – 85.77 kJ and – 83.68 kJ respectively. Calculate the enthalpy change of the reaction at 32°C.

(4 marks)

34. (i) The enthalpy of formation of NH_3 is – 46 kJ at 300 K. Calculate the enthalpy of formation at 325 K. The molar heat capacities at constant pressure of N_2, H_2 and NH_3 are 28.4, 28.3 and 37 $JK^{-1} mol^{-1}$ respectively.

(4 marks)

(ii) Derive an equation for the variation of equilibrium constant of a reaction with temperature.

(6 marks)

[2 x 10 = 20 marks]

D 72404 **(Pages : 2)** **Name.....**

Reg. No.....

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2014

(UG-CCSS)

Complementary Course—Chemistry

CH 3C 05—ORGANIC AND BIOCHEMISTRY

Time : Three Hours Maximum : 30 Weightage

Answer all **twelve** *questions.*
Each question carries a weightage of ¼.

I. **1** Which of the following is the strongest acid ?

(a) HCOOH. (b) CH_3COOH.

(c) $ClCH_2COOH$. (d) CH_3CH_2COOH.

2 Which of the following is a heterocyclic compound containing sulphur in the ring ?

(a) Furan. (b) Thiophene.

(c) Pyran. (d) Indole.

3 Addition of HBr to an unsymmetrical alkene in presence of a peroxide proceed through :

(a) Electrophilic addition. (b) Free radical addition.

(c) Nucleophilic addition. (d) None of these.

4 Deficiency of Vitamin C is the cause for the disease

(a) Scurvy. (b) Ricket.

(c) Beriberi. (d) Xerophthalmia.

5 Give an example of a neutral electrophile.

6 Of the two isomeric butenes which would show geometrical isomerism ?

7 How many Chiral carbon atoms are there in Tartaric acid ?

8 The purine bases present in RNA are adenine and _____

9 Name the enzyme which hydrolyses sucrose into glucose and fructose.

10 The monomer of the polymer Teflon is _____

11 Give the name of one thermosetting plastic.

12 Write one example for a steroid hormone.

(12 x ¼ = 3 weightage)

Turn over

(Short Answer Type)

Answer all **nine** *questions.*
Each question carries a weightage of 1.

II. 13 State Markownikoff 's rule with an example.

14 Give two examples for meta orienting substituents.

15 Draw the NMR spectrum of ethanol at high resolution.

16 How will you distinguish $CH_3CH_2CH_2OH$ and CH_3COCH_3 by IR spectroscopy ?

17 Draw the Newman projection formula for the staggered and eclipsed conformation of eth

18 What is meant by resolution ?

19 What are the monomers present in the synthetic rubber Buna N ?

20 What are biodegradable plastics ?

21 What are alkaloids ? Give *one* example.

(9 x 1 = 9 weighta

(Short Paragraph Questions)

Answer any **five** *questions.*
Each question carries a weightage of **2.**

III. 22 Explain hyperconjugative effect.

23 Explain the mechanism of dehydration of alcohol.

24 Give a short account of optical isomerism in Tartaric acid.

25 What are nucleosides and nucleotides ? Give examples.

26 What is meant by condensation polymerisation ? Give *one* example.

27 How Dacron fibres are obtained ?

28 State and illustrate Isoprene rule.

(5 x 2 = 10 weightage)

(Essay Questions)

Answer any **two** *questions.*
Each question carries a weightage of 4.

IV. 29 (a) How are amino acids classified ? Give example for each.

(b) Discuss the structure of proteins.

30 (a) Explain "Inductive effect". How it can be used to explain the basic strengths of methyl amine, dimethyl amine and trimethyl amine ?

(b) Discuss the mechanism of SN^{-} reaction.

31 (a) Write a note on asymmetric synthesis.

(b) Describe the general method of isolation of alkaloids.

(2 x 4 = 8 weightage)

D 51299 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2018

(CUCBCSS—UG)

Complementary Course

CHE 3C 03—ORGANIC CHEMISTRY

Time : Three Hours Maximum : 64 Marks

Section A

Answer **all** *questions.*
Each question carries 1 *mark.*

1. The IUPAC name of $(CH_3)_3C$-OH is ————.
2. The hybridisation of carbon in carbonyl group is ————.
3. Which is a better nucleophile, Br^- or I^- ?
4. The electrophile in Friedel-Craft's alkylation is ————.
5. Draw the structure of indol.
6. Which is more acidic, Phenol or *p*-nitrophenol ?
7. Optical isomers which are mirror images are called ————.
8. Methylbromide on treating with metallic sodium in presence of dry ether gives ————.
9. Give the name of an alkaloid ————.
10. Structural formula of cis 2-butene is ————.

(10 × 1 = 10 marks)

Section B

Answer any **seven** *questions.*
Each question carries 2 *marks.*

11. Explain functional isomerism with one example.
12. Explain the mechanism of nitration in benzene.
13. Briefly compare the basicity of ammonia and methyl amine.
14. Write a method of preparation of benzene diazonium chloride.
15. What is HVZ reaction ?
16. Compare the stability of 1°, 2° and 3° alkyl carbocations. Justify your answer.
17. Differentiate between rectified spirit, absolute alcohol and denatured spirit.
18. Explain the terms racemisation and resolution.
19. State and explain isoprene rule.
20. Explain Huckle's rule by taking a non-benzenoid aromatic compound as example.

(7 × 2 = 14 marks)

Turn over

Section C

Answer any **four** *questions.*
Each question carries 5 *marks.*

21. Write notes on a) Williamson's synthesis ; and b) Hofmann's bromamide reaction.
22. Discuss the mechanism of SN^2 reaction in alkyl halide.
23. Explain the acid base property of amino acid.
24. Define each of the following nucleoside, nucleotide and nucleic acid.
25. Outline the synthetic applications of Benzene diazonium chloride.
26. Give a note on the primary, secondary and tertiary structure of proteins.

(4 × 5 = 20 marks)

Section D

Answer any **two** *questions.*
Each question carries 10 *marks.*

27. Explain why :
    (i) Methyl amine is more basic than aniline.
    (ii) Phenol is less acidic compared to *p*-nitrophenol.
    (iii) Chloro acetic acid is stronger than acetic acid.
28. Explain the double helical structure of DNA.
29. (a) *Illustrate* the preparation of :
    (i) Phenol from chlorobenzene ; (ii) Picric acid from phenol.
    (b) Explain Iodoform test by using proper reactions.
30. Explain :
    (a) Conformations of ethane and explain their stability.
    (b) Optical isomerism in tartaric acid and
    (c) Geometrical isomerism in but-2-ene-1,4-dioic acid.

(2 × 10 = 20 marks)

D 12432 **(Pages : 2)** **Name.....**

Reg. No.....

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2016

(CUCBCSS–UG)

Complementary Course

CHE 3C 03 – ORGANIC CHEMISTRY

Time : Three Hours Maximum : 64 Marks

Section A (One word/Sentence)

Answer **all** *the questions.*
Each question carries 1 *mark.*

1. Homolytic fission of a covalent bond liberates _____.
   (a) Cations. (b) Anions.
   (c) Free radicals. (d) Molecules.
2. Name the conformations of cyclohexane.
3. Different isomers of a substance will have the same _____.
   (a) Structural formula. (b) Chemical properties.
   (c) Molecular formula. (d) Physical properties.
4. A carbon atom which is bonded to four different groups is called _____.
5. An isomer of ethanol is :
   (a) Methanol. (b) Dimethyl ether.
   (c) Diethyl ether. (d) Ethylene glycol.
6. Write the IUPAC name of $CH_2 = CH - CH_2 - CHO$.
7. The number of pi electrons in benzene molecule is _____.
8. Which of the following contains acetic acid?
   (a) Vinegar. (b) Coal tar.
   (c) Molasses. (d) Butter.
9. The conversion of acid to alkene by electrolysis is known as _____.
10. –CONH–linkages are called _____ linkages.

(10 × 1 = 10 marks)

Section B (Short Answers)

Answer any **seven** *questions.*
Each question carries 2 *marks.*

11. Explain HVZ reaction.
12. What is meant by functional isomerism? Give one example.
13. Explain Racemisation.

Turn over

14. What are enantiomers? Give one example.
15. Write the mechanism and drawback of Friedel-Craft alkylation reaction.
16. Explain the directive effect of substituents with suitable examples.
17. Describe the manufacture of ethyl alcohol from molasses.
18. Differentiate DNA and RNA.
19. What are nucleosides? How are they converted to nucleotides?
20. Define Iodine number. What is its significance?

(7 × 2 = 14 marks)

Section C (Paragraphs)

Answer any **four** *questions.*
Each question carries 5 *marks.*

21. What is optical activity? Explain with an example.
22. Explain Huckel's rule by taking benzenoid compound as example.
23. Alkyl halides undergo SN^1 and SN^2 reactions. Explain.
24. Write the preparation of 2-butanone from ethanol.
25. What is meant by hydrogenation of oils? Explain its application.
26. Discuss the physiological functions of nicotine and piperine?

(4 × 5 = 20 marks)

Section D (Essays)

Answer any **two** *questions.*
Each question carries 10 *marks.*

27. Discuss the type, hybridization and stability of reaction intermediates in organic reactions.
28. Write briefly on :
    (i) Cleavage of ethers by acid.
    (ii) Dow process for the preparation of phenol.
    (iii) Preparation and uses of phenolphthalein.

(3 + 3 + 4 = 10 marks)

29. (i) Discuss the preparation of amines from nitro group by Hofmann bromamide reaction.
    (ii) Compare the basicity of ammonia, methyl amine and aniline.

(4 + 6 = 10 marks)

30. Write notes on :
    (i) Muta rotation.
    (ii) Industrial applications of cellulose.
    (iii) Secondary structure of proteins.

(3 + 3 + 4 = 10 marks)

[2 × 10 = 20 marks]

D 12432 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2016

(CUCBCSS–UG)

Complementary Course

CHE 3C 03 – ORGANIC CHEMISTRY

Time : Three Hours Maximum : 64 Marks

Section A (One word/Sentence)

Answer **all** *the questions.*

Each question carries 1 *mark.*

1. Homolytic fission of a covalent bond liberates _____.
   (a) Cations. (b) Anions.
   (c) Free radicals. (d) Molecules.
2. Name the conformations of cyclohexane.
3. Different isomers of a substance will have the same _____.
   (a) Structural formula. (b) Chemical properties.
   (c) Molecular formula. (d) Physical properties.
4. A carbon atom which is bonded to four different groups is called _____.
5. An isomer of ethanol is :
   (a) Methanol. (b) Dimethyl ether.
   (c) Diethyl ether. (d) Ethylene glycol.
6. Write the IUPAC name of $CH_2 = CH - CH_2 - CHO$.
7. The number of pi electrons in benzene molecule is _____.
8. Which of the following contains acetic acid ?
   (a) Vinegar. (b) Coal tar.
   (c) Molasses. (d) Butter.
9. The conversion of acid to alkene by electrolysis is known as _____.
10. –CONH–linkages are called _____ linkages.

(10 × 1 = 10 marks)

Section B (Short Answers)

Answer any **seven** *questions.*

Each question carries 2 *marks.*

11. Explain HVZ reaction.
12. What is meant by functional isomerism? Give one example.
13. Explain Racemisation.

Turn over

14. What are enantiomers? Give one example.
15. Write the mechanism and drawback of Friedel-Craft alkylation reaction.
16. Explain the directive effect of substituents with suitable examples.
17. Describe the manufacture of ethyl alcohol from molasses.
18. Differentiate DNA and RNA.
19. What are nucleosides? How are they converted to nucleotides?
20. Define Iodine number. What is its significance?

(7 × 2 = 14 marks)

Section C (Paragraphs)

Answer any **four** *questions.*

Each question carries 5 *marks.*

21. What is optical activity? Explain with an example.
22. Explain Huckel's rule by taking benzenoid compound as example.
23. Alkyl halides undergo SN^1 and SN^2 reactions. Explain.
24. Write the preparation of 2-butanone from ethanol.
25. What is meant by hydrogenation of oils? Explain its application.
26. Discuss the physiological functions of nicotine and piperine?

(4 × 5 = 20 marks)

Section D (Essays)

Answer any **two** *questions.*

Each question carries 10 *marks.*

27. Discuss the type, hybridization and stability of reaction intermediates in organic reactions.
28. Write briefly on :
    (i) Cleavage of ethers by acid.
    (ii) Dow process for the preparation of phenol.
    (iii) Preparation and uses of phenolphthalein.

(3 + 3 + 4 = 10 marks)

29. (i) Discuss the preparation of amines from nitro group by Hofmann bromamide reaction.
    (ii) Compare the basicity of ammonia, methyl amine and aniline.

(4 + 6 = 10 marks)

30. Write notes on :
    (i) Muta rotation.
    (ii) Industrial applications of cellulose.
    (iii) Secondary structure of proteins.

(3 + 3 + 4 = 10 marks)

[2 × 10 = 20 marks]