C 20094 (Pages : 3) Name.....

Reg. No.....

SIXTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION MARCH 2022

Chemistry

CHE 6B 10—ORGANIC CHEMISTRY—III

(2014 to 2018 Admissions)

Time : Three Hours Maximum : 80 Marks

Section A (one word)

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

1. Finger print region in ir spectrum is ————.
2. Among ethane, 1, 3-butadiene and 1, 3, 5-hexatriene, which will have highest λ max ?
3. α-D-glucopyranose and β-D-glucopyranose are ————.
4. A disaccharide which does not exhibit mutarotation is ————.
5. An example for carbohydrate with β–glycosodic linkage is ————.
6. Write an example of a non chiral amino acid.
7. Name of an acidic amino acid.
8. Waxes are chemically ————.
9. Give any *one* source of vitamin C.
10. Write the name of a peptide hormone.

(10 × 1 = 10 marks)

Section B (Short Answer)

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

11. What is red shift ?
12. How will you distinguish acetone and ethanol by ir spectroscopy ?

Turn over

13. What are epimers ? Give example.

14. Draw the structure of phenyl alanine and lysine.

15. Write a test to distinguish proteins.

16. How vitamins are classified ?

17. Why LDL is termed as bad lipid ?

18. Draw the structure of lecithin.

19. Why adenine pair up with thymine and guanine with cytosine ?

20. Give any *two* uses of lemon grass oil.

21. What are nucleotides ?

22. Draw the molecular orbitals of butadiene.

(10 × 2 = 20 marks)

Section C (Paragraph)

Answer any **five** *questions.*

Each question carries 6 *marks.*

23. How will you distinguish ethanol and dimethyl ether by ^{1}H NMR spectra ?

24. Describe Killiani-Fischer synthesis.

25. How glucose reacts with phenyl hydrazine ?

26. Explain Solid Phase Peptide Synthesis. (SPPS)

27. Write the differences between DNA and RNA.

28. Show that the thermal electrocyclic ring closure of butadiene is con rotatory.

29. Draw the structure and write uses of citral and menthol.

30. Explain replication.

(5 × 6 = 30 marks)

Section D (Essay)

Answer any **two** *questions.*

Each question carries 10 *marks.*

31. Discuss DNA finger printing.

32. Write any *two* methods each for the synthesis of amino acids and peptides.

33. How are lipids classified ? Give an account of each type.

34. Identify the compound :

Molecular formula	:	C_8H_{10}, UV λ max : 266 nm
IR spectra	:	3028, 2967,1496, 1453 cm^{-1}.
^{1}H NMR spectra	:	δ (ppm) 1.22 (3H) triplet, 2.63 (2H) quartet, 7.10 – 7.45 (5H) multiplet

(2 × 10 = 20 marks)

C 20540 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS—UG)

Chemistry

CHE 6B 10—ORGANIC CHEMISTRY—III

(2019 Admissions)

Time : Two Hours Maximum : 60 Marks

Section A

Answer at least **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 24.

1. What is a chromophore ? Give an example.
2. Write the fingerprint region in IR spectroscopy. What is its significance?
3. Give one example each for mobile phase and stationary phase in column chromatography.
4. Represent the ^1H nmr spectrum of CH_3CH_2Br.
5. Draw the Fischer projection of D(+) Glucose.
6. What are osazones ?
7. What are polysaccharides? Give two examples.
8. Write the hydrolysis product of sucrose.
9. Define isoelectric point.
10. What is biuret test ?
11. Name the bases present in nucleic acids.
12. Draw the structure of Vitamin C.

(8 × 3 = 24 marks)

Turn over

Section B

Answer at least **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall Ceiling 25.

13. How is IR spectroscopy useful for distinguishing inter and intramolecular H -bonding in alcohols ?
14. Write notes on electronic transitions in organic molecules giving suitable examples.
15. Give an account on structure of starch and glycogen.
16. Draw the structure of cholesterol. Give any two biological functions of cholesterol.
17. Discuss conrotation and disrotation in electrocyclic reactions.
18. Explain the Woodward-Hoffmann selection rules for sigmatropic reactions.
19. Write the mechanism of Claisen rearrangement.

(5 × 5 = 25 marks)

Section C

Answer any **one** *question.*
The question carries 11 *marks.*

20. Describe the structure of nucleic acids and their role in heredity and protein biosynthesis.
21. (a) Give an account on structure of natural rubber.
    (b) Write notes on vulcanization of rubber and show the substitution at allylic carbon and addition across double bond.

(1 × 11 = 11 marks)

C 40515 **(Pages : 2)** **Name.....**

Reg. No.....

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2023

(CBCSS—UG)

Chemistry/Polymer Chemistry

CHE 6B 10—ORGANIC CHEMISTRY—III

(2019 Admission onwards)

Time : Two Hours Maximum : 60 Marks

Section A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. State Beer -Lambert Law.
2. Write the chromophore present in nitrobenzene.
3. What is R_f value in TLC ?
4. Predict the λmax of 3-methylpent-3-en-2-one.
5. Draw the structure of epimer of D(+) Glucose.
6. What are products formed when glucose is treated with periodic acid?
7. Give one example of a disaccharide. Draw its structure.
8. Write the composition of invert sugar.
9. Represent the zwitter ion of an amino acid.
10. What is ninhydrin test ?
11. What are the constituents of nucleic acids ?
12. What is the effect of hydrogenation of double bonds in oils ?

(Ceiling 20)

Turn over

Section B

Answer **all** *questions.*
Each question carries 5 *marks.*

13. What are Anomers ? Explain mutarotation.

14. Give an account on classification of vitamins. List the diseases caused by their deficiency.

15. Write notes on physiological functions of nicotine and coniine. Draw their structures.

16. Describe the general principle of extraction of alkaloids. Draw the structure of quinine

17. Represent the molecular orbitals of ethylene and 1, 3- butadiene. Write the number of nodes present.

18. Explain the feasibility of thermal and photochemical reactions of 2+2 cycloaddition reaction using FMO approach.

19. Describe the mechanism of Claisen rearrangement.

(Ceiling 30)

Section C

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

20. (a) What is chemical shift ?

    (b) Explain spin-spin splitting. Predict the ^{1}H nmr spectra of ethyl acetate and propanoic acid

21. (a) Describe the Strecker synthesis of Phenyl alanine

    (b) Explain the principle of solid -phase polypeptide synthesis

(1 × 10 = 10 marks)

D 100524 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER U.G. (CBCSS—UG) DEGREE EXAMINATION MARCH 2024

Chemistry/Polymer Chemistry

CHE 6B 10—ORGANIC CHEMISTRY—III

(2019 Admission onwards)

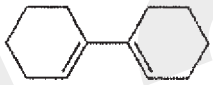
Time : Two Hours Maximum : 60 Marks

Section A (Short answers)

Answer questions up to 20 *marks.*

Each question carries 2 *marks.*

1. What are red shift and blue shift ?
2. Calculate the λ_{max} of :



3. Write a short note on spin-spin splitting observed in NMR spectroscopy ?
4. What is mutarotation ?
5. What is Biuret test ?
6. What are nucleosides and nucleotides ?
7. Draw the structure of vitamin C.
8. What is denaturation of proteins ?
9. Define Saponification value and iodine value.
10. What are the physiological actions of nicotine ?
11. What are HDL and LDL ?
12. What are electrocyclic reactions ?

(Ceiling of marks : 20)

Turn over

Section B (Paragraph)

Answer questions up to 30 *marks.*

Each question carries 5 *marks.*

13. Discuss the UV-Vis spectra shown by polyatomic molecules.

14. Write a short note on paper chromatography.

15. Convert glucose to fructose and fructose to glucose.

16. Differentiate DNA and RNA.

17. What are lipids? How are they classified ? Explain.

18. Write a short note on Sanger's method for the structure elucidation of peptides.

19. Discuss the mechanism of Cope and Claisen rearrangements.

(Ceiling of marks: 30)

Section C (Essay)

Answer any **one** *questions.*

Each question carries 10 *marks.*

20. (i) Discuss with mechanism of the solid phase synthesis of peptides.

    (ii) What is meant by DNA fingerprinting ? What are its applications ?

21. (i) Write a short note on the cyclic structure of glucose.

    (ii) What is Chemical shift ? What are the factors affecting it ?

(1 × 10 = 10 marks)