

5 SEM TDC CHMH (CBCS) C 11

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(Held in January/February, 2022)

CHEMISTRY

(Core)

Paper : C-11

(Organic Chemistry)

Full Marks : 53

Pass Marks : 21

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Select the correct answer from the following
(any three) : 1×3=3
- (a) In the double helix of DNA, guanine of one coil involves pairing with cytosine of the other
- (i) through one H-bond
 - (ii) through two H-bonds
 - (iii) through three H-bonds
 - (iv) Not through H-bond

- (b) DNA multiplication is called
- (i) translation
 - (ii) transduction
 - (iii) transcription
 - (iv) replication
- (c) Which one of the following is a compound lipid?
- (i) Triolein
 - (ii) Glyceryl linoleate
 - (iii) Myricyl palmitate
 - (iv) Phosphatidylserine
- (d) Which of the following reactions is used to form a $C=C$ in a synthesis?
- (i) Aldol condensation
 - (ii) Michael condensation
 - (iii) Knoevenagel reaction
 - (iv) Dieckmann reaction

UNIT—I

2. (a) Distinguish between nucleotide and nucleoside.

Or

Synthesize one important pyrimidine base present only in RNA.

- (b) What are complementary bases? Draw the structure to show hydrogen bonding between adenine-thymine. 1+1=2
- (c) Define genetic code. Write the important structural and functional differences between DNA and RNA. 1+2=3

Or

How does DNA replicate? How is the process responsible for preservation of heredity?

3

UNIT—II

3. (a) Give one example of a tri-peptide showing N-terminal and C-terminal end. 2
- (b) Synthesize alanine with the help of Strecker's synthesis. 2
- (c) Discuss the α -helical structure of protein. 2
- (d) Write a short note on electrophoresis of amino acids. 2
- (e) What happens when alanine reacts with ninhydrin? 1

UNIT—III

4. (a) Define enzyme. How does pH affect the activity of enzymes? 1+1=2

Or

Write a short note on specificity of enzymes with the help of a suitable example. 2

- (b) Define the term 'active site'. Give a brief diagram for the mechanism of enzymatic action. 1+2=3

- (c) How does trypsin breakdown peptide bonds in a protein? Write the mechanism of the reaction. 3

Or

What are the cofactors present in enzymes? Give an example of a coenzyme with a specific reaction. 3

UNIT—IV

5. (a) What is hydrogenation of oil? What is its importance in lipid chemistry? 1+1=2

- (b) What is rancidity? How can you prevent rancidity? 1+1=2

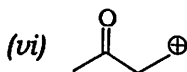
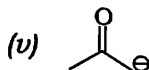
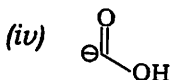
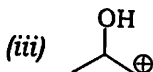
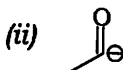
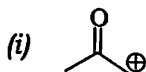
Or

What is saponification value of a fat?
What is its significance in determining the quality of lipid? 2

- (c) What are triglycerides? Give two examples with structures. 1+1=2
- (d) How do you isolate carboxylic acid and alcohol from fats and oil? 2

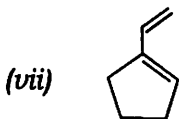
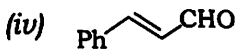
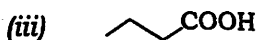
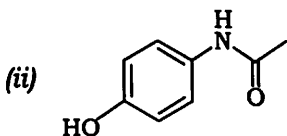
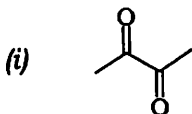
UNIT—V

6. (a) Write the synthetic equivalents and also find the logical and illogical synthons of the following (any two) : 2



(b) Write a short note on umpolung. 2

(c) With the help of the retrosynthetic analysis, write down the synthesis of the following TMs (any three) : $2 \times 3 = 6$



UNIT—VI

7. Answer any *four* questions : 2×4=8

- (a) Synthesize a drug which is used to bring down body temperature during fever.
- (b) Sulpha drugs work like antibiotics but they are not antibiotics. Is this a valid statement and why?
- (c) Write in brief about the medicinal importance of azadirachtin present in neem.
- (d) Draw the structure of chloramphenicol and write in brief about its clinical properties.
- (e) Starting from *m*-chloroaniline, how would you synthesize chloroquine?
- (f) What are antacids? Give the structure of ranitidine.
