

5 SEM TDC CHMH (CBCS) C 11

2 0 2 1

(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

(2)

- (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. 2

Or

- Synthesize one important pyrimidine base present only in RNA. 2

22P/146

(Continued)

(3)

- (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

22P/146

(Turn Over)

(4)

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

(5)

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

Or

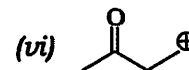
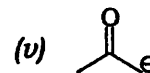
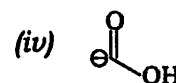
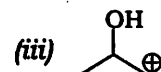
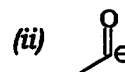
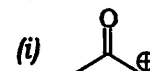
What is saponification value of a fat? What is its significance in determining the quality of lipid? 2

- (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

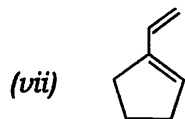
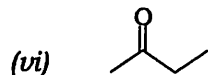
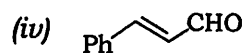
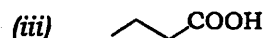
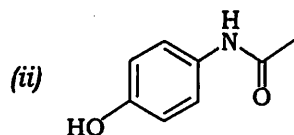
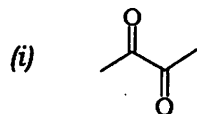
6. (a) Write the synthetic equivalents and also find the logical and illogical synthons of the following (any two) : 2



(6)

(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) : $2 \times 3 = 6$



(7)

UNIT—VI

7. Answer any four questions : $2 \times 4 = 8$

(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.
