

Total No. of Printed Pages—7

**5 SEM TDC CHMH (CBCS) C11**

**2025**

( Nov/Dec )

**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. Choose the correct answer from the following : 1×4=4

(a) Adenine present in DNA is

(i) purine base

(ii) pyrimidine base

(iii) nucleotide

(iv) nucleoside

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- (b) ATP contains
- (i) one phosphate ester
  - (ii) two phosphate esters
  - (iii) three phosphate esters
  - (iv) None of the above
- (c) Which of the following is a simple lipid?
- (i) Oils and fats
  - (ii) Glycolipids
  - (iii) Phospholipids
  - (iv) Cholesterol
- (d) Synthetic equivalent of  $\overset{\oplus}{\text{C}}\text{H}_3$  is
- (i)  $\text{CH}_3\text{Cl}$
  - (ii)  $\text{CH}_3\text{CH}_3$
  - (iii)  $\text{CH}_3-\text{C}\equiv\text{CH}$
  - (iv)  $\text{CH}_3\text{MgBr}$

UNIT—I

2. (a) Explain the term 'nucleotide'. 2

Or

Show the hydrogen bonds between adenine and thymine, and guanine and cytosine.

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( Continued )

( 3 )

- (b) Discuss the replication process of DNA.  
What is its significance? 1+1=2
- (c) Discuss the structure of DNA. 2

Or

Discuss the process of protein synthesis. 1+1=2

UNIT—II

3. (a) Describe Gabriel phthalimide synthesis for amino acids. 2
- (b) Give DNP and Edman methods of N-terminal analysis in case of proteins. 2
- (c) Write a short note on primary and secondary structures of proteins. 2
- (d) Discuss the classification and biological importance of proteins. 2

UNIT—III

4. (a) What are enzymes and coenzymes? 2
- (b) Write a short note on Fischer's lock and key model of enzyme action. 2

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( Turn Over )

( 4 )

- (c) Explain enzyme kinetics and also explain the factors which effect the rate of enzymatic reactions. 3
- (d) What are competitive and non-competitive inhibitions? 2

UNIT—IV

5. (a) How will you distinguish between a fat and an oil? 2
- (b) Give an example of *trans*-esterification in case of glycerides. 2

Or

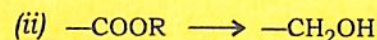
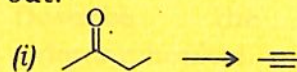
Write a brief note on detergents bringing out structural relationship (if any) between soaps and detergents.

- (c) What are glycerides? How are they classified? Give examples. 1+1=2
- (d) What is rancidity? Which reactions are responsible for the development of rancidity? 1+1=2

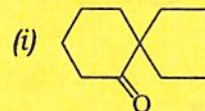
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UNIT—V

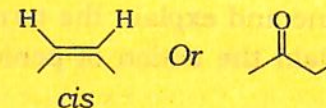
6. (a) How can the following FGIs be carried out? 1+1=2



- (b) Synthesize the following compounds with proper retrosynthetic analysis (any one) : 2



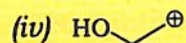
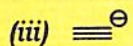
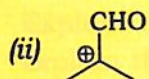
- (c) How is the following compound synthesized? Give proper retrosynthetic analysis : 1+1=2



- (d) Write the synthetic equivalent of the following compounds :  $\frac{1}{2} \times 4 = 2$



( 6 )



- (e) How would you synthesize the following compound by using Wittig reaction? Give retrosynthesis and synthetic pathways :

2



#### UNIT—VI

7. Answer any four of the following questions :

2×4=8

- (a) Describe the synthesis of an antimalarial drug.
- (b) Define and explain the term 'antibiotic'. Explain the action of penicillin.
- (c) Discuss the medicinal uses of curcumin and vitamin C.
- (d) Discuss the mode of action of sulphanilamides.

( 7 )

- (e) Prepare the following :

(i) Aspirin

(ii) Ibuprofen

- (f) Describe the synthesis of chloramphenicol.

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