Total No. of Printed Pages—7

5 SEM TDC CHMH (CBCS) C 11

2023

(November)

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 (any *five*) : 1×5=5

(a) Which of the following amino acids has an amide side chain?

(i) Aspartic acid

(ii) Glutamic acid

(iii) Asparagine

(iv) Methionine

(b) Sanger's reagent is

(i) 1-fluoro-2,4-dinitrobenzene

(ii) phenylisothiocyanate

(iii) ninhydrin

(iv) 2,4-dinitrophenylhydrazine

(c) The number of H-bonds between adenine and thymine in a DNA molecule is

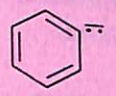
(i) two

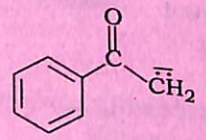
(ii) three

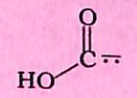
(iii) four

(iv) None of the above

(d) Which of the following synthons is an example of umpolung?

(i) 

(ii) 

(iii) 

(iv) $CH_3\bar{\bar{C}}H_2$

(Continued)

(e) Which of the following drugs is not classified in the criteria based on pharmacological effect?

(i) Antihistamines

(ii) Antiseptics

(iii) Analgesics

(iv) Antipyretics

(f) Which of the following is not a function of protein?

(i) Helps in digesting food

(ii) Carries genetic information

(iii) Fights against invading pathogen

(iv) Helps in transporting oxygen in blood

UNIT—I

2. (a) Draw the structure of a nucleotide present only in RNA and write down its name. 2

(b) Write down the synthesis of a base which is present only in DNA. 3

Or

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

(c) Write down the important structural difference between DNA and RNA. 2

(Turn Over)

UNIT—II

3. *(a)* What is ninhydrin reagent? Explain with chemical reaction how it is used to detect amino acid. 3

Or

What is isoelectric point? How is it helpful in separating amino acid from a mixture?

(b) How can you synthesize alanine by Gabriel phthalimide synthesis? 2

(c) Explain briefly the α-helix structure of protein. 2

(d) How will you prepare alanyl-glycyl-valine only from glycine, valine and alanine using suitable amino protecting group and carboxy activating group? 2

Or

What are conjugated proteins? How are they classified?

UNIT—III

4. *(a)* How are enzymes classified on the basis of their functions? 2

Or

Explain stereospecificity of enzyme with suitable example.

(Continued)

(b) Write short notes on any *two* of the following : 2×2=4

(i) Active site

(ii) Coenzyme

(iii) Inhibitors

(c) Discuss briefly the lock and key theory of enzyme action. 3

UNIT—IV

5. Answer any *three* questions : 2×3=6

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

(b) "Melting point of unsaturated fatty acid is lower than those of saturated fatty acid." Explain.

(c) Discuss how vegetable ghee is prepared from oils.

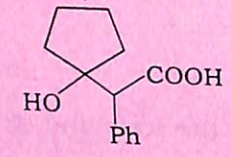
(d) What is iodine number? How is it helpful in determining the quality of oil?

(Turn Over)

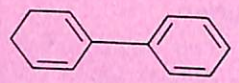
UNIT—V

6. *(a)* Applying retrosynthesis, how would you prepare the following compound (any *one*) ? 3

(i)

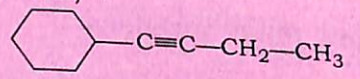


(ii)

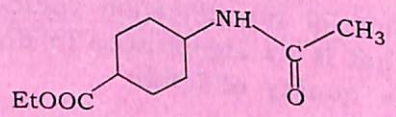


(b) Carry out disconnection of the molecules given below and show their synthons and synthetic equivalents (any *one*) : 2

(i)

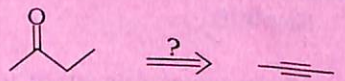


(ii)

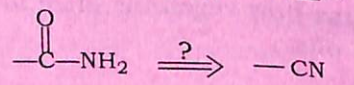


(c) How can the following FGIs be carried out? 2

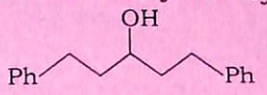
(i)



(ii)



(d) How can you disconnect the following molecule and carry its synthesis? 2



(Continued)

UNIT—VI

7. *(a)* "Sulpha drugs are bacteriostatic but not bacteriocidal." Explain. 2

Or

Write down the preparation of sulphaguanidine.

(b) Write down the molecular structure of curcumin and its medicinal importance. 2

(c) Write down the synthesis of the following (any *one*) : 2

(i) Chloroquine

(ii) Chloramphenicol

(d) What is the importance of vitamin C in our body? 2

Or

Write down the synthesis of an antipyretic.

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