Total No. of Printed Pages—7

**5 SEM TDC CHMH (CBCS) C 11**

**2021**

( 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. 2

*Or*

Synthesize one important pyrimidine base present only in RNA. 2

(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

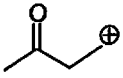
(i) 

(ii) 

(iii) 

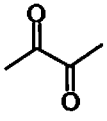
(iv) 

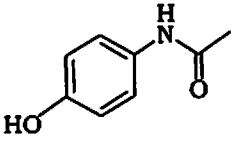
(v) 

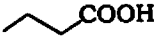
(vi) 

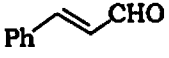
(b) Write a short note on umpolung. 2

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

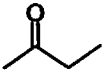
(i) 

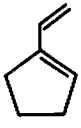
(ii) 


(iii) 


(iv) 


(v) 

(vi) 


(vii) 

## 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.

★★★