63/1 (SEM-5) CC11/CHMHC5116

2024

CHEMISTRY

Paper : CHMHC5116

(Organic Chemistry–IV)

Full Marks : 60

Pas Marks : 24

Time : Three hours

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

1. Choose the correct answer ***(any five)*** : 1×5=5

   (a) Which one of the following sugar is present in DNA ?

   (i) Deoxyribose

   (ii) Ribose

   (iii) Glucose

   (iv) Fructose

Contd.

(b) Isoelectric point is the pH at which a protein *or* an amino acid has

(i) dipolar ion

(ii) cation

(iii) anion

(iv) no net electric charge

(c) How many enzymes are produced by the human body?

(i) 1200

(ii) 1300

(iii) 900

(iv) 1000

(d) Oils having iodine value lower than 100 are called

(i) drying oil

(ii) semi-drying oil

(iii) non-drying oil

(iv) essential oil

(e) All the enzymes required for beta-oxidation occurs in

(i) Cytoplasm

(ii) Nucleus

(iii) Ribosomes

(iv) Mitochondria

(f) The caloric value of milk is (kJ/g)

(i) 3.2

(ii) 2·5

(iii) 30.4

(iv) 37.6

(g) Ibuprofen is

(i) antibiotic

(ii) antipyretic

(iii) analgesic

(iv) antimalarial

(h) Metamorphosis process is controlled by

(i) ranitidine

(ii) vitamin C

(iii) curcumin

(iv) azadirachtin

(i) Which one of the following is not a pyrimidine base ?

(i) Cytosine

(ii) Thymine

(iii) Uracil

(iv) Guanine

(j) The exchange of alcoholic part of triglyceride on treatment with alcohol is known as

(i) trans esterification

(ii) esterification

(iii) alcoholysis

(iv) None of the above

2. Answer the following questions ***(any five)*** : 2×5=10

(a) Give the structure of *any one* nucleotide.

(b) How can you synthesise glycine by Gabriel's phthalimide reaction ? Give proper reactions.

(c) Write a note on 'Iodine Value'.

(d) Give biosynthesis of fatty acids and fats from nonlipid substances.

(e) Write an essay on lipid metabolism.

(f) How can you prepare adenosine ? Mention the method of preparation.

(g) Define pharmaceutical compounds. How are they classified ?

3. Answer the following questions ***(any five)*** : 5×5=25

(a) Write the difference between DNA and RNA. Mention the types of RNA. Show the hydrogen bonds in DNA structure.

(b) What are purine and pyrimidine bases ? Explain with examples.

(c) Explain the terms 'saponification value' and 'acid value' with their significance.

(d) Write a note on electrophoresis.

(e) Classify proteins on the basis of molecular shape and function and give proper examples.

(f) Mention the salient features of active site of enzyme.

(g) Give the structure, synthesis and uses of paracetamol.

(h) Write *two* medicinal values of neem (azadirachtin) and haldhi (curcumin).

(i) Explain K_a or pK_a and K_b or pK_b of α-amino acids.

4. Answer ***any two*** of the following : 10×2=20

(a) What are enzymes? Give the classification of enzymes with examples. 2+8=10

(b) What is Glycogenesis? Write in detail the sequence of reaction in anaerobic glycolysis by Embden-Meyerhof pathway. 2+8=10

(c) What will be the products when

(i) glycine is heated with barium hydroxide

(ii) glycine is reduced in presence of lithium aluminium hydride.

(iii) glycine reacts with HCl.

(iv) glycine is heated with chloroform ($CHCl_3$) in presence of alcoholic potassium hydroxide (KOHalc).

(v) two molecules of α-amino acids are heated ?

2×5=10

(d) What are sulpha drugs? 2+4+4=10

Give the synthesis and mode of action of following drugs :

(i) Sulphadiazine

(ii) Sulphaguanidine
