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3 (Sem-5/CBCS) CHE HC 1

2021

(Held in 2022)

CHEMISTRY

(Honours)

Paper : CHE-HC- 5016

(Organic Chemistry-IV)

Full Marks : 60

Time : Three hours

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

1. Answer the following as directed : $1 \times 7 = 7$

(i) Which carbon atom of the purine ring combines with the sugar molecule during nucleotide formation ?

(ii) Which amino acid is formed on transamination of pyruvic acid ?

Contd.

(iii) Name the enzyme which catalyzes in the conversion of glucose into glucose-6-phosphate.

(iv) Name *one* essential fatty acid.

(v) The protein part of a holoenzyme is called _____. (Fill in the blank)

(vi) Write an example of amino acid having thiol group.

(vii) β -pleated sheets correspond to which structure of protein?

2. Answer the following questions : **(any four)**

2×4=8

(a) What is nucleotide? Draw the structure of dCMP.

(b) What do you mean by isoelectric point of an amino acid? Give example.

(c) What are NSAIDs? Where does paracetamol get metabolised inside the body?

(d) What is trans fat? Why is trans fat not good for health?

(e) What do you mean by high energy compounds in metabolic process? Give example.

3. Answer **any three** questions from the following: 5×3=15

(a) How can a purine derivative be synthesized by Traube's method? Write all the reactions involved. 1+4=5

(b) What is electrophoresis? How can you separate a mixture of Gly, Asp and Arg having isoelectric points 5.97, 2.98 and 10.76 respectively, by using a buffer of pH=6.0? 2+3=5

(c) What do you mean by specificity of enzyme? Elaborate with *two* examples.
2+3=5

(d) How the sugar breaking process starts in glycolysis and finishes in Krebs cycle? Also give the account of ATP in the process.
4+1=5

(e) Write the mode of action of chloramphenicol. Against which malarial parasite chloroquine is active?
4+1=5

4. Answer *either* 'A' or 'B'; 'C' or 'D'; 'E' or 'F':
10×3=30

(A) 2+4+4=10

(i) What are the different steps of determination of primary structure of proteins?

(ii) Write elaborately how the number of polypeptide chain can be identified.

- (iii) Explain the method of determination of amino acid sequence by using Sanger's reagent.

Or

(B)

3+3+4=10

- (i) Write the reactions involved when an alpha-amino acid reacts with ninhydrin.
- (ii) How can a polypeptide be synthesized by activating $-COOH$ group?
- (iii) Write a note on 'solid phase' or 'Merrifield Method' of synthesis of peptide.

(C)

2+5+3=10

- (i) What do you mean by glycolysis?

(ii) Write the different steps and the enzymes involved in glycolysis.

(iii) How lipid transportation in the cell takes place and converted to free fatty acids and energy?

Or

(D) 2+6+2=10

(i) What do you mean by enzyme inhibition?

(ii) Write a note on different types of inhibition of enzyme.

(iii) What is special about allosteric inhibition?

(E) What do you mean by analgesics and antipyretics? How do they differ in their mode of action? Write the synthesis of Paracetamol and Ibuprofen.

2+4+4=10

Or

(F) What are the main active constituents of turmeric and neem? Write their structures. Write some medicinal properties of turmeric and neem.

2+4+4=10
