

Bachelor of Science (B.Sc.) Semester—II (C.B.S.) Examination**BIOTECHNOLOGY (Cell Constituents and Enzymology)****Compulsory Paper—2**

Time : Three Hours]

[Maximum Marks : 50

Note :—(1) All questions are compulsory and carry equal marks.

(2) Draw diagrams wherever necessary.

1. What are homopolysaccharides ? Describe the structure of starch. 10

OR

Describe in detail the structure of Glycosaminoglycans. 10

2. Write short notes on :

- (a) Simple triglycerides 2½
 (b) Acid value of fats 2½
 (c) Lecithins 2½
 (d) Structure of cholesterol. 2½

OR

(e) Describe the classification of lipids. 2½

(f) Describe Saponification value of fat. 2½

(g) Describe unsaturated fatty acids. 2½

(h) Describe the structure of gangliosides. 2½

3. (a) What are isoenzymes ? Explain with a suitable example. 5

(b) Explain the mechanism of metal ion catalysis. 5

OR

(c) Describe the classification of enzymes with suitable example. 5

(d) Explain the models of enzyme action. 5

4. Explain competitive, uncompetitive and noncompetitive Inhibition in detail. 10

OR

Write the various spectrophotometric methods for assay of enzymes. 10

5. Solve any **TEN** of the following :

(i) Draw the structure of fructose. 1

(ii) Name the sugar present in milk. 1

(iii) What are anomers ? 1

(iv) Define iodine value. 1

(v) Write the chemical structure of 9,12 octadecaenoic acid. 1

(vi) Name any one saturated fatty acid. 1

(vii) Define irreversible inhibitors. 1

(viii) Define holoenzyme. 1

(ix) What are allosteric enzymes ? 1

(x) What is Katal ? 1

(xi) What is turnover number ? 1

(xii) What is specific activity ? 1

NKT/KS/17/5105

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Note :— (1) **ALL** questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

1. Write notes on :

- | | |
|-------------------------|---|
| (a) Starch | 5 |
| (b) Sucrose and maltose | 5 |

OR

- | | |
|--------------------------------------|---|
| (c) Glycogen | 5 |
| (d) Classification of carbohydrates. | 5 |

2. What are triglycerides ? Describe the classification of triglycerides in detail. 10

OR

Describe glycerophospholipids and sphingolipids in detail. 10

- | | |
|---|----|
| 3. (a) Describe the Lock and Key model of enzyme specificity. | 2½ |
| (b) Describe any one multienzyme complex. | 2½ |
| (c) Explain the terms cofactors and co-enzymes. | 2½ |
| (d) What are zymogens ? Explain with suitable examples. | 2½ |

OR

- | | |
|--|----|
| (e) Describe allosteric enzyme. | 2½ |
| (f) Write a note on induced-fit model of enzyme specificity. | 2½ |
| (g) Describe the structure and function of LDH. | 2½ |
| (h) Describe the mechanism of metal ion catalysis. | 2½ |

4. Derive the Michaelis-Menten equation. How is it transformed into Lineweaver-Burke equation ? 10

OR

What is enzyme inhibition ? Describe reversible inhibition along with their LB plots. 10

5. Solve any *ten* of the following :

- (i) What is a reducing sugar ? 1
- (ii) Write the structural formula of α -D-Glucopyranose. 1
- (iii) Give one example of heteropolysaccharide. 1
- (iv) What are waxes ? 1
- (v) Define saponification value. 1
- (vi) What are steroids ? 1
- (vii) What is turnover number ? 1
- (viii) Define allosteric site. 1
- (ix) What is meant by single reciprocal plot ? 1
- (x) What is a holoenzyme ? 1
- (xi) What is Katal ? 1
- (xii) Give an example of irreversible enzyme inhibition. 1