TDC (CBCS) Odd Semester Exam., 2019

BIOTECHNOLOGY

(1st Semester)

Course No. : BTCHCC–101T

(Biochemistry and Metabolism)

Full Marks : 50
Pass Marks : 20

Time : 3 hours

The figures in the margin indicate full marks for the questions

UNIT—I

1. Answer any *two* questions from the following : 2×2=4

(a) What is primary protein structure? Give examples.

(b) What do you mean by essential and non-essential amino acids?

(c) Give one example of fibrous and globular proteins each.

2. *(a)* Discuss chemical properties of amino acids. Name one acidic amino acid. 5+1=6

Or

(b) Discuss the different steps involved in purification of protein. 6

UNIT—II

3. Answer any *two* questions from the following : 2×2=4

(a) What is glycoprotein? Write its function.

(b) Give the chemical structure of one monosaccharide and one disaccharide.

(c) Differentiate between glucose and fructose in terms of chemical structure.

4. *(a)* Classify different types of carbohydrates with their chemical structures and functions. 6

Or

(b) Discuss one biological function of the following along with their chemical structures : 6

(i) Starch

(ii) Lactose

(iii) Sucrose

UNIT—III

5. Answer any *two* questions from the following : 2×2=4

(a) What is glycolipid? Give its function.

(b) What do you mean by denaturation of DNA?

(c) What do you mean by essential fatty acids? Give examples.

6. *(a)* State the functions of DNA. Give a comparative account on A-, B- and Z-DNA. 2+4=6

Or

(b) Write short notes on the following : 2×3=6

(i) Phospholipids

(ii) Sphingolipids

(iii) Nucleotides

UNIT—IV

7. Answer any *two* questions from the following : 2×2=4

(a) What do you mean by cofactors? Give example.

(b) Differentiate between holoenzyme and appoenzyme.

(c) What are metalloenzymes? Give examples.

8. *(a)* State the biological role of the following : 2×3=6

(i) FMN

(ii) Coenzyme A

(iii) NAD^+

Or

(b) What do you mean by transition state? Add a note on enzyme-substrate reactions with suitable models. 2+4=6

UNIT—V

9. Answer any *two* questions from the following : 2×2=4

(a) Differentiate between aerobic and anaerobic respiration with examples.

(b) What is gluconeogenesis? When does it occur?

(c) What is the fate of pyruvic acid and $NADPH_2$ produced during glycolysis?

10. *(a)* Write the reactions of pentose phosphate pathways. Add a note on its significance. 4+2=6

Or

(b) Describe the mechanism of mitochondrial electron transport chain. Why is it known as a coupled process? 4+2=6

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