TDC (CBCS) Odd Semester Exam., 2020
held in March, 2021

BOTANY

(1st Semester)

Course No. : BOTHCC–102T

(Biomolecules and Cell Biology)

Full Marks : 50
Pass Marks : 20

Time : 3 hours

The figures in the margin indicate full marks for the questions

SECTION—A

1. Answer any *ten* of the following questions : 2×10=20

(a) What is buffer? Give two examples.

(b) What do you mean by saturated and unsaturated fatty acids? Give example of each type.

(c) Give examples of one aromatic and one aliphatic amino acid with their structures.

(d) How many nucleotides are found in per turn in *B* and *Z* types of DNA?

(e) What do you mean by redox reaction? Give one example.

(f) What do you mean by activation energy and enzyme active site?

(g) Write the second law of thermodynamics.

(h) Differentiate between apoenzyme and holoenzyme with examples.

(i) Who proposed fluid mosaic model of plasma membrane and in which year?

(j) What is phagocytosis? Give example.

(k) Write the role of amino acids in formation of proteins.

(l) Differentiate between active and passive transports with examples.

(m) What is F_1 particle? What is its function?

(n) What do you mean by nucleosome?

(o) What do you mean by SER and RER?

(p) What is thylakoid? Write its function.

(Continued)

(q) What is CDK protein? Write its role in control of cell cycle.

(r) Write two characteristic features of metaphase stage of mitosis.

(s) What is interphase? Write its function.

(t) Name the organelle responsible for spindle fibre formation. In which stage of mitosis it appears?

SECTION—B

Answer *any* **five** questions

2. (a) Write the chemical properties of water. 3

(b) Write the importance of biological buffer. 3

3. What is polypeptide? Discuss the different structural forms of proteins with examples. 1+5=6

4. Define free energy. Differentiate between endergonic and exergonic reactions. Write the role of ATP as energy currency. 1+3+2=6

5. Write notes on the following : 3+3=6

(a) Co-enzymes

(b) Michaelis-Menten equation

(Turn Over)

6. *(a)* "Cell is a structural and functional unit of life." Explain with example. 3

(b) Add a note on endosymbiotic theory. 3

7. Differentiate between active and passive transports. Discuss the process of active transport with example. 2+4=6

8. With neat diagram, describe the structure of mitochondria. Why is mitochondria considered as powerhouse of the cell? 5+1=6

9. Write notes on the following : 3+3=6

(a) Peroxisome

(b) Golgi apparatus

10. Where do mitosis and meiosis cell divisions take place? Discuss the steps of mitotic cell division with neat diagrams. 1+5=6

11. What do you mean by cell cycle? Write about the different steps of cell cycle with suitable model. 1+5=6

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