

B.Sc. 2nd Semester (Honours) Examination, 2023 (CBCS)

Subject : Zoology

Course : CC-IV

(Cell Biology)

Time: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.
Candidates are required to give their answers in their
own words as far as applicable.*

Group-A

1. Answer any five questions of the following: 2×5=10

- (a) Why is the cholesterol necessary for maintaining membrane fluidity?
- (b) Where are the desmosomes located? State its function.
- (c) What is substrate level phosphorylation? Cite an example.
- (d) Why is the TCA cycle considered as central pathway in energy metabolism of a cell?
- (e) Differentiate between apoptosis and necrosis.
- (f) What do you mean by second messenger?
- (g) State the significance of MPF in cell cycle regulation.
- (h) Differentiate between euchromatin and heterochromatin.

Group-B

2. Answer any two questions of the following: 5×2=10

- (a) Elaborate the four basic mechanisms of solute transport across biological membranes with proper diagram.
- (b) Describe the process of organelle turnover by lysosome with proper sketch. 1+4
- (c) Briefly discuss the basic structure of nucleosome with proper diagram.
- (d) Contrast kinesin and dynein proteins. Why is the myosin motor proteins family called mechanoenzymes? 3+2

Group-C

3. Answer *any two* questions of the following: 10×2=20
- (a) What is oxidative phosphorylation? Describe the mitochondrial respiratory chain with proper diagram. 2+(2+6)
 - (b) What is meant by cAMP? Describe the GPCR cell signalling system with a suitable diagram. 2+(2+6)
 - (c) Differentiate between tumor-suppressor gene and oncogene. Name one tumor-suppressor gene and explain how it triggers cancer with diagram. 2+(1+7)
 - (d) Why is collagen considered as the most abundant protein present in human body? Explain its structure with a schematic diagram. State the process of disintegration of nuclear lamina during mitosis. (2+6)+2
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