

U.G. 2nd Semester Examination - 2023**ZOOLOGY****[HONOURS]****Course Code : ZOOL-H-CC-T-04****(Cell Biology)****Full Marks : 40****Time : 2½ Hours***The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.***1. Answer any five questions:****2×5=10**

- i) What are vSNARE and tSNARE?
- ii) Differentiate between apoptosis and necrosis.
- iii) What do you mean by semi-autonomous nature of mitochondria?
- iv) Distinguish between tight junction and gap junction.
- v) What do you mean by receptor mediated endocytosis?
- vi) State the role of ATP in membrane transport.
- vii) What is clathrin?
- viii) What are CRE and CREB?

[Turn over]

2. Answer any two questions of the following:

$$5 \times 2 = 10$$

- i) Distinguish between Heterochromatin and Euchromatin. What do you mean by 'beads on a string' structure of chromatin? $2+3=5$
- ii) What is G-protein? What are the sub-units of G-protein? How does G-protein act as molecular switch in cellular signalling? $1+1+3=5$
- iii) Write a note on 'chemi-osmotic hypothesis'. What is ATP synthase? $4+1=5$
- iv) What is 'Signal hypothesis' in relation to protein sorting? What are translocon and Chaperones? $3+2=5$

3. Answer any two questions of the following:

$$10 \times 2 = 20$$

- i) Describe the ultrastructure, types and functions of endoplasmic reticulum. $4+2+4=10$
- ii) Define cell cycle. What are the phases of cell cycle? What do you mean by check points in cell cycle? Discuss the process of regulation of cell cycle by CDK and Cyclin. $1+3+2+4=10$

- iii) Define cancer. Distinguish between Carcinoma and Sarcoma. How do you differentiate between normal cell and Cancer cell? What are the processes of transformation of Proto-oncogenes into Oncogenes? What do you mean by Philadelphia chromosome?

$$1+2+2+3+2=10$$

- iv) Why NO is important in cell signalling? What are growth factors and eicosanoids? What do you mean by second messengers in cell signalling? How does second messengers amplify cellular signalling? What do you mean by JAK/STAT pathway of cellular signal transduction? $2+2+2+2+2=10$