

BANKURA UNIVERSITY
Undergraduate End Semester -II Examination of the A.Y. 2021 - 22
ZOOLOGY

Course ID: 22612

Course Code: SH/ZOOH/202/C-4

Course Title: Cell-Biology

Full Marks: 25

Time: 1Hr 15 mins

The figures in the right hand side margin indicate marks. Candidates are required to give their answers in their own words as far as practicable.

Answer all the questions.

1. Answer any five questions:

1 x 5 = 5

- a) Mention the role of flippases and floppases in the formation of membrane asymmetry.
- b) 'Claudin and occludin provide tight control over paracellular diffusion within an epithelium' - explain the statement.
- c) Define Mitchell's chemiosmotic hypothesis.
- d) Mention the role of signal peptide in most newly synthesized proteins that are destined toward the secretory pathway.
- e) Distinguish between constitutive and facultative heterochromatin.
- f) 'Mutant p53 can have a dominant negative effect over wild-type p53' - Justify the statement.
- g) Mention the role of BH4 domain in apoptosis.
- h) State the role of Maturation promoting factor (MPF) in a cell cycle.

2. Answer any two questions:

5 x 2 = 10

- a) With the help of a suitable diagram, explain the mechanisms of vesicular transport. 5
- b) "Chromosomal DNA is packaged inside microscopic nuclei with the help of histones." - explain the statement. 5
- c) With the help of a suitable diagram, explain the molecular basis of Treadmilling in cytoskeletal filaments. 5
- d) "Mitochondria are semi-autonomous." - Justify the statement. 5

3. Answer any one question :

10 x 1 = 10

- a) What is an apoptosome? 'P53 plays a crucial role in supporting DNA repair by arresting the cell cycle' - Explain the statement. Explain the role of cAMP as second messenger in GPCR pathway. 2+5+3 =10
- b) The retinoblastoma protein is an inhibitor of cell cycle progression from the G1 to the S phase of the cell cycle.' - Justify the statement. With the help of a suitable diagram, explain how does Adenomatous polyposis coli (APC) mutation may lead to colon and rectal cancers. Briefly describe different components of Extra cellular matrix.

3+3+4=10