

**VIT**
Vellore Institute of Technology**Final Assessment Test – May 2024**

Course: TBIT103L - Cell Biology

Class NBR(s): 4815 / 4835

Time: Three Hours

Slot: B1+TB1

Max. Marks: 100

- KEEPING MOBILE PHONE/ELECTRONIC DEVICES EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE
- DON'T WRITE ANYTHING ON THE QUESTION PAPER

General Instructions:

- (i) Draw neat diagram wherever necessary
- (ii) Read the questions and answer accordingly

Answer any TEN Questions**(10 X 10 = 100 Marks)**

1. Explain the significance of bacterial arrangements and give examples of bacteria exhibiting each arrangement with neat diagram.
2. Summarize the basic components, functions, advantages, and limitations of a light microscope, as well as how to prepare a specimen for viewing under a light microscope.
3. a) Sketch the structure of the nucleus and nuclear membrane and its significance in regulating nuclear activities.
b) What are vesicles, and what roles do they play in intracellular transport and communication?
4. Distinguish the three systems of cytoskeleton filaments present in eukaryotic cells in terms of composition, function and structure.
5. Compare and contrast the Unit Membrane Theory with Micellar, Lamellar Theory and the Fluid Mosaic Model with appropriate examples.
6. Elaborate the structure and function of chloroplasts, including the arrangement of thylakoid membranes and stroma.
7. Describe the stages of meiosis I and meiosis II, including the key events that occur in each stage.
8. Demonstrate ploidy conditions in organisms in terms of their chromosome numbers and genetic composition.
9. Analyze the general structure of a GPCR and the mechanism of signal transduction initiated by GPCRs upon ligand binding.
10. Interpret the role of cAMP in glucose metabolism, including its regulation of glycogen breakdown and gluconeogenesis.
11. Explain the concept of checkpoints in the cell cycle and their role in monitoring DNA integrity and cellular conditions.
12. Outline the intrinsic and extrinsic pathways of apoptosis with illustrations.

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