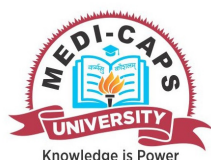


Total No. of Questions: 6

Total No. of Printed Pages: 2



**Enrollment No.....**  
**Faculty of Science**  
**End Sem Examination Dec-2023**  
**BT3CO02 Cell Biology**

Programme: B.Sc.

Branch/Specialisation: Biotechnology

**Duration: 3 Hrs.**

**Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

- Q.1 i. In the plasma membrane, lipid molecules are arranged in- **1**  
(a) Head parallel (b) Alternate (c) Scattered (d) Series
- ii. Which of the following is energy independent? **1**  
(a) Active transport (b) Primary active transport  
(c) Secondary active transport (d) Passive transport
- iii. What are flagella and cilia of eukaryotic cells made of- **1**  
(a) Tubulin (b) Desmin (c) Lamin (d) Keratin
- iv. Endoplasmic reticulum membrane which is associated with ribosomes **1**  
is called \_\_\_\_\_.  
(a) ER lumen  
(b) Smooth endoplasmic reticulum  
(c) Rough endoplasmic reticulum  
(d) Endosome
- v. Protein sorting and secretion is the function of \_\_\_\_\_. **1**  
(a) Lysome (b) Ribosome (c) Golgi bodies (d) Vacuoles
- vi. Ribosomes are the sites of \_\_\_\_\_. **1**  
(a) Protein synthesis (b) Fat synthesis  
(c) Photosynthesis (d) Respiration
- vii. Nucleolus is the place for the synthesis of \_\_\_\_\_. **1**  
(a) rRNA (b) Enzymes (c) Protein (d) None of these
- viii. In plant cell, which of the following contains their own DNA? **1**  
(a) Vacuole and endoplasmic reticulum  
(b) Golgi body and ribosome  
(c) Mitochondria and chloroplast  
(d) Vacuole and Golgi body

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- ix. Which type of CAM is best known for presenting foreign particles to immune cells? **1**  
(a) Immunoglobulin superfamily (b) Cadherin  
(c) Selectin (d) Integrin
- x. Which is a form of cell division that results in the creation of gametes or sex cells? **1**  
(a) Mitosis (b) Meiosis (c) Miosis (d) All of these
- Q.2 i. Define cell theory. **2**  
ii. State the functions of cell membrane. **3**  
iii. Draw a well-labelled diagram of prokaryotic cells and state functions of any three components. **5**
- OR iv. Discuss active and passive transport. **5**
- Q.3 i. What is membrane vacuolar system? Elaborate on any three types of vacuoles. **4**  
ii. Write short note on any two cytoskeletons. **6**
- OR iii. Explain the structure, types and functions of endoplasmic reticulum. **6**
- Q.4 i. How do ribosomes differ in prokaryotic and eukaryotic cells in terms of structure and function? **3**  
ii. What are the key components of the Golgi apparatus? How do they contribute to its functions? **7**
- OR iii. "Lysosomes are the suicidal bags of the cell." Justify the statement. **7**
- Q.5 Attempt any two: **5**  
i. How are mitochondria involved in cellular processes beyond energy production? **5**  
ii. What is extra nuclear organelle? Explain any one of them in detail. **5**  
iii. Illustrate the structure of nucleus and add a note on its functions. **5**
- Q.6 i. Provide diagrammatic representation of mitosis and meiosis and name its phases. **4**  
ii. How do cell adhesion molecules contribute to the binding and interaction between cells and their extracellular environment? **6**
- OR iii. How is the cell cycle regulated? What are the key checkpoints that ensure the accurate progression of the cell cycle? **6**

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P.T.O.

# Scheme of Marking



Faculty of Science

End Sem Examination Dec-2023

Cell Biology (T) - BT3CO02 (T)

Programme: B.Sc.

Branch/Specialisation:

**Note: The Paper Setter should provide the answer wise splitting of the marks in the scheme below.**

Q.1	i)	In the plasma membrane, lipid molecules are arranged in	1
		a) Head parallel	
	ii)	Which of the following is energy independent?	1
		d) Passive transport	
	iii)	What are flagella and cilia of eukaryotic cells made of?	1
		a) Tubulin	
	iv)	Endoplasmic reticulum membrane which is associated with ribosomes is called	1
		c) Rough endoplasmic reticulum	
	v)	Protein sorting and secretion is the function of ____.	1
		(c) Golgi bodies	
Q.2	vi)	Ribosome are the sites of	1
		a) Protein Synthesis	
	vii)	Nucleolus is the place for the synthesis of	1
		a) rRNA	
	viii)	In plant cell, which of the following contains their own DNA?	1
		c) Mitochondria and chloroplast	
	ix)	Which type of CAM is best known for presenting foreign particles to immune cells?	1
		a) Immunoglobulin superfamily	
	x)	Which is a form of cell division which results in the creation of gametes or sex cells?	1
		b) Meiosis	
Q.2	i.	Define cell theory?	2
		Definition	-2
	ii.	State functions of cell membrane	3
		Diagram	-0.5
		6 Functions	-2.5
	iii.	Draw a well-labelled diagram of prokaryotic cells and state functions of any 3 components	5
		Diagram	-2

OR	iv.	3 Function (one of each component)	-3	5
		Discuss active and passive transport		
		Definition of Active transport	-1	
		Types of active transport	-1	
		Example	-0.5	
		Definition of Passive transport	-1	
OR	iii.	Types of active transport	-1	6
		Example	-0.5	
		What is membrane vacuolar system and elaborate any 3 types of Vacuoles		
		Definition	-1	
		Explanation of each three types	-3	
		Write short note on any two cytoskeletons		
Q.3	ii.	Cytoskeleton definition	-1	6
		Explanation of each two types	-4	
		Diagram if any	-1	
		Explain structure and function of Endoplasmic reticulum in detail		
		Structure	-2	
		Any 4 Function	-4	
Q.4	i.	How do ribosomes differ between prokaryotic and eukaryotic cells in terms of structure and function?		7
		Any 6 difference	-3	
		What are the key components of the Golgi apparatus, and how do they contribute to its functions?		
		Components	-3	
		Any 4 Function	-4	
		“Lysosomes are the suicidal bags of the cell” Justify the statement		
OR	iii.	Lysosome’s structure	-1	7
		Enzymes present	-1	
		Diagram	-1	
		Justification/ reason	-4	
		How are mitochondria involved in cellular processes beyond energy production?		
		Labelled Mitochondrial structure	2	
Q.5	i.	Any 6 Function	3	5
		What is extra nuclear organelle? Explain any <b>ONE</b> of them in detail		
		Definition	-1	
		Explanation of extra nuclear organelle	-3	
		Well labelled Diagram	-1	

[2]

[3]

- OR iii. Illustrate the structure of the nucleus and add notes on its functions. **5**
- |            |   |
|------------|---|
| Diagram    | 2 |
| 5 Function | 3 |

Q.6

- i. Provide diagrammatic representation of Mitosis and meiosis and name its phases **4**
- |  |      |
|--|------|
| Diagrammatic representation of mitosis | -1.5 |
| Diagrammatic representation of mitosis | -1.5 |
| Name of phase                          | -1   |
- ii. How do cell adhesion molecules contribute to the binding and interaction between cells and their extracellular environment? **6**
- |             |    |
|-------------|----|
| Definition  | -1 |
| Types       | -1 |
| Diagram     | -1 |
| Explanation | -3 |
- OR iii. How is the cell cycle regulated, and what are the key checkpoints that ensure the accurate progression of the cell cycle? **6**
- |   |    |
|---|----|
| Definition and importance of cell cycle | -1 |
| Diagram                                 | -1 |
| Explanation                             | -3 |
| Checkpoints                             | -1 |

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