Reg. No															

B.Tech. DEGREE EXAMINATION, JUNE 2023

Third Semester

18BTC102J - CELL BIOLOGY

(For the candidates admitted during the academic year 2018-2019 to 2021-2022)

Note:

i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40 minutes.
ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours **Max. Marks: 100**

Part - A (20 × 1 Marks = 20 Marks)
Answer **All** Questions

		Marks	BL	CO
1.	Lysosomes are produced by (A) Vacuoles (B) Golgi apparatus (C) Mitochondria (D) Nucleus	1	1	1
2.	Which of these is NOT part of the endomembrane system of the cell? (A) mitochondria (B) endoplasmic reticulum (C) lysosomes (D) Golgi apparatus	1	2	1
3.	Prokaryotes are characterized by all of the following structures EXCEPT (A) Mitochondria (B) Mesosomes (C) Nucleiod (D) Inclusion bodies	1	2	1
4.	Identify the non membranous organelle from the following (A) Endoplasmic reticulum (B) Ribosome (C) Mitochondria (D) Nucleus	1	2	1
5.	Cell junctions that prevent small molecules from passing in between two animal cells are called (A) gap junctions (B) tight junctions (C) adherens junctions (D) plasmodesmata	1	2	2
6.	Cell-cell interactions through adhesion between two different cells are mediated by this class of transmembrane proteins in process such as inflammation are (A) Sphingomyelin (B) Cholesterol (C) Glycolipid (D) Selectin	1	1	2
7.	Crossovers between homologous chromatids occur in meiosis and can be visualized in structures known as (A) Homologous chromosomes (B) Chaismata (C) Heterologous chromosomes (D) Centrosome	1	1	2
8.	Cilia and flagella of eukaryotic cells are made up of (A) Keratin (B) desmin (C) Lamin (D) Tubulin	1	1	2
9.	Which of the actin-binding proteins are involved in parallel and contractile actin bundles? (A) Troponin-C and Troponin -T (B) α-actinin and fimbrin (C) Titin and Nebulin (D) actin and myosin	1	1	3
10.	This phospholipid is a quantitatively minor membrane component, it plays an important role in cell signaling and it is (A) Phosphotidylcholine (B) Sphingomyelin (C) Phosphotidylinositol (D) Cholesterol	1	1	3

11.	The signaling molecules are secreted by specialized cells and carried through the circulation to act on target cells at distant body sites and it is called (A) Autocrine (B) Paracrine (C) Endocrine (D) Autocrine	1	1	3
12.	Transmembrane proteins that facilitate binding of cells to extracellular matrix through focal adhesions are (A) Desmoplakin (B) Cadherins (C) Integrins (D) Vinculins	1	2	3
13.	The extracellular concentration of the following ions is more than inside: (A) Na+, Cl^-, Ca2+ (B) K+, Cl^-, H+ (C) Na+, K+, Ca2+ (D) K+, H+, Cl^-	1	2	4
14.	Cells are dependent on appropriate growth factors and if not available at this _____ in cell cycle, the cells return to quiescent state (A) G2 Checkpoint (B) Restriction point (C) M Checkpoint (D) G1 Checkpoint	1	1	4
15.	Which of the following does not belong to MAP Kinase pathway? (A) CREB (B) ERK (C) Ras (D) Raf	1	2	4
16.	Which type of dementia is treatable? (A) Normal pressure hydrocephalus (B) Pick's disease (C) subfrontal meningioma (D) Parkinson's disease	1	1	4
17.	Identify the anti-apoptotic gene. (A) Bad (B) Bax (C) Bid (D) Bcl2	1	2	5
18.	Cancer is due to (A) rupturing of the cells (B) uncontrolled mitosis (C) uncontrolled meiosis (D) loss of immunity of the cells	1	1	5
19.	Which of the following is used for in the intervention of Alzheimer's disease? (A) Hormone blocking therapy (B) Choline esterase inhibitors (C) Salicylic acid (D) Aromatase inhibitors	1	2	5
20.	Which microscope can be used for studying cellular localization? (A) Differential interface contrast (B) Fluorescence (C) Phase contrast (D) Bright field	1	1	5

		Marks	BL	CO
	Part - B (5 × 4 Marks = 20 Marks) Answer **any 5** Questions			
21.	Compare and contrast between plant and animal cells with respect to the structure.	4	3	1
22.	Write short notes on the direct cell communication between plant cells.	4	1	2
23.	Highlight the importance of therapeutic cloning using stem cells.	4	1	3
24.	Distinguish between apoptosis and necrosis.	4	3	4
25.	What is tau hypothesis?	4	1	5
26.	What are the types of breast cancer?	4	2	5
27.	Which phase of Meiosis has unique cell division that occurs only in germ cells? Justify.	4	3	4

		Marks	BL	CO
	Part - C (5 × 12 Marks = 60 Marks) Answer **All** Questions			
28.	a. Explain in detail on the eukaryotes that can be used in experimental science.	12	2	1
	(OR)			
	b. Describe in detail on the factors affecting enzyme activity.			
29.	a. Elaborate on the protein folding and processing in endoplasmic reticulum.	12	3	2
	(OR)			
	b. Explicate the structure and function of Mitochondria.			
30.	a. Explain the role of actin and myosin in muscle contraction.	12	2	2
	(OR)			
	b. Describe on the various phases of cell cycle.			
31.	a. Elaborate on the various phases of mitosis in animal cells.	12	2	4
	(OR)			
	b. Delineate the intrinsic pathway of apoptosis.			
32.	a. Write in detail on the pathogenesis and treatment of any one epithelial cell cancer.	12	1	5
	(OR)			
	b. Write an essay on any one neurodegenerative disease along with its treatment.			

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