Reg. No.															

B.Tech. DEGREE EXAMINATION, DECEMBER 2023

Third and Fourth Semester

18BTB101T – BIOLOGY

(For the candidates admitted from the academic year 2020-2021 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 40th minute.

(ii) **Part - B & Part - C** should be answered in answer booklet.

Time: 3 hours | Max. Marks: 100

PART – A (20 × 1 = 20 Marks)

Answer **ALL** Questions

	Marks	BL	CO	PO
1. Cell wall of bacteria is made of (A) Glucose (B) Peptidoglycan (C) Peptidoglucan (D) Peptide	1	2	1	1
2. Golgi bodies receive protein to be transported in _____end. (A) CIS (B) Trans (C) CIS and Trans (D) On the side ways	1	2	1	1
3. Which of the following amino acids can be synthesized by human body. (A) Glycine and leucine (B) Alanine and valine (C) Serine and lysine (D) Serine and alanine	1	2	1	1
4. DNA and RNA components differ in (A) Sugar and position of phosphate group (B) Sugar and bases (C) Bases and position of phosphate group (D) Position of bases	1	2	1	1
5. In covalent bonds, which of the following statement is TRUE (A) Only one pair of electrons are shared (B) The participating atoms are on same charges (C) The participating atoms are in rigid manner (D) No sharing of electrons	1	2	2	1
6. Transcription of prokaryotic cell DNA transcribe into (A) RNA (B) mRNA (C) Pre-mRNA (D) Another DNA	1	2	2	1
7. Which one of the following has double carbon nitrogen ring (A) Cytosine (B) Cysteine (C) Adenine (D) Alanine	1	2	2	1
8. In regenerative medicine, which of the following is used to develop different cell types? (A) Fertized egg (B) Embryo (C) Inner cell mass (D) Blastocyst	1	2	2	1

9. Acrosin is a type of 1 2 4 1

(A) Serine protease (B) Acid protease
(C) Protease which has cysteine as active site (D) Protease which works in acid pH

10. β carbonic anhydrase has 1 2 4 1

(A) Two conserved histidine (B) Two conserved serine
(C) Three conserved histidine (D) One conserved histidine

11. Protein involved in tissue remodeling is 1 2 4 1

(A) Collagenase (B) Pepsin
(C) Thrombin (D) Renin

12. In cysteine protease, deprotonation of SH group is achieved by 1 2 4 1

(A) Histidine reside in the catalytic site (B) Mg^{2+} ions in catalytic site
(C) Another cysteine residue in catalytic site (D) No deprotonation occur in cysteine protease

13. Kinesin move from 1 2 5 1

(A) Minus end to the plus end of microtubules (B) Plus end to the minus end of microtubules
(C) Plus end of actin to the minus end of microtubules (D) Minus end of actin to the plus end of microtubules

14. Methanotrophs uses _____ for carbon and energy. 1 2 5 1

(A) Methanol (B) Methylene
(C) Methane (D) CO_2

15. Injecting air below the water table in bioremediation is 1 2 5 1

(A) Bioventing (B) Biosparging
(C) Intrinsic bioremediation (D) Bioaugmentation

16. Action potentials in neurons denote 1 2 5 1

(A) Rapid changes in voltage across membrane (B) Change in movement of ions across membrane
(C) Change in structure of neuron (D) Change in metabolism of neurons

17. Plasma cells are derived from 1 2 6 1

(A) B cells (B) T cells
(C) T_C cells (D) T_H cells

18. Piezo-electric device detect _____ to calculate the change in the mass of substance. 1 2 6 1

(A) Change in light adsorption (B) Angle at which electrons are emitted
(C) Change in distribution of charges (D) Photon output

19.	The immune cells which are differentiated and stored for later use is (A) Antigen presenting cells (B) Plasma cells (C) Memory cells (D) Basophils	1	2	6	1
20.	Virus infected cells are killed by (A) B cells (B) Cytotoxic T cells (C) Plasma cells (D) T helper cells	1	2	6	1

PART – B (5 × 4 = 20 Marks)

Answer **ANY FIVE** Questions

		Marks	BL	CO	PO
21.	Illustrate the structure of mitochondria.	4	3	1	1
22.	List out the functions of protein in the body.	4	2	1	1
23.	Relate the importance of biodiversity with the environment.	4	3	2	2
24.	Derive metabolic pathway of tryptophan and comment on its importance.	4	4	4	2
25.	Classify the bacterium based on flagellar present in their body.	4	3	4	3
26.	If cells are infected with virus what type of immune defence will occur? Explain.	4	4	6	3
27.	Write down how mathematical analysis can help to develop immunology sciences.	4	2	5	3

PART – C (5 × 12 = 60 Marks)

Answer **ALL** Questions

		Marks	BL	CO	PO
28. a.	How genetic information in stored in nucleus? In what form it is stored? Explain its components.	12	4	1	2
	(OR)				
b.	Draw flow chart depicting the metabolism of carbohydrate, protein and fat.	12	4	1	2
29. a.	Explain the process of protein synthesis with diagrams.	12	3	2	2
	(OR)				
b.	Write in detail about isolation and culturing of stem cells with diagrams.	12	2	2	2
30. a.	How glucose is synthesized in plant cell? Explain the process.	12	4	3	2
	(OR)				
b.	Explain the catalytic mechanism of carbonic anhydrase in respiration of human.	12	3	4	2
31. a.	Bacteria move from one place to other in search of food. Explain the mechanism of bacterial movement.	12	3	5	2
	(OR)				

b.	Describe in detail about how plants can be used in bioremediation.	12	3	3	2
32. a.	Describe in detail about organizational of the nervous system.	12	3	6	2
	(OR)				
b.	Explain how humoral immunity works against pathogens with examples.	12	3	6	2

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