

B.Tech. / M.Tech (Integrated) DEGREE EXAMINATION, JANUARY 2023
First Semester

21BTB103T - BIOLOGY

(For the candidates admitted from the academic year 2022-2023)

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** and **Part - C** should be answered in answer booklet.

Time: 3 Hours

Max. Marks: 75

PART – A (20 × 1 = 20Marks)

Answer ALL Questions

	Marks	BL	CO	PO
1. Cell membrane is	1	2	1	2
(A) Unilaminar				
(B) Bilaminar				
(C) Trilaminar				
(D) Quadrilaminar				
2. Endoplasmic reticulum is absent in	1	2	1	2
(A) Animal cells				
(B) Prokaryotes				
(C) Plant cells				
(D) Fungi				
3. Crossing over occurs in meiosis during	1	2	1	2
(A) Prophase – 1				
(B) Prophase – 2				
(C) Interphase				
(D) Inter kinesis				
4. Undifferentiated cells are called	1	2	1	2
(A) Blood cells				
(B) Stem cells				
(C) Epithelial cells				
(D) Bonemarrow cells				
5. Choose the simplest form of carbohydrates?	1	2	2	2
(A) Carboxyl groups				
(B) Aldehyde and ketone groups				
(C) Alcohol and carboxyl groups				
(D) Hydroxyl and hydrogen groups				
6. Among these, which one is NOT lipid?	1	2	2	2
(A) Fats				
(B) Oils				
(C) Proteins				
(D) Waxes				
7. Proteins are made up of	1	2	2	2
(A) Fat				
(B) Amino acids				
(C) Nucleic acids				
(D) Vitamins				
8. How many amino acids make up a protein?	1	2	2	2
(A) 10				
(B) 20				
(C) 30				
(D) 50				
9. Which pathogenic bacteria is frequently isolated from human infections?	1	2	3	2
(A) <i>E. coli</i>				
(B) <i>Plasmodium sp</i>				
(C) <i>Streptomyces sp</i>				
(D) <i>Bacillus sp</i>				

10. Among these, which virulence factor will NOT help the pathogenic bacteria
 (A) Siderophores (B) Exotoxins
 (C) EPS (D) Pili
11. Which antibiotic used to treat anaphylactic reaction to penicillin?
 (A) Cefuroxime (B) Meropenem
 (C) Erythromycin (D) Ciprofloxacin
12. Which of these conditions, cannot be treated with antibiotics resistance?
 (A) Gonorrhea (B) Multiple
 (C) Meningitis (D) HIV
13. In glucose electrode, glucose oxidase has been coupled to _____ material?
 (A) Ferrocene (B) Urease
 (C) Polyacrylamide (D) Biochips
14. Which of the following biosensors use the movement of electrons produced during redox reactions?
 (A) Amperometric biosensor (B) Potentiometric biosensor
 (C) Piezo-electric biosensor (D) Optical biosensor
15. Which electrolyte involves in the transmitting action potentials in neurons?
 (A) Sodium ion (B) Potassium ion
 (C) Nitrate ion (D) Chloride ion
16. Molecular machines work in the scale of
 (A) Nanometer (B) Micrometer
 (C) Millimeter (D) Picometer
17. Biocompatibility of a material is
 (A) Independent of material (B) Dependent of material
 (C) Dependent of target application (D) Independent of target application
18. Which is NOT an example of biomaterial application in medical devices?
 (A) Bone plates (B) Bone cements
 (C) Bone joints (D) Artificial ligaments
19. Among these which one is NOT consider under compressive strength of scaffold.
 (A) Biomaterial composition (B) Scaffold porosity
 (C) Biopolymer (D) Biomaterial processing
20. For biomedical applications, which property is very important
 (A) Electrical property (B) Hardness/strength
 (C) Cell and tissue compatibility (D) Magnetic property

PART – B (4 × 10 = 40 Marks)

Answer ANY FOUR Questions

Marks BL CO PO

21. Elaborate the structure and functions of the various cell organelles present in animal cells with neat diagram. 10 2 1 2
22. Write a note on monosaccharides and its classifications with examples. 10 2 2 2
23. Elaborate various antibiotics and its applications with examples. 10 2 3 2
24. How does glucose sensor work? Explain with neat sketch. 10 2 4 2
25. Elaborate various classes of biomaterials used in biological applications. 10 2 5 2
26. Write a note on biomaterials used for organ replacement with examples. 10 2 5 2

PART – C (1 × 15 = 15 Marks)

Answer ANY ONE Questions

Marks BL CO PO

27. Explain why there is disagreement among public using embryonic stem cells for medical treatments. 15 2 1 2
28. Doctors are advising to use mask to prevent communicable diseases. Elaborate the various control strategies to prevent such diseases. 15 2 3 2

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