Reg. No.															

19

B.Tech. DEGREE EXAMINATION, NOVEMBER 2019
First / Second Semester

BT1001 – BIOLOGY FOR ENGINEERS
(For the candidates admitted during the academic year 2013 – 2014 and 2014 -2015)

Note:
(i) **Part - A** should be answered in OMR sheet within first 45 minutes and OMR sheet should be handed over to hall invigilator at the end of 45th minute.
(ii) **Part - B** and **Part - C** should be answered in answer booklet.

Time: Three Hours Max. Marks: 100

PART – A (20 × 1 = 20 Marks)
Answer **ALL** Questions

1. Which cell organelle is known as the workhorse of protein biosynthesis?
   (A) Nucleus (B) Ribosomes
   (C) Endoplasmic reticulum (D) Mitochondria

2. What is the number of residues per turn in the protein α helix structure?
   (A) 10 (B) 4
   (C) 3.6 (D) 5

3. Four chromatids of each pair of homologous chromosome form _____.
   (A) Double helix (B) Fibrous structure.
   (C) Bivalent (D) Globular structure

4. Mention the cells which can generate all cell types EXCEPT trophoectoderm.
   (A) Totipotent cells (B) Pluripotent cells
   (C) Multipotent cells (D) Muscle cells

5. Which of the given molecular makes the two layers of the cell membrane?
   (A) Protein (B) Triglycerides
   (C) Carbohydrates (D) Phospholipids

6. Identify the role of AUG codon
   (A) Stop codon (B) Anticodon
   (C) Start codon (D) Inhibitory codon

7. What is the disease due to deficiency in dopamine chemical?
   (A) Parkinson's disease (B) Muscular dystrophy
   (C) Polio (D) Diabetes

8. ____ and _____ subunits make the prokaryotic ribosomes.
   (A) 60S and 40S (B) 40S and 30S
   (C) 20S and 80S (D) 10S and 80S

9. Which is the enzyme having important applications in pulp and paper industry?
   (A) Amylase (B) Xyalanase
   (C) Lipases (D) Proteases

10. What is the cofactor in the carbionic anhydrase enzyme?
    (A) Zn^{2+} (B) Mg^{2+}
    (C) Mn^{2+} (D) Na^{+}

11. Where is the chlorophyll pigment present in the chloroplast?
    (A) Thylakoids (B) Stroma
    (C) Inter membrane space (D) Inner membrane

12. What is the reaction for incorporating carbon atom from atmosphere into living system?
    (A) Glycolysis (B) Electron transport chain
    (C) Calvin cycle (D) Photosynthesis

13. Marine and alkalophilic bacterial species have flagallor motor driven by _____.
    (A) K^{+} ions (B) H^{+} ions
    (C) Na^{+} ions (D) OH^{-} ions

14. Identify the protein that makes thick filaments of muscles.
    (A) Actin (B) Myosin
    (C) Tropomyosin (D) Keratin

15. Biodeterctors are sensors used for _____.
    (A) Measurement of carbohydrates (B) DNA detections
    (C) Environmental pollution (D) Metals

16. What is the type of microorganisms efficient in degradation of explosive?
    (A) Ligninolytic fungi (B) Methylotrophs
    (C) Anerobes (D) Aerobes

17. Which type of glial cells help in myelin sheath synthesis?
    (A) Ependymal cells (B) Microglia
    (C) Oligodendrides (D) Astrocytes

18. What is the life span of a RBC cell?
    (A) 5 days (B) 9 days
    (C) 7 days (D) 120 days

19. The pH of the skin secretions is _____.
    (A) 7.0 (neutral) (B) Less than 7.0 (acidic)
    (C) More than 7.0 (alkaline) (D) 11

20. The process of signaling cells within short distance is known as
    (A) Autocrine signaling (B) Paracrine signaling
    (C) Synaptic signaling (D) Endrocrine signaling

PART – B (5 × 4 = 20 Marks)
Answer **ANY FIVE** Questions

21. Write a short note on endoplasmic reticulum.

22. What is ATP? Mention its role in cellular metabolism.

23. Define Biodiversity. What are the different levels of biodiversity?

24. Explain the enzyme mechanism of nucleoside monophosphate kinase.

25. Where is dynein motor located and what is its function?

26. Draw a neuron and label its parts.

27. A short note on G-protein coupled receptor.

PART – C (5 × 12 = 60 Marks)
Answer **ALL** Questions

28.a. What are proteins? Give a detailed explanation of their structure and importance.

(OR)

b. Elaborate on the germ cell division process.

29.a. Differentiate between DNA and RNA. Explain the structure and functions of three different RNA molecules.

(OR)

b. Discuss the different applications of stem cell technology.

30.a. Describe the factors affecting enzyme activity.

(OR)

b. Explain the light reaction of photosynthesis in detail.

31.a. Elaborate on FOFI-ATP synpthase motor with
    (i) Types of the motor
    (ii) Structure of the motor
    (iii) Working mechanism

(OR)

b. What is bioremediation? Describe the types of bioremediation.

32.a. List the cells of the innate immune system and specify their functions in immune response.

(OR)

b. What are the different cell signaling mechanisms? Describe the role of the cell surface receptors.

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