Reg. No.															

B.Tech. DEGREE EXAMINATION, DECEMBER 2018
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. Ribosomes are also known as
   (A) Power house (B) Store house
   (C) Protein factory (D) Suicidal bag

2. Two nucleotides are linked by ____ bond.
   (A) Phospho diester bond (B) Disulphide bond
   (C) Peptide bond (D) Hydrogen bond

3. The cells produced at the end of second meiotic division are
   (A) Triploids (B) Diploids
   (C) Tetraploids (D) Haploids

4. Release of parathyroid hormone due to low calcium level is a type of
   (A) Intrinsic homeostatic control (B) Extrinsic homeostatic control
   (C) Carbohydrate metabolism (D) Fatty acid metabolism

5. _____ is a disaccharide.
   (A) Lactose (B) Fructose
   (C) Galactose (D) Cellulose

6. Triplet codons are carried in
   (A) tRNA (B) mRNA
   (C) rRNA (D) DNA

7. Inner cell mass in blastocyst stage is approximately made of __ cells.
   (A) 10 (B) 100
   (C) 50 (D) 30

8. Which one of the following is used as a delivery vehicles in gene therapy?
   (A) Fungi (B) Algae
   (C) Bacteria (D) Virus

9. Small organic molecules used as cofactors are called
   (A) Enhancers (B) Coenzymes
   (C) Ribozyme (D) Lactase

10. Which one of the following is essential for restriction enzyme catalysis?
    (A) Mg^{2+} (B) Cl^{2+}
    (C) Mn^{2+} (D) Zn^{2+}

11. Photosynthetic pigments in chloroplast are embedded in ____ membrane.
    (A) Thylakoid (B) Cristae
    (C) Matrix (D) Nuclear

12. The minimum energy required to initiate a chemical reaction is
    (A) Free energy (B) Heat
    (C) Activation energy (D) Enthalpy

13. What is the number of photons utilized to reduce 6 molecules of CO_2 to one glucose molecule?
    (A) 50 (B) 48
    (C) 68 (D) 60

14. F1 portion of ATP synthase consist of _____ catalytic sites.
    (A) 4 (B) 5
    (C) 3 (D) 7

15. Which of the following is a type of Ex-situ bioremediation?
    (A) Biopiles (B) Bioventing
    (C) Bioaugmentation (D) Biosparging

16. What is the type of electrode used in glucose biosensor?
    (A) Copper (B) Iron
    (C) Platinum (D) Silver

17. The thick filaments of skeletal muscles are made of ____ protein.
    (A) Actin (B) Troponin
    (C) Tropomyosin (D) Myosin

18. Glial cells that produce immune molecules are
    (A) Astrocytes (B) Ependymal cells
    (C) Microglial cells (D) Oligodendrocytes

19. Euphoria is
    (A) Muscle rigidity (B) Pain relief
    (C) Thinking disorder (D) Feeling of extreme joy

20. The antibody which can cross placental barrier.
    (A) Ig G (B) Ig M
    (C) Ig E (D) Ig D

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

21. How are the living organisms classified? Explain with their characteristics features.

22. Explain the factors that are regulated by homeostasis.

23. What are the levels of biodiversity? Discuss.

24. Write a short notes on the catalytic mechanism of carbionic anhydrase enzyme.

25. How are biosensors used to detect pollution? Explain.

26. What are the diseases of the nervous system?

27. Write a note on the intercellular signaling mechanism in animals.

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

28. a. Describe the structure and function of the different cell organelles present in an animal cells.

(OR)

b. Explain the different phases of the mitotic division, with neat diagram.

29. a. Define: Protein synthesis. Explain transcription and translation process.

(OR)

b. What are the unique properties of stem cells? How are they used in regenerative medicine and gene therapy?

30. a. Elaborate the factors affecting the catalytic activity of the enzymes.

(OR)

b. Explain the stages of Calvin cycle in detail.

31. a. What are molecular machines? Write in detail about the working mechanism of the linear motors.

(OR)

b. Describe on the types of bioremediation.

32. a. Write an essay on the organization of nervous system.

(OR)

b. Define: Acquired immunity. Explain in detail the cell mediated immune response.

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