Reg. No.															

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

(12)

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. Smooth endoplasmic reticulum is the site of
   (A) Protein synthesis (B) Carbohydrate synthesis
   (C) Amino acid synthesis (D) Lipid synthesis

2. The membrane around the vacuole is called
   (A) Cytoplast (B) Tonoplast
   (C) Amyloplast (D) Elaioplast

3. Microfilaments are composed mainly of a protein called
   (A) Actin (B) Tubulin
   (C) Myosin (D) Chitin

4. Cell theory was proposed by
   (A) Beadle and Tatum (B) Robert Hooke
   (C) Schleiden and Schwann (D) Leeuwenhoek

5. Which one of the following, groups all are polysaccharides?
   (A) Sucrose, glucose and fructose (B) Maltose, lactose and fructose
   (C) Glycogen, sucrose and maltose (D) Glycogen, cellulose and starch

6. Which purine base is focused in RNA?
   (A) Thymine (B) Uracil
   (C) Cytosine (D) Guanine

7. Lipids are insoluble in water because lipid molecules are
   (A) Hydrophilic (B) Neutral
   (C) Zwitter ions (D) Hydrophobic

8. Which of the following is not a requirement for protein synthesis?
   (A) Ribosomes (B) Peptidyl transferase
   (C) Spliceosome (D) Amino acyl-tRNA synthetase

9. "Lock and bey" theory of enzymes action was proposed by
   (A) Fischer (B) Koshland
   (C) Kuhne (D) Arrhenius

10. The conversion of CO2 and H2O into carbonic acid during the formation of aqueous humour is catalyzed by which one of the following enzyme?
    (A) Carboxylase (B) Carbamylase
    (C) Carbonic anhydrase (D) Carbonic deoxygenase

11. Minimum energy required for starting reactor is called
    (A) Enzymatic energy (B) Catalysis energy
    (C) Solvent energy (D) Activation energy

12. Light is necessary is the process of photosynthesis to
    (A) Split carbon dioxide (B) Produce ATP and a reducing substance
    (C) Release energy (D) Combine carbon dioxide and water

13. Cilia and flagella of eukaryotic cells are made up of
    (A) Keratin (B) Tubulin
    (C) Lamin (D) Desmin

14. Microfilaments are made up of
    (A) Actin (B) Tubulin and actin
    (C) Desmin (D) Vimeaten

15. Landfills are generally places where
    (A) Microbes successfully breakdown the major of trash produced (B) Composting occurs as there is plenty of water and oxygen
    (C) Castoff materials find a final burial ground (D) Biodegradation readitly occurs

16. The biological response of the biosensor is determined by
    (A) Biocatalytic membrane (B) Physiochemical membrane
    (C) Chemical membrane (D) Artificial membrane

17. Alzheimer's disease in humans in associated with the deficiency of
    (A) Dopamine (B) Glutamic acid
    (C) Acetylcholine (D) Gamma amino butyric acid

18. Which of the following is the structural unit of the nervous system?
    (A) Alveoli (B) Nephron
    (C) Neuron (D) Leukocyte

19. Macrophages are derived from
    (A) Neutrophils (B) Lymphocytes
    (C) Monocytes (D) Basophils

20. Paracrine signaling is involved in which of the following?
    (A) Hormonal communication (B) Chemical signals that can only travel limited distances between cells and synaptic transmission
    (C) Auto stimulation of a cell (D) Enzymatic communication

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

21. Write the characteristic features of the five kingdoms. Give example of organisms under each kingdom.

22. Explain the structure and functions of chloroplast.

23. Write the difference between saturated and unsaturated fatty acids.

24. What are the factors affecting the rate of photosynthesis?

25. What is biological energy cycle? Explain cellular respiration.

26. Write on difference between rotary motors and linear motors.

27. Write the cellular components of blood and their specific functions.

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

28. a. Describe in detail about the structure and functions of the cellular organelles present in a plant cell with suitable diagrams.

(OR)

b. Explain in detail about the structure of protein at different levels of organization with suitable diagrams.

29. a. Explain the double helical structure of DNA proposed by Watson and Crick.

(OR)

b. Explain in detail about the culture of embryonic stem cells. Write the applications stem cells.

30. a. Explain in detail about the mechanism of action of protease. Write the protease applications in food processing industries.

(OR)

b. Describe in detail about the mechanism of action of carbonic anhydrase with diagrams.

31. a. Explain elaborately about the bacterial flagellar motor structure. Write the functions of bacterial flagellar motors.

(OR)

b. What is bioremediation? Explain the different methods of in-situ and ex-situ bioremediation with the help of suitable diagrams.

32. a. Discuss in detail about cell-mediated immunity and humoral immunity with appropriate schematic representations.

(OR)

b. Discuss the structure and functions of astrocytes, oligodendrocytes, and microglia. Give suitable diagrams.

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