

Reg. No.

B.Tech. DEGREE EXAMINATION, MAY 2019

1st to 7th Semester

15BT101 – BIOLOGY FOR ENGINEERS

(For the candidates admitted during the academic year 2015 – 2016 to 2017 - 2018)

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. The mRNA binds to which region of the ribosome
(A) tRNA (B) the large subunit
(C) the small subunit (D) between the subunits
2. Hemoglobin is an example of
(A) Primary protein (B) Secondary protein
(C) Tertiary protein (D) Quaternary protein
3. Majority of ATP production during cellular respiration is generated by the process of
(A) Glycosylation (B) Oxidative phosphorylation
(C) Photophosphorylation (D) Substrate level phosphorylation
4. Which are NOT the components of homeostatic system?
(A) Effector (B) Sensor
(C) Comparator (D) Dentin
5. A _____ is a substance formed when two or more elements are chemically joined.
(A) Element (B) Compound
(C) Macromolecules (D) Molecules
6. The chemical reactions that take place inside the living things are generally grouped under
(A) Interactions (B) Digestion
(C) Metabolism (D) Chemical bonding
7. When few monosaccharaides are joined together, it is called _____
(A) Oligosaccharides (B) Disaccharides
(C) Carbohydrates (D) Clusters
8. The region where the substrate binds with an enzyme is called as
(A) Polar organic solvents (B) Water
(C) Acetic acid (D) Non-polar organic solvents

9. The region where the substrate binds with an enzyme is called
 (A) Allosteric site (B) Domain region
 (C) Recognition site (D) Active site
10. The term 'molecular scissors' refers to which of the following enzyme
 (A) Lipases (B) Ligases
 (C) Restriction enzymes (D) Proteolytic enzymes
11. The light and dark reactions use sunlight to convert 6 molecules of CO₂ to _____ molecules of glucose.
 (A) 3 (B) 6
 (C) 1 (D) 2
12. Lipid and steroid biosynthesis occur in
 (A) Golgi apparatus (B) Lysosome
 (C) Rough endoplasmic reticulum (D) Smooth endoplasmic reticulum
13. Which of the following are molecular motors?
 (A) Kinesin & Dynein (B) Microfilaments
 (C) Microtubules (D) Actins
14. The most commonly used electrode in a glucose biosensor is
 (A) Gold electrode (B) Platinum electrode
 (C) Silver electrode (D) Zinc electrode
15. Biosensors based on lux gene has been genetically engineered to detect _____.
 (A) Parathion (B) Polystyrene
 (C) Naphthalene (D) Benzopyrene
16. What is supplied to stimulate the growth of indigenous microorganism in bioventing process?
 (A) Nutrients and air (B) Nutrients
 (C) Water (D) Water and methane
17. The glial cell which has the capability to produce cerebrospinal fluid (CSF) is called
 (A) Astrocytes (B) Oligodendrocytes
 (C) Ependymal cells (D) Microglia
18. The lifespan of RBCs is
 (A) 5-9 days (B) 120 days
 (C) 150 days (D) 150-180 days
19. Sebum secreted by hair follicles contains
 (A) Tartaric acid (B) Acetic acid
 (C) Hydrochloric acid (D) Lactic acid
20. Which of the following is an antigen-presenting cell?
 (A) RBC (B) Mast cells
 (C) Dendritic cells (D) Basophils

PART – B (5 × 4 = 20 Marks)

Answer ANY FIVE Questions

21. Explain the role of lysosomes in cell.
22. Differentiate mRNA and tRNA.
23. Write the salient features of metabolic pathways.
24. Write a note on dynein motor.
25. Explain the factors determining bioremediation.
26. Write the functions of lymphoid organs.
27. Write a short note on the action potential.

PART – C (5 × 12 = 60 Marks)

Answer ALL Questions

28. a. Describe in detail about the mitotic cell division.

(OR)

- b. What are proteins? Explain its biological functions and its structure.

29. a. Explain the following (i) importance and threats of biodiversity (ii) types and chemistry of carbohydrates.

(OR)

- b. Write an essay on stem cells with respect to properties, sources, classification and its uses.

30. a. Elaborate on strategies utilized by enzymes to effect catalysis.

(OR)

- b. Describe about the photosynthesis involved in the conversion of light energy into chemical energy.

31. a. What is a biosensor? Enumerate different types and applications of biosensors.

(OR)

- b. Write detailed note on ATP synthase motor with neat diagram.

32. a. Describe the innate immune system.

(OR)

- b. Explain the classes of cells in the nervous system.
