Reg. No. RA1811003030156

B.Tech. DEGREE EXAMINATION, NOVEMBER 2019
Third Semester

18BTB101T – BIOLOGY
(For the candidates admitted during the academic year 2018-2019 onwards)

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 of the following is NOT the function of smooth endoplasmic reticulum?
(A) Produce membrane lipids (B) Regulate calcium in muscle cells
(C) Produce ribosomes (D) Destroy toxic substances

2. Which of the following peptide is being translated from the given stretch of mRNA, 5'AUGUGUGAAGGU 3'.
(A) Meth-Ser-Asn-Gly (B) Met-Tyr-Gln-Leu
(C) Met-Phe-Asn-Val (D) Met-Cys-Glu-Gly

3. Theoretical yield of total ATP per glucose during catabolism under aerobic conditions is
(A) 30 (B) 32
(C) 36 (D) 38

4. Which check point is being activated when there is a fault in DNA replication and chromosome duplication?
(A) G_0 check point (B) G_1 check point
(C) G_2 check point (D) M check point

5. Which of the following disease is due to mutation in the gene coding?
(A) Scurvy (B) Cystic fibrosis
(C) Cholera (D) Tuberculosis

6. Waxes are
(A) Esters of single chain, highly complexed alcohol and long chain fatty acids (B) Esters of trihydric alcohol and fatty acids
(C) Esters of tetrameric cycloalkyl hydroxyl compounds and fatty acids (D) Esters of flavanols and long chain fatty acids

7. Anti-codon of tRNA is _____ that gets paired with tripler codon of mRNA 'CAG' and it attaches _____ amino acid to the existing peptide.
(A) GAG, Glutamic acid (B) GUC, glutamine
(C) CUG, leucine (D) UGC, cysteine

11. How many possible restriction recognition sites are present in 17 kilo base pairs of DNA for the restriction endonuclease EcoRI?
(A) 2
(B) 3
(C) 4
(D) 5

12. Calvin cycle involves
(A) Oxidative phosphorylation
(B) Oxidative carboxylation
(C) Reductive carboxylation
(D) Reductive phosphorylation

13. Microfilaments are composed of
(A) Actin
(B) Tubulin
(C) Myosin
(D) Fibers

14. The torque-generating unit of bacterial flagellar motor is
(A) C-ring
(B) MS-ring
(C) HOOK
(D) Mot-A

15. Piezo-electric devices detect
(A) Potential differences
(B) Angle of emitted electron waves
(C) Emitted fluroscence light
(D) Electric current

16. Which of the following enzyme activity senses glucose concentration?
(A) Glucose oxidase
(B) Glucose synthase
(C) Glucose reductase
(D) Gluco kinase

17. Axon is surrounded by a fatty material called
(A) Myelin sheath
(B) Pleura
(C) Mucus
(D) Dura

18. Transmission of an electrical signal from one neuron to the next is not effected by
(A) Glutamate
(B) Acetylcholine
(C) Oxytocin
(D) Carbon-di-sulphide

19. The distinctive markers on antigens that trigger an immune response is
(A) Paratope
(B) Epitope
(C) Idiotope
(D) Isotope

20. The immune cell that allow for subsequent recognition of an antigen resulting in secondary response's called

(A) Antigen presenting cell (B) Plasma cell
(C) Basophils (D) Memory cell

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

21. Write the structural components of nucleotides.

22. Write about the structure and functions of mitochondria with a neat diagram.

23. How is matured mRNA being generated after transcription in eukaryotic organisms?

24. Write a note on specificity of enzyme actions.

25. Classify biosensors and write their components with schematic diagram.

26. Explain how impulse is being transported through nerve cells.

27. Write a short note on types of intercellular signaling.

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

28. a. Describe the structure of protein and its functions.

(OR)

b. Explain the autosomal cell division with a neat diagram.

29. a. Discuss about stem cells and their applications.

(OR)

b. Explain the translation of a protein with a neat schematic diagram.

30. a. Write in detail about restriction endonucleases and their applications in rDNA technology.

(OR)

b. Describe the stages involved in photosynthesis.

31. a. Discuss about the structure and mechanism of action of F_0F_1 ATP synthase motor with a neat diagram.

(OR)

b. Explain the types of bioremediations and types of microorganisms involved in them.

32. a. Write in detail about neural network in the brain and discuss about computer based neural networks.

(OR)

b. Explain how acquired immunity is developed in our body.

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Reg. No.

B.Tech. DEGREE EXAMINATION, DECEMBER 2017
First / Second Semester

15BT101 BIOLOGY FOR ENGINEERS
(For the candidates admitted during the academic year 2015 - 2016 onwards)

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. Plants produce energy from sunlight with the help of chlorophyll which is present in
(A) Chromosome (B) Chromoplast
(C) Chloroplast (D) Centromere

2. At the end of 2nd meiotic division how many haploid cells are produced
(A) 4 (B) 3
(C) 2 (D) 1

3. Polymer of proteins are linked together by which bond
(A) Polypeptide bond (B) Covalent bond
(C) Non-covalent bond (D) Amino bond

4. The chromosomes are pulled apart by the spindle fibers during which stage of the mitotic division
(A) Prophase (B) Anaphase
(C) Telophase (D) Metaphase

5. Proteins are essential for a variety of functions ranging from _____ level to _____ level.
(A) Macro; Micro (B) Molecular; Micro
(C) Molecular; Macro (D) Minor; Major

6. The introduction of _____ can disrupt entire ecosystem
(A) Native species (B) Hybrids
(C) Exotic species (D) Familiar species

7. The two strands of the DNA in the double helix is held together by _____ interactions.
(A) Covalent (B) Non-covalent
(C) Hydrophilic interactions (D) Hydrogen gas

8. The Inner Cell Mass (ICM) is surrounded by an outer layer called _____.
(A) Endoderm (B) Ectoderm
(C) Trophoblast (D) Mesoderm

9. Enzymes which have different structure but the same function are calle
(A) Apoenzyme
(B) Proenzyme
(C) Isoenzyme
(D) Haloenzyme

10. When the temperature increases in the system, it leads to increase in
(A) Internal and kinetic energy
(B) Kinetic and potential
(C) Internal and potential energy
(D) Internal energy only

11. Which of the following enzyme is present in papaya?
(A) Renin
(B) Amylase
(C) Papain
(D) Cellulase

12. The length of the chloroplast is _____ µm.
(A) 3
(B) 5
(C) 7
(D) 9

13. F0F1 – ATP synthase is present in the _____ of animal cells.
(A) Cytoplasm
(B) Mitochondria
(C) Nucleus
(D) Endoplasmic reticulum

14. Which is the key ion responsible for the ion-motive force?
(A) Na_+
(B) K_+
(C) Ca^{2+}
(D) Mg^{2+}

15. Which of the following can be a sensor element in a biosensor?
(A) Microbe
(B) Temperature
(C) Polysaccharide
(D) Nucleic acid

16. Kinesin and dynein transport cargo along _____
(A) Microfilaments
(B) Microtubules
(C) Intermediate filaments
(D) Actin

17. The basic structural unit of the nervous system is called as
(A) Axon
(B) Nephron
(C) Neuron
(D) Glia

18. Which of the following is not an auto immune disease?
(A) Type 1 diabetes
(B) Multiple sclerosis
(C) Tuberculosis
(D) Lupus erythromatous

19. pH of the skin is ____.
(A) Basic (above 7)
(B) Acidic (below 7)
(C) Neutral (pH 7)
(D) Modifies frequently

20. Antibodies are produced by _____
(A) T lymphocytes
(B) B lymphocytes
(C) Macrophages
(D) Neutrophils

PART – B (5 × 4 = 20 Marks)

Answer **ANY FIVE** Questions

21. List down the stages of cell cycle.

22. Write the importance of macromolecules.

23. Differentiate ionic and covalent bonding.

24. Explain the process of splicing.

25. Give an account of classification of enzyme by Enzyme Commission of IUBMB.

26. Define glucose biosensors.

27. Write short note on peripheral nervous system.

PART – C (5 × 12 = 60 Marks)

Answer **ALL** Questions

28. a. Explain with a neat diagram of the cell structure and functions.

(OR)

b. Differentiate between intrinsic and extrinsic homeostatic system.

29. a. Explain the structure of t-RNA with neat diagram. Describe its role in the process of translation.

(OR)

b. Elaborate on the method of human embryonic stem cells isolation and culturing.

30. a. Describe in detail about the factors affecting enzyme activity and its applications.

(OR)

b. Write detail note on the light-dependent reactions in photosynthesis.

31. a. Describe in detail about the flagellar motor with neat structure.

(OR)

b. What is bioremediation? Enlist different techniques of bioremediation.

32. a. Explain computer – based neural network and how is it useful to human beings.

(OR)

b. What is an antigen and how do T and B cells interact with an antigen to cause the destruction of an antigen?

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PART – A (20 × 1 = 20 Marks)

Answer **ALL** Questions

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8. Which of the following is neuro degenerative disease?
   (A) Cerebral palsy
   (B) Neuralgia
   (C) Neuropathy
   (D) Parkinson's disease

9. Phenyl ketonuria is due to the deficiency of enzyme
   (A) Dopamine β-hydroxylase
   (B) Tyrosine hydroxylase
   (C) Phenyl alanine hydroxylase
   (D) Cholesterol 7-alpha-hydroxylase

10. The amino acids involved in catalytic trial formation in the active site of the serine protease are
   (A) Serine, histidine and aspartic acid
   (B) Serine, proline and aspartic acid
   (C) Serine, cysteine and aspartic acid
   (D) Serine, histidine and glycine

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