Manimegalai

Avinashilingam Institute for Home Science and Higher Education for Women

(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)
Re-accredited with 'A+' Grade by NAAC. Recognised by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Bachelor's Degree Examination – March 2021
I Semester

Class : I UG **Time : 3 Hours**
Major : Biochemistry and Biotechnology **Max. Marks: 100**

18BBTC01 Introduction to Biotechnology and Cell Biology

Part A **10 x 1 = 10**
Choose the Correct Answer

1. Which one of the following is not a main component of cell theory?
   a. Cells must contain DNA b. All living things are made up of cells
   c. Cells can only come from other cells d. Cells are the basic unit of life

2. An Example of red biotechnology is
   a. Pesticides b. Antibiotics c. Bt Corn d. Industrial catalysts

3. Which one of the following organelles is enclosed by a single membrane?
   a. Mitochondria b. Nucleus c. Lysosome d. Chloroplast

4. The most abundant lipid in plasma membrane is
   a. cholesterol b. glycolipid c. sterol d. phospholipids

5. Entry in M phase of cell cycle is not allowed if
   a. the cell is not big enough b. sufficient nutrients are not available
   c. DNA replication is not complete d. mitotic cyclin is overexpressed

6. Normal cells stop dividing when surrounded by other cells on all sides. This process is called
   a. contact inhibition b. platelet derived growth factor function
   c. out of control growth inhibition d. the cell cycle control system

7. The space between two Z lines constitute the
   a. Sarcomere b. Sarcolemma c. Sarcoplasm d. Sarcophagus

8. What channel plays a role in the release of neurotransmitter into the synaptic cleft?
   a. Both voltage gated potassium and sodium channels
   b. Voltage gated sodium channels
   c. Voltage gated potassium channels
   d. Voltage gated calcium channels

9. Which of the following is anti apoptotic protein?
   a. Bcl-Xs b. Bfl1 c. Bim d. NOXA

10. The name for the type of cleavage in the mammalian embryo is called
   a. planar cleavage b. unequal cleavage
   c. rotational cleavage d. radial cleavage

Part B **5 x 6 = 30**

Answer ALL questions

Each answer should not exceed 400 words or two pages

11.a. Discuss the difference between plant and animal cells with a neat diagram.

(or)

11.b. Write a brief note on the Stanley-Miller Experiment.

12.a. Elucidate the structure of mitochondria with a neat diagram.

(or)

12.b. Draw a neat sketch of chloroplast and explain its structure.

13.a. What is cell division? Discuss the stages of Mitosis.

(or)

13.b. Explain about the electrical coupling and contact inhibition of cell-cell interaction.

14.a. Explain the general structure of Skeletal muscles.

(or)

14.b. Brief the structure of neuron with diagram.

15.a. Define fertilization in plants. Write about the process of seed formation.

(or)

15.b. Explain the process of Gastrulation in animals.

Part C **5 x 12 = 60**

Answer ALL questions

Each answer should not exceed 800 words or fourpages

16.a. Write a detailed note on the history and various colours of Biotechnology.

(or)

16.b. Give a detailed on the classification of cell types within an organism with examples.

17.a. Write in detail about the ultrastructure of nucleus including nuclear pore complex.

(or)

17.b. Illustrate the structure of following cellular organelles:

i. Endoplasmic reticulum (Rough and smooth)
ii. Peroxisomes
iii. Lysosomes

18.a. Explain in detail about the stages of cell cycle.

(or)

18.b. Discuss the autocrine,paracrine and endocrine signalling.

19.a. Write in detail about the organization of microfilaments in skeletal muscles and how they help in muscular contraction.

(or)

19.b. Discuss about the different cytoskeletal filaments and their role in cellular locomotion.

20.a. Write a detailed note on the fertilization and organogenesis in animals.

(or)

20.b. Explain in detail about the events of programmed cell death.

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