

**B.SC. BIOTECHNOLOGY  
SEMESTER- 1<sup>ST</sup> (REPEAT)  
CELL BIOLOGY  
BBT-103**

**Duration: 3 Hrs.**

**Marks: 70**

**Part : A (Objective) = 20**

**Part : B (Descriptive) = 50**

**[ PART-B : Descriptive ]**

**Duration: 2 Hrs. 40 Mins.**

**Marks: 50**

**[ Answer question no. One (1) & any four (4) from the rest ]**

1. What do you mean by passive transport? Explain the types of tonic solutions with suitable examples. 3+7=10
2. Define and explain the main causes of cancer. Differentiate apoptosis and cancer in brief. 5+5=10
3. What is the Endosymbiotic hypothesis regarding the origin of mitochondria? What molecular facts support this hypothesis? To which other cellular organelles can the hypothesis also be applied? 5+3+2=10
4. What do you mean by cell cycle checkpoints? Write in detail about the significance of each phase of cell cycle. 3+7=10
5. Illustrate the structure and function of chloroplast? 10
6. What are peroxisomes? What are the important functions of peroxisomes? Discuss an essential function of peroxisome whose abnormality affects nerve cells. 2+3+5=10
7. Explain the structure of plasma membrane. Write some of the important differences between Extrinsic and intrinsic proteins. 6+4=10
8. Write short notes on *any two*: 2x5=10
  - a. Plasmids, types and their role in bacteria.
  - b. Histones, types and their function.
  - c. Chromatin structure and organization.

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**[ PART-A : Objective ]**

**I. Choose the correct answer from the following :**

**1X20=20**

1. Programmed Cell death is known as
  - a. Cancer
  - b. Apoptosis
  - c. Tumor
  - d. Metastasis
2. The smooth ER is especially abundant in cells that synthesize extensive amounts of
  - a. Toxins
  - b. Proteins
  - c. Enzymes
  - d. Lipids
3. ....Sodium ions are allowed to go outside the membrane through Na-K pump
  - a. 4
  - b. 5
  - c. 2
  - d. 3
4. Which of the following is not true for a eukaryotic cell?
  - a. It has 80S type of ribosome present in the mitochondria.
  - b. It has 80S type of ribosome present in the cytoplasm.
  - c. Mitochondria contain circular DNA.
  - d. Membrane bound organelles are present.
5. Which of the following pigments are found in vacuoles?
  - a. Anthocyanin
  - b. Anthochlor
  - c. Chlorophyll
  - d. Both a & b
6. The type of the diffusion in which ATP is not required but protein is involved is
  - a. Osmosis
  - b. Active transport
  - c. Simple diffusion
  - d. Facilitated diffusion
7. A genophore consists of
  - a. Histones and RNA
  - b. A single dsDNA
  - c. A single ssDNA
  - d. All of the above
8. Conformational change of the protein can be seen in
  - a. Simple diffusion
  - b. Facilitated diffusion
  - c. Active transport
  - d. Ion driven active transport
9. In mammals, beta oxidation of fatty acids occurs in
  - a. Mitochondria
  - b. Peroxisomes
  - c. Vacuoles
  - d. Both a & b
10. The most important function of nuclear membrane is
  - a. Regulate nucleo cytoplasmic traffic
  - b. Protect genetic material
  - c. Synthesis rDNA
  - d. Prevent the entry of active ribosomes
11. The major amino acids of histones are
  - a. Arginine
  - b. Lysine
  - c. Histidine
  - d. All of the above
12. How many mitotic divisions are required to make 128 cells from a single cell
  - a. 7
  - b. 14
  - c. 28
  - d. 32
13. The outer most layer of plant cell is.....
  - a. Capsule
  - b. Peptidoglycan
  - c. Cell wall
  - d. Plasma membrane
14. What is the main difference between prokaryotes and eukaryotes?
  - a. Prokaryotes cannot undergo cell division
  - b. Prokaryotes have no internal membranes
  - c. Prokaryotes have no DNA
  - d. Prokaryotes have no cytosol

15. The type of cancer in which cells are confined to one area is

- a. Metastasis
- b. Benign
- c. Leukemia
- d. Sarcoma

16. The regulator of cell cycle cdks are

- a. CDK
- b. Kinases
- c. Cyclin
- d. Check points

17. The sequence of the cell cycle is

- a. G1/S/G2/M
- b. G1/G2/S/M
- c. S/G1/G2/M
- d. G2/G1/S/M

18. Which one of the following does not differ in *E.coli* and *Chlamydomonas*?

- a. Cell wall
- b. Cell membrane
- c. Ribosomes
- d. Chromosomal organization

19. Fluid mosaic model of plasma membrane was demonstrated in year

- a. 1977
- b. 1978
- c. 1972
- d. 1973

20. What is the main function of the smooth endoplasmic reticulum?

- a. It generates energy to drive other biochemical processes
- b. It is the site of the modification of proteins following their translation from RNA
- c. It synthesizes proteins using RNA as a template
- d. It is the site of destruction of unwanted biological materials

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# UNIVERSITY OF SCIENCE & TECHNOLOGY, MEGHALAYA



**[PART (A) : OBJECTIVE]**

Duration : 20 Minutes

Serial no. of the  
main Answer sheet

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Course : .....

Semester : ..... Roll No : .....

Enrollment No : ..... Course code : .....

Course Title : .....

Session : ..... 2017-18 ..... Date : .....

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### Instructions / Guidelines

- The paper contains twenty (20) / ten (10) questions.
- Students shall tick (✓) the correct answer.
- No marks shall be given for overwrite / erasing.
- Students have to submit the Objective Part (Part-A) to the invigilator just after completion of the allotted time from the starting of examination.

Full Marks	Marks Obtained
20	

.....  
Scrutinizer's Signature

.....  
Examiner's Signature

.....  
Invigilator's Signature