

**B.S.C. BIOTECHNOLOGY  
SEMESTER-1<sup>ST</sup>  
CELL BIOLOGY  
BBT-102**

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. 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.
2. What do you mean by cell cycle checkpoints? Write in detail about the significance of each phase of cell cycle. 3+7=10
3. Explain the structure of plasma membrane. Write some of the important differences between Extrinsic and intrinsic proteins. 6+4=10
4. Define and explain the main causes of cancer. Differentiate apoptosis and cancer in brief. 5+5=10
5. 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
6. Illustrate the structure and function of chloroplast? 10
7. 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
8. What do you mean by passive transport? Explain the types of tonic solutions with suitable examples. 3+7=10

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**[ PART-A : Objective ]**

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

**1X20=20**

1. Conformational change of the protein can be seen in
  - a. Simple diffusion
  - b. Facilitated diffusion
  - c. Active transport
  - d. Ion driven active transport
2. How many mitotic divisions are required to make 128 cells from a single cell
  - a. 7
  - b. 14
  - c. 28
  - d. 32
3. Fluid mosaic model of plasma membrane was demonstrated in year
  - a. 1977
  - b. 1978
  - c. 1972
  - d. 1973
4. The regulator of cell cycle cdks are
  - a. CDK
  - b. Kinases
  - c. Cyclin
  - d. Check points
5. Programmed Cell death is known as
  - a. Cancer
  - b. Apoptosis
  - c. Tumor
  - d. Metastasis
6. ....Sodium ions are allowed to go outside the membrane through Na-K pump
  - a. 4
  - b. 5
  - c. 2
  - d. 3
7. 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
8. The outer most layer of plant cell is.....
  - a. Capsule
  - b. Peptidoglycan
  - c. Cell wall
  - d. Plasma membrane
9. The type of cancer in which cells are confined to one area is
  - a. Metastasis
  - b. Benign
  - c. Leukemia
  - d. Sarcoma
10. 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
11. Which one of the following does not differ in *E.coli* and *Chlamydomonas*?
  - a. Cell wall
  - b. Cell membrane
  - c. Ribosomes
  - d. Chromosomal organization
12. 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
13. 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
14. In mammals, beta oxidation of fatty acids occurs in
  - a. Mitochondria
  - b. Peroxisomes
  - c. Vacuoles
  - d. Both a & b

15. The most important function of nuclear membrane is
- Regulate nucleo cytoplasmic traffic
  - Protect genetic material
  - Synthesis rDNA
  - Prevent the entry of active ribosomes
16. The major amino acids of histones are
- Arginine
  - Lysine
  - Histidine
  - All of the above
17. A genophore consists of
- Histones and RNA
  - A single dsDNA
  - A single ssDNA
  - All of the above
18. Which of the following pigments are found in vacuoles?
- Anthocyanin
  - Anthochlor
  - Chlorophyll
  - Both a & b
19. The smooth ER is especially abundant in cells that synthesize extensive amounts of
- Toxins
  - Proteins
  - Enzymes
  - Lipids
20. Which of the following is not true for a eukaryotic cell?
- It has 80S type of ribosome present in the mitochondria.
  - It has 80S type of ribosome present in the cytoplasm.
  - Mitochondria contain circular DNA.
  - Membrane bound organelles are present.

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# UNIVERSITY OF SCIENCE & TECHNOLOGY, MEGHALAYA



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

Duration : 20 Minutes

Serial no. of the  
main Answer sheet

Course : .....

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

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

Course Title : .....

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

**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