



B-003-0011010

Seat No. _____

B. Sc. (Sem. I) (CBCS) Examination

March - 2021

BT-101 : Biotechnology

(Introduction to Biotechnology & Cell Bio.) (New Course)

Faculty Code : 003

Subject Code : 0011010

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instruction : Answer any five out of 10 questions.

- 1 (a) Answer the following : **4×1=4**
- (i) Biotechnology can employ for biological systems in industrial processes and waste treatment plants. (True/False)
 - (ii) Define plasmid.
 - (iii) The use of living cells and bacteria in industrial and scientific process is called _____.
 - (iv) The scope of biotechnology is limited to medical world (True/False)
- (b) Define Recombinant DNA technology. **1×2=2**
- (c) Explain the social impacts of Biotechnology. **1×3=3**
- (d) Write down the applications of Biotechnology in various fields. **1×5=5**
- 2 (a) Answer the following : **4×1=4**
- (i) The joining together of DNA molecules from different organisms and inserting it into a host organism to produce new genetic combinations that are of value to science, medicine, agriculture and industry is called Recombinant DNA technology. (True/False)
 - (ii) Direct uptake of exogenous genetic material by bacteria from its surrounding is known as _____.
 - (iii) BT cotton is produced by hybridization of improved varieties of cotton plant (True/False)
 - (iv) Define Biotechnology.

- (b) Write down the applications of Biotechnology in agriculture. $1 \times 2 = 2$
- (c) Write down Current Status of Biotechnology. $1 \times 3 = 3$
- (d) Explain stepwise process for Recombinant DNA Technology in brief. $1 \times 5 = 5$
- 3** (a) Answer the following : $4 \times 1 = 4$
- (i) Define Cell.
- (ii) First simple microscope was discovered by _____.
- (iii) Name the process of Mitochondria and Chloroplasts origin.
- (iv) Cell theory has universal application (True/False)
- (b) Why Cell acts as the Basic Unit of Life ? $1 \times 2 = 2$
- (c) “Virus is Exception of Cell Theory” – explain this statement with reasons. $1 \times 3 = 3$
- (d) Write the difference between Prokaryotic cell and Eukaryotic cell. $1 \times 5 = 5$
- 4** (a) Answer the following : $4 \times 1 = 4$
- (i) Prokaryotes possess true nucleus (True/False)
- (ii) What are the two main groups into which cells are classified ?
- (iii) Vibrio is a genus of bacteria, possessing a comma shape (True/False)
- (iv) Mitochondria is evolved from _____.
- (b) What is statement of cell theory ? $1 \times 2 = 2$
- (c) Draw well labelled diagram of animal cell and write its organization. $1 \times 3 = 3$
- (d) Describe Biochemical Origin of Life. $1 \times 5 = 5$
- 5** (a) Answer the following : $4 \times 1 = 4$
- (i) Cell wall of Gram Positive bacteria is made up of _____.
- (ii) Lipid metabolism occurs in Smooth endoplasmic reticulum (True/False)
- (iii) Which cell organelle is called as power house of the cell ?
- (iv) What are the components of Plant Cell wall ?

- (b) Write down the function of peroxisome. $1 \times 2 = 2$
- (c) Write a note on mitochondria structure. $1 \times 3 = 3$
- (d) Explain fluid mosaic model of Plasma membrane. $1 \times 5 = 5$
- 6** (a) Answer the following : $4 \times 1 = 4$
- (i) _____ cell organelle digest large molecules through the use of hydrolytic enzymes.
- (ii) RER involved in secretory pathway of protein transport (True/False)
- (iii) Which ribosome is found in Prokaryotes ?
- (iv) 80S ribosome is present in prokaryotes (True//False)
- (b) Write down the function of Endoplasmic reticulum. $1 \times 2 = 2$
- (c) Write a short note on structure and function of ribosome. $1 \times 3 = 3$
- (d) Explain structure of Chloroplast with diagram. $1 \times 5 = 5$
- 7** (a) Answer the following : $4 \times 1 = 4$
- (i) Meiosis is the form of eukaryotic cell division that produces two sex cells or gametes from one parent cell (True/False).
- (ii) During which stage does DNA replication occur ?
- (iii) In prophase, the nuclear membrane disappears (True/False)
- (iv) Spindle fibers attach to _____ in the chromosome.
- (b) Write the function of Nucleus. $1 \times 2 = 2$
- (c) Write two differences between mitosis and meiosis. $1 \times 3 = 3$
- (d) Explain cell division of somatic cell (Mitosis) with well labelled diagram.
- 8** (a) Answer the following : $4 \times 1 = 4$
- (i) Prophase II phase of meiosis is associated with crossing over (True/False)
- (ii) In which phase of cell cycle, cell is arrested (halting phase) ?
- (iii) Metacentric chromosomes have the _____ located midway between the ends of the chromosome, separating the two arms of the chromosome.
- (iv) Reduction division occurs in Meiosis I (True/False)

- (b) What is mitosis ? Write its importance. $1 \times 2 = 2$
- (c) Write differences between mitosis and meiosis. $1 \times 3 = 3$
- (d) Write a detailed note on Meiosis. $1 \times 5 = 5$
- 9** (a) Answer the following : $4 \times 1 = 4$
- (i) Microtubule is made up of _____ Protein.
- (ii) Define exocytosis.
- (iii) What is full form of MTOC ?
- (iv) Cancer is a disease caused when cells divide uncontrollably and spread into surrounding tissues. (True/False)
- (b) Describe amoeboid type of cellular movement. $1 \times 2 = 2$
- (c) Write a short note on Microtubules. $1 \times 3 = 3$
- (d) Write the traits of cancer and classification and types of cancer. $1 \times 5 = 5$
- 10** (a) Answer the following : $4 \times 1 = 4$
- (i) Which process is also referred as “Cell drinking” ?
- (ii) Define endocytosis.
- (iii) A stem cell is a cell with the unique ability to develop into specialized cell types in the body. (True/False)
- (iv) Spindle fiber is made up of _____ cytoskeleton.
- (b) Briefly explain Paracrine, Endocrine signalling. $1 \times 2 = 2$
- (c) Discuss briefly : Stem cells and its types. $1 \times 3 = 3$
- (d) Write down the importance of cell interaction and types of cell communication. $1 \times 5 = 5$
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