

Seat No. : _____

JI-105

June-2022

B.Sc., Sem.-II

103 : Biotechnology

(Cell : Structure and Function)

Time : 2 Hours]

[Max. Marks : 50

- Instructions :** (1) Draw figures wherever necessary.
(2) Write question number against each answer
(3) Answer any **three** out of initial **eight** main questions. Question **9** is compulsory.

SECTION – I

1. (A) Explain ultrastructure and functions of cell membrane. 7
(B) Describe structure of mitochondria with neat labeled diagram. 7
2. (A) Discuss cytoskeletal elements and architecture. 7
(B) Explain structural diversities within prokaryotic cell. 7
3. (A) Write a note on electron transport chain. 7
(B) Explain nutrient uptake by passive transport mechanism. 7
4. (A) Discuss characteristic properties of enzymes. 7
(B) Write about steps of Calvin cycle. 7
5. (A) Explain stages of Prophase I of Meiosis I with suitable diagram. 7
(B) Write about stages of cell cycle with suitable diagram. 7
6. (A) Explain different types of cancer. 7
(B) Discuss in detail about cell programmed death. 7

7. (A) Describe “Central Dogma of Life” with neat labelled diagram. 7
(B) Explain *Lac* operon model for regulation of gene expression. 7
8. (A) Write about termination of prokaryotic transcription. 7
(B) Explain cell junction and its types. 7

SECTION-II

9. Answer any **eight** of the following : 8
- (1) Differentiate function of cilia and flagella.
 - (2) Write function of peroxisomes.
 - (3) Differentiate Bacteria and Archea.
 - (4) What is axoneme ?
 - (5) Define cellular respiration.
 - (6) What is chemical nature of cytosol ?
 - (7) What are chemolithotrophs ?
 - (8) What is oxidation -reduction reaction ?
 - (9) Define antiport.
 - (10) Name the end products of alcoholic fermentation.
 - (11) What is the significance of mitosis ?
 - (12) What is the role of spindle fibers in cell division ?
 - (13) What is allosteric control ?
 - (14) What is G₀ phase ?
 - (15) Write significance of apoptosis.
 - (16) What is translation ?
 - (17) Name the initiation codons.
 - (18) Write about plasmodesmata.
 - (19) Define gene.
 - (20) What is senescence ?