

Roll No.

Total Pages : 3

325401

May, 2023

B.Sc. (Life Sciences) IV SEMESTER

Botany IV Cell and Molecular Biology (BLS-401)

Time : 3 Hours

Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.*
2. *Answer any four questions from Part -B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) Differentiate between prokaryotic and Eukaryotic cells. (1.5)
- (b) Write down the key differences between Scanning and transmission electron microscope. (1.5)
- (c) Discuss the importance of checkpoints in cell cycle. (1.5)
- (d) Differentiate between passive and facilitated transport. (1.5)

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- (e) Define protein sorting and give its importance. (1.5)
- (f) What is semi conservative mode of DNA replication? (1.5)
- (g) Enlist the salient features of Genetic code. (1.5)
- (h) What is Wobble hypothesis? (1.5)
- (i) Define Okazaki fragments. (1.5)
- (j) What is 'The Central Dogma' in molecular biology? (1.5)

PART-B

- 2. (a) Describe the various steps that occur as a secretory protein gets targeted to ER, undergoes folding and processing inside the endoplasmic reticulum. (10)
- (b) With a well labelled diagram, describe the structure of the Fluid Mosaic model of plasma membrane. (5)
- 3. (a) Describe the structure and function of mitochondria. (5)
- (b) Explain the role and structure of three types of Cytoskeletal elements present inside the eukaryotic cell. (10)
- 4. Define cell cycle. Describe various phases of Mitotic cell division. Add a note on significance of mitotic cell division. (15)

- 5. (a) Describe in detail the Watson and Crick model of DNA'. (5)
- (b) Explain in detail the DNA replication in Eukaryotes with the help of well labelled diagrams. (10)
- 6. (a) Explain the process of translation in prokaryotes with the help of well labelled diagrams. (10)
- (b) Describe the process of mRNA processing in eukaryotes. (5)
- 7. Write short notes on any *three* of the following : (15)
 - (a) Lac operon model.
 - (b) Meselson and Stahl's experiment.
 - (c) Fraenkel- Conrat's experiment.
 - (d) Alternative splicing.
 - (e) Ribosome structure and Assembly in prokaryotes.