

SET -

B

Unique Paper Code : 42167902

Name of the Paper : Cell and Molecular Biology

Name of the Course : B.Sc (Life Sciences)

Semester : V

Duration : 4 Hours (3 hours for answering and 1 hour to download question paper and upload the Pdf of scanned answer sheets as one file)

Maximum Marks 75

GUIDELINES TO ATTEMPT THE QUESTION PAPER

- ATTEMPT THE QUESTION PAPER ON NUMBERED A-4 SIZE SHEETS
- MENTION: NAME, ROLL NUMBER, DATE, AND EXAMINATION SUBJECT ON THE TOP
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INSTRUCTIONS: Attempt any 4 questions. All questions carry equal marks.

Q1. Explain the principles and optics of confocal and fluorescence microscopy. Differentiate between transmission electron microscope and scanning electron microscope.

(Marks-18.75)

Q2. What are the major defining features that differentiate eukaryotic cells from their prokaryotic counterparts? Discuss the roles of semi-autonomous organelles in

endosymbiotic theory of the origin of eukaryotes.
(Marks-18.75)

Q3. Give a detailed account of the structure and functions of any three cell organelle.

(Marks-18.75)

Q4. Give an overview of cell cycle. How does a cell maintain its fidelity during the process? Explain the various stages of cell division that occur in somatic cells.

(Marks-18.75)

Q5. Give an account of the various cell components required for protein synthesis. Describe the complete process of translation in *Escherichia coli*.

(Marks-18.75)

Q6. Differentiate between an inducible and a repressible operon with illustrations. DNA is a genetic material – justify with an experimental evidence.

(Marks- 18.75)

SET -C

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GUIDELINES TO ATTEMPT THE QUESTION PAPER

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INSTRUCTIONS: Attempt any 4 questions. All questions carry equal marks.

Q1. Explain the techniques of freeze fracture and etching, negative staining, shadow casting and cryofixation with illustrations. (Marks-18.75)

Q2. Discuss the structure and functions of chloroplast, mitochondria and lysosomes. (Marks -18.75)

Q3. Describe the fluid mosaic model of cell membrane and state its functions. (Marks-18.75)

Q4. Write a detailed account of reduction division and its significance in biological science? (Marks-18.75)

Q5. Discuss the different types of RNA and their functions. Also distinguish between different forms of DNA. (Marks-18.75)

Q6. What is genetic code? How was it deciphered? Discuss the various properties of genetic code. (Marks-18.75)

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