# SET -A

**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
- YOU HAVE TO DOWNLOAD THE QUESTION PAPER, UPLOAD AND MAIL THE SCANNED ANSWER SHEETS AS A SINGLE PDF FILE WITHIN FOUR HOURS ONLY.

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

**Q1. Compare the working of light microscope with an electron microscope. What are the significant features of fluorescent microscopy? (Marks-18.75)**

**Q2. Distinguish between prokaryotic and eukaryotic cell. Describe in detail about the organelles involved in protein synthesis in eukaryotes. (Marks-18.75)**

**Q3. Explain the structure and function of the control centre of the cell. Draw well labelled diagrams to explain in detail the packaging of genetic material in eukaryotic cells.**

**(Marks-18.75)**

**Q4. Discuss various phases of cell cycle and give its significance. Explain in detail about the various stages of cell division involved in the formation of gametes.**

**(Marks-18.75)**

**Q5. What is central dogma of molecular biology? Discuss the process of formation of messenger RNA from DNA template in *Escherichia coli*. Explain the structure of tRNA with a**

**well labelled diagram.**
**(Marks-18.75)**

**Q6. Differentiate between the positive and negative control of gene regulation in inducible operon. Explain the salient features of genetic code.**
**(Marks-18.75)**

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**SET - B**

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

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**Maximum Marks :** **75**

***GUIDELINES TO ATTEMPT THE QUESTION PAPER***

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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)**

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# SET -C

**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
- YOU HAVE TO DOWNLOAD THE QUESTION PAPER, UPLOAD AND MAIL THE SCANNED ANSWER SHEETS AS A SINGLE PDF FILE WITHIN FOUR HOURS ONLY.

**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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