

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(MID SEMESTER EXAMINATION)

CLASS: BE  
BRANCH: BIOTECH

SEMESTER: III  
SESSION : MO/2018

SUBJECT : BT3023 CELL AND MOLECULAR BIOLOGY

TIME: 1.5 HOURS

FULL MARKS: 25

**INSTRUCTIONS:**

1. The total marks of the questions are 30.
  2. Candidates may attempt for all 30 marks.
  3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. The missing data, if any, may be assumed suitably.
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- Q1 (a) Recommend that mitochondria have similarity with bacteria. [2]  
(b) Comparatively describe the Plant cell and Animal cells. [3]
- Q2 (a) What do you understand by mitotic division? How it is different from Binary fission? [2]  
(b) Analyse the prophase I of meiosis and prophase of mitosis. Describe the significance of prophase I in meiosis. [3]
- Q3 (a) Describe secondary messenger with example. [2]  
(b) Classify the cell signaling types. What kinds of receptors are involved in sensing vision and smell? [3]
- Q4 (a) Which molecule is involved in opening calcium ion channel in ER? What will be the consequence of open calcium ion channel? [2]  
(b) Draw a schematic diagram of GPCR activating PKC. [3]
- Q5 (a) What are histones proteins? How they help in condensation of DNA? [2]  
(b) Summaries few experiments to prove DNA is a genetic material not protein. [3]
- Q6 (a) Point out the difference between prokaryotic and eukaryotic DNA. [2]  
(b) List the molecules/enzymes involved in DNA replication. What is replication fork? [3]