

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

CLASS: BTECH  
BRANCH: BIOTECHNOLOGY

SEMESTER : III  
SESSION : MO/2022

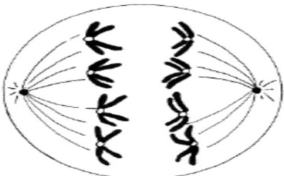
SUBJECT: BE202 CELL AND MOLECULAR BIOLOGY

TIME: 3:00 Hours

FULL MARKS: 50

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

	FM	CO	BL
Q.1(a) Differentiate between plant cell and animal cell.	[2]	2	1
Q.1(b) Evaluate the similarity between Mitochondrion and a bacterium.	[3]	1	5
Q.1(c) Describe an experiment to measure rate of diffusion of membrane proteins.	[5]	3	3
Q.2(a) Define Signal Amplification.	[2]	2	1
Q.2(b) Demonstrate the events through signaling via GPCR to open a Ca <sup>2+</sup> ion gated channel on ER membrane.	[3]	3	3
Q.2(c) Schematically describe the different modes of cell-cell communications.	[5]	1	1
Q.3(a) Identify the stage of cell division in the given figure below and comment on it.	[2]	2	5
			
Q.3(b) Analyze the significance of meiotic cell division in eukaryotes.	[3]	4	6
Q.3(c) Describe the role of Cyclins and CDK in control of mitotic cell division, Specially in cancerous cells.	[5]	2	3
Q.4(a) Explain alternative splicing.	[2]	2	1
Q.4(b) Differentiate between DNA replication occurring inside the cell and PCR.	[3]	5	4
Q.4(c) Identify the role of repressor in switching the gene "ON" for lactose metabolism in <i>E.coli</i> with suitable diagram.	[5]	2	5
Q.5(a) Explain the importance of protein degradation.	[2]	2	3
Q.5(b) Define glycosylation of protein. What is the importance of glycosylation.	[3]	2	2
Q.5(c) Sketch a roadmap of protein transport across the cell organelle.	[5]	3	2

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