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

CLASS: BE **SEMESTER : III**
BRANCH: BIOTECHNOLOGY **SESSION : MO/18**

SUBJECT: BT3023 CELL AND MOLECULAR BIOLOGY

TIME: 3 HOURS **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
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.

Q.1(a)	Describe the quasifluid nature of plasma membrane.	[2]
Q.1(b)	What is endosymbiotic theory? Demonstrate mitochondria and chloroplast is similar to prokaryotes.	[4]
Q.1(c)	Justify the prokaryotic cell was evolved before the eukaryotic cell.	[6]
Q.2(a)	What could be reason that mouse have more GPCR compared to human?	[2]
Q.2(b)	Schematically draw and explain the cell signaling processes.	[4]
Q.2(c)	Explain the heterotrimeric GPCR. Describe the cAMP mediated activation of PKA via GPCR.	[6]
Q.3(a)	Justify the existence of RNA before DNA.	[2]
Q.3(b)	Verify, “DNA is a genetic material” describing some experiments	[4]
Q.3(c)	What is the recipe of DNA replication? Why it proceeds in only one direction and how?	[6]
Q.4(a)	What are start and stop codon?	[2]
Q.4(b)	What are the different characteristics of genetic code?	[4]
Q.4(c)	What is extrachromosomal Inheritance? How CMS is used in hybrid seed production?	[6]
Q.5(a)	Explain the central dogma of molecular biology.	[2]
Q.5(b)	How the lambda phage maintains lysogeny and what makes it turn into lytic?	[4]
Q.5(c)	What are the situations when the *Lac operon* really turns on?	[6]
Q.6(a)	Explain he term polyploidy. How it is useful?	[2]
Q.6(b)	Describe any four types of inborn error in Metabolism.	[4]
Q.6(c)	What are DNA mutations? Explain Point mutation and nonsense mutation in detail.	[6]
Q.7(a)	What are aminoacyl tRNA synthase? How it helps in amino-acid loading into transfer RNA?	[2]
Q.7(b)	Explain the transcriptional Unit and describe the process of transcription.	[4]
Q.7(c)	Draw a schematic diagram showing the protein synthesis on ribosomes.	[6]

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