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

CLASS: M. Sc./Pre-PhD **SEMESTER : I**
BRANCH: BIOTECHNOLOGY **SESSION : MO/2022**

SUBJECT: BT407 GENOMICS

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.

			CO	BL
Q.1(a)	What you understand about genome of an organism?	[2]	1	2
Q.1(b)	Differentiate between prokaryotic and eukaryotic genome.	[3]	1	4
Q.1(c)	Describe about central dogma of molecular biology and evaluate its significance.	[5]	3,2	5
Q.2(a)	Write the strategies used in whole genome sequencing.	[2]	1	2
Q.2(b)	Describe the conventional and new sequencing technologies used in genomics.	[3]	2	4
Q.2(c)	Make a pictorial sketch explaining the RNAseq based differential gene expression study in leaf and root samples.	[5]	3	6
Q.3(a)	What are the various blotting techniques used in genomics?	[2]	3	2
Q.3(b)	Compare the gene expression study using qPCR and digital PCR.	[3]	2	5
Q.3(c)	Give a pictorial drawing explaining the CRISPR-Cas 9 based gene editing mechanism for deleting the GCCGCC sequences of the *Hexokinase* gene.	[5]	3,4	6
Q.4(a)	Briefly differentiate between structural and functional genomics.	[2]	3	4
Q.4(b)	Evaluate that rice genome sequencing initiative has played a significant role for the food and nutritional security at global level.	[3]	3,4	5
Q.4(c)	Explain about tomato genome sequencing project and role of Indian initiative on this fleshy fruit genomics and increasing productivity.	[5]	3,4	5
Q.5(a)	How genomics may be applied for the functional analysis of a gene?	[2]	3	3
Q.5(b)	Evaluate that genomics is capable to improve the crop by value addition related to nutritional qualities.	[3]	3,4	5
Q.5(c)	Explain that genomics has played a significant role in developing the recombinant proteins.	[5]	3,4	5

:::::25/11/2022:::::E