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

CLASS: BE
BRANCH: ALL

SEMESTER : III
SESSION : MO/17

SUBJECT: BT3021 BIOLOGICAL SCIENCE

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)	What are the characteristic of Life?	[2]
Q.1(b)	Describe the different level of Biological Organization starting from atoms.	[4]
Q.1(c)	Explain the situations of early Earth atmosphere. Describe the famous experiment by Miller and Urey for supporting the theory of chemical Evolution.	[6]
Q.2(a)	Why water is so important for Life?	[2]
Q.2(b)	What are the different types of RNA? Give some functions of each RNA.	[4]
Q.2(c)	Describe the different structure of proteins. What are the functions of protein?	[6]
Q.3(a)	In a closed system H_2 and O_2 are reacted. What will be the situation inside the system and outside the system in terms of entropy?	[2]
Q.3(b)	Differentiate between aerobic and anaerobic respiration.	[4]
Q.3(c)	Describe Kreb's cycle. How it is central to all metabolic pathways?	[6]
Q.4(a)	Why Virus is considered as connecting link between living and non living?	[2]
Q.4(b)	What are the steps involved in cell cycle? Describe the events occurs in mitosis.	[4]
Q.4(c)	Differentiate between prokaryotic and eukaryotic organism. Write any 12 differences suitably with illustrated diagrams.	[6]
Q.5(a)	What is central dogma of molecular biology? How it changed after discovery of retrovirus?	[2]
Q.5(b)	Give any five differences between DNA and RNA.	[4]
Q.5(c)	What is Translation? What are the factors involved in successful translation? How translation is altered due to frame shift mutation.	[6]
Q.6(a)	Name five factors affecting the rate of enzymatic reaction.	[2]
Q.6(b)	With suitable block diagram explain the two theory of enzyme action.	[4]
Q.6(c)	Draw a graph showing the change in rate of reaction with change in substrate concentration. What is the relation between K_m and [S] for any reaction? Why Km is very important for any particular enzyme?	[6]
Q.7(a)	What do you mean by electromagnetic spectrum?	[2]
Q.7(b)	Describe the basic principle of Centrifugation. Cell wall and Ribosomes of crushed bacterial cell were centrifuged, which organelle will be collected in bottom of centrifuge tube?	[4]
Q.7(c)	Define electrophoresis. Give a detailed procedure of Agarose gel electrophoresis and draw a labeled diagram of electrophoresis setup.	[6]

:::::06-12-2017 E:::::