

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

**CLASS: MSc  
BRANCH: BIOINFORMATICS**

**SEMESTER : I  
SESSION : MO/2023**

**SUBJECT: BT415 MOLECULAR BIOLOGY AND RDNA TECHNOLOGY**

**TIME: 3 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.
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|---|-----|
| Q.1(a) What is central dogma of molecular biology and what are its exceptions.                | [5] |
| Q.1(b) Kinetics of DNA denaturation and renaturation and its applications                     | [5] |
|   |     |
| Q.2(a) Elaborate organizational elements of Lac Operon and its regulation                     | [5] |
| Q.2(b) How lysogeny is different in bacteriophage lambda life cycle                           | [5] |
|   |     |
| Q.3(a) What are the various kinds of DNA polymerases? Explain any two of them                 | [5] |
| Q.3(b) Distinguish between qPCR and digital PCR   | [5] |
|   |     |
| Q.4(a) Compare the genomic libraries and cDNA libraries                                       | [5] |
| Q.4(b) Differentiate between cloning vectors and expression vectors                           | [5] |
|   |     |
| Q.5(a) How would you go about diagnosing SARS CoV2 virus in a patient with the help of qPCR.  | [5] |
| Q.5(b) Explain the steps that you will follow to produce recombinant Insulin in a E coli host | [5] |

:::28/11/2023 E:::