**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI**
**(MID SEMESTER EXAMINATION MO/2023)**

**CLASS: BTECH** **SEMESTER : Vth**
**BRANCH: BIOTECH** **SESSION : MO/2023**

**SUBJECT: BE302 FUNCTIONAL GENOMICS AND RDNA TECHNOLOGY**

**TIME: 02 Hours** **FULL MARKS: 25**

**INSTRUCTIONS:**
**1. The question paper contains 5 questions each of 5 marks and total 25 marks.**
**2. Attempt all questions.**
**3. The missing data, if any, may be assumed suitably.**
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

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| Q.1(a) | Based on the Eukaryotic DNA and cDNA sequence, how would you find an exons and introns sequence? | [2] | CO1 | 4 |
| Q.1(b) | The question of which came first; DNA, RNA, or protein is a classic problem in the origin of life studies. Discuss your overview based on the RNA world Hypothesis. | [3] | CO1 | 3 |
| Q.2(a) | If you were to detect the expression level of a particular gene, which PCR technique would you choose and why? | [2] | CO1 | 3 |
| Q.2(b) | With suitable example, Differentiate between forward and reverse genetics. | [3] | CO1 | 2 |
| Q.3(a) | Analyze the benefits of using RNA interference (RNAi) over traditional gene knockouts | [2] | CO1 | 4 |
| Q.3(b) | Propose a method to screen a number of T-DNA insertion events in a plant genome after Agrobacterium-mediated transformation. | [3] | CO1 | 3 |
| Q.4(a) | Compare the results obtained from qPCR and end point PCR. | [2] | CO2 | 3 |
| Q.4(b) | Design a basic experiment to use site-directed mutagenesis to introduce a restriction site HinD III in a gene of interest. | [3] | CO2 | 5 |
| Q.5(a) | Classify the Restriction endonucleases based on their functions. | [2] | CO2 | 5 |
| Q.5(b) | Discuss the applications of cDNA library. | [3] | CO2 | 1 |

**:::::20/09/2023 M:::::**