Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **15BT3006** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MOLECULAR MICROBIOLOGY** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Give a detailed account on the organization of a prokaryotic chromosome. | CO1 | 12 |
| b. | Comment on the genomic diversity among viruses. | CO1 | 8 |
| **(OR)** | | | | |
| 2. | a. | Demonstrate the genetics in the establishment of Lytic and Lysogenic cycles in Phage λ. | CO1 | 10 |
| b. | With a suitable diagram, explain the mechanism of conjugation in F plasmid. Add a note on Hfr cells and sexduction. | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Illustrate the principle and applications of following molecular methods in microbiology.   1. Insitu Hybridization 2. Microarray | CO2 | 10 |
|  | b. | Highlight the applications of Negative and Differential staining. | CO1 | 10 |
| **(OR)** | | | | |
| 4. | a. | PCR is a powerful tool in Molecular Microbiology. Substantiate this statement with suitable reasons and applications. | CO2 | 12 |
| b. | Give a neat illustration of a bacterial cell. Comment on the structure and functions of the following organelles.   1. Flagella 2. Cell wall 3. Plasmid | CO1 | 8 |
|  |  |  |  |  |
| 5. | a. | What is reverse transcription? Explain the process and significance of reverse transcription in retroviruses. | CO1 | 10 |
| b. | Both continous and semi-discontinuation mechanism of DNA synthesis is observed during replication. Give reasons. | CO1 | 10 |
| **(OR)** | | | | |
| 6. | a. | Briefly explain the structure and functions of *E.coli* RNA polymerase. | CO1 | 8 |
| b. | Give an account on the charging of tRNA and translation initiation process in prokarytoes. | CO1 | 12 |
|  |  |  |  |  |
| 7. | a. | Give an overview of transcription in Prokaryotes. Tabulate the differences between prokaryotic and eukaryotic transcription.. | CO1 | 12 |
| b. | Distinguish the following gene regulatory regions.  i) Promoter ii) Operator iii) Repressor iv) Inducer | CO2 | 8 |
| **(OR)** | | | | |
| 8. | a. | Appraise the significance of metagenomic approach in detecting the uncultivable microorganisms. | CO2 | 16 |
| b. | What would be the response of *E coli* to the addition of lactose if it contains a *lac* operon with a mutant, completely nonfunctioning *lac Y* gene? | CO2 | 4 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Summarize the the applications of plasmids, cosmids and phagemids in DNA cloning. | CO2 | 8 |
| b. | Highlight the salient applications of rDNA technology in human welfare. | CO2 | 12 |

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