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

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**End Semester Examination – Nov/Dec– 2018**

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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. | Compare prokaryotes with eukaryotes in respect of the structural organization of their genetic material. | CO1 | 8 |
| b. | What is bacterial transduction? In what modes it can occur? Explain schematically the specialized transduction. | CO1 | 12 |
| (OR) | | | |  |
| 2. | a. | Comment on the enriched, selective and indicator media for culturing microbes. | CO2 | 6 |
| b. | Write a note on the differential staining. | CO2 | 4 |
| c. | Mention the disadvantages of pour plate method of isolation of pure culture, and explain diagrammatically the alternative method to overcome such limitations. | CO2 | 10 |
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| 3. | a. | Bring out the basic steps involved in PCR process in brief. | CO3 | 8 |
| b. | Expand and define FISH, and bring out its uses. Give the schematic representation for the principle of FISH. | CO3 | 12 |
| (OR) | | | |  |
| 4. | a. | What could be a nucleic acid hybridization probe? | CO3 | 2 |
| b. | Give a detailed account of cycling probe technology, followed by its applications. | CO3 | 18 |
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| 5. | a. | Genetic information is actually meant at the molecular level in three ways – how? | CO1 | 4 |
| b. | Tabulate the eukaryotic cellular site of biosynthesis, enzyme involved, and role of the three types of RNA. | CO1 | 6 |
| c. | Discuss the process of initiation of prokaryotic mRNA biosynthesis. | CO1 | 10 |
| (OR) | | | |  |
| 6. | a. | Give the genetic code (GC) table with the respective amino acid representations, and write a short note on GC properties. | CO1 | 12 |
| b. | Define post-translational processing. Why it needs to occur? And cite the examples for that, followed by their importance. | CO1 | 8 |
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| 7. |  | What do you understand by central dogma of life? Show its regulation with *trp* operon model. | CO1 | 4+16 |
| (OR) | | | |  |
| 8. | a. | What is metagenomics? Give the schematic representation of construction and screening of metagenomic libraries from the ecobiological samples. | CO3 | 12 |
| b. | Briefly discuss the applications of metagenomics in the fields of infectious disease diagnosis, biofuel production, eco-remediation and agriculture. | CO3 | 8 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Bring out the i) similarities and ii) differences between cloning vectors and expression vectors. | CO1 | 6 |
| b. | Explain colony hybridization diagrammatically in brief. | CO3 | 8 |
| c. | What is cell differentiation? Define the different levels of cell potency (with examples) during multicellular differentiation. | CO1 | 6 |