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

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

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| **Code :** | **17BI2001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ANALYTICAL BIOINFORMATICS** | **Max. marks :** | **100** |

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

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | Discuss in detail the classification, features and characteristics of biological databases. | CO1 | 20 |
| (OR) | | | | |
| 2. | a. | Describe the different versions of BLAST and FASTA programs. | CO1 | 5 |
| b. | Illustrate and explain the Blast algorithm. | CO1 | 15 |
|  |  |  |  |  |
| 3. | a. | Establish how dynamic programming algorithms are ideal in performing optimal sequence alignments. | CO2 | 15 |
| b. | Distinguish local and global sequence alignments using suitable examples. | CO2 | 5 |
| (OR) | | | | |
| 4. |  | Perform global alignment for the following DNA sequence fragments from Mouse and Homosapiens  **Mouse: GTTCAC T C C**  **Homo sapiens: GTAGAT T C G**  **Scores : Match = 2; Mismatch = -2; Gap = -2** | CO3 | 20 |
|  |  |  |  |  |
| 5. | a. | Give the significance of Ramachandran plot. | CO5 | 10 |
| b. | Define an example on your own and explain the procedure for SIMPA algorithm. | CO5 | 10 |
| (OR) | | | | |
| 6. |  | Given a cluster of related sequences from various organisms, describe the procedure for performing multiple sequence alignment and its result interpretation. | CO3 | 20 |
|  |  |  |  |  |
| 7. | a. | Illustrate with a representative phylogenetic tree, the various terms associated with it. | CO4 | 10 |
| b. | Show examples and explain rooted and unrooted phylogenetic trees. | CO4 | 10 |
| (OR) | | | | |
| 8. |  | Define an example on your own and construct a phylogenetic tree using UPGMA method. Also explain the algorithm. | CO4 | 20 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain with suitable diagrams the eukaryotic and prokaryotic gene structure. | CO6 | 10 |
| b. | Explain any two gene finding methods. | CO6 | 10 |