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

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

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| **Code :** | **15BT3024** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MICROBIAL NANOTECHNOLOGY** | **Max. marks :** | **100** |

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

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | Elaborate the history and evolution of nanotechnology from the 4th Century (Rome) to the present day. | CO1 | 20 |
| (OR) | | | | |
| 2. | a. | Discuss the factors affecting the manufacturing/synthesis of nanomaterials/nanoparticles. | CO1 | 10 |
| b. | Describe the evolution of nanotechnology from 1998 to the Nano Mission in 2017 from the Indian perspective. | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Interpret the classification of nanoparticles based on dimension. | CO2 | 4 |
| b. | Discuss in detail the characterization of size, structure, stabilization and aggregation of nanoparticles using UV-Vis Spectroscopy. | CO2 | 16 |
| (OR) | | | | |
| 4. |  | Discuss in detail the characterization of particle morphology and size of nanoparticles using the following tools: |  |  |
| a. | Atomic force microscopy. | CO3 | 10 |
| b. | Scanning electron microscopy. | 10 |
|  |  |  |  |  |
| 5. |  | Discuss in detail the structure, properties and applications of the following nanosystems: |  |  |
| a. | Fullerenes. | CO3 | 10 |
| b. | Semiconductor quantum dots. | 10 |
| (OR) | | | | |
| 6. |  | Evaluate the methods for microbial synthesis of nanoparticles based on the research paper, “Biosynthesis of Nanoparticles by Microorganisms and their Applications”given as self-study. | CO3 | 20 |
|  |  |  |  |  |
| 7. | a. | Discuss the properties of nanoparticles in detail. | CO2 | 10 |
| b. | Infer the application of nanomaterials in todays. | CO2 | 10 |
| (OR) | | | | |
| 8. | a. | Describe the Applications of nanotechnology in microbiology in general, food mirobiology and water microbiology. | CO1 | 10 |
| b. | Elucidate the application of nanotechnology in nanomedicine with a special mention about “Nanobots”. | CO1 | 10 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. |  | Interpret and infer the various societal implications of nanoscience and nanotechnology incurred in the Environment referred to as “Green Nanotechnology”. | CO3 | 20 |