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

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

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| **Code :** | **16NT3007** | **Duration :** | **3hrs** |
| **Sub. Name :** | **BIOMEDICAL NANOSTRUCTURES AND NANOMEDICINE** | **Max. Marks :** | **100** |

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

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| **Q. No.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | Explain micro / nanomachining in the design of dental and orthopedic materials. | CO1 | 20 |
| **(OR)** | | | |
| 2. | Describe the role and biocompatible materials in nanomedicine. | CO2 | 20 |
|  |  |  |  |
| 3. | What are hydrogels? Explain their classifications and applications in biomedical engineering. | CO2 | 20 |
| **(OR)** | | | |
| 4. | Elaborate the following: (a) core-shell structured materials (b) stimuli sensitive polymers. | CO3 | 20 |
|  |  |  |  |
| 5. | Discuss with following with relevance to drug delivery: (a) Ability to cross biological membranes (b) Activation and targeting through physicochemical stimuli (c) Drug targeting through targeting molecules. | CO3 | 20 |
| **(OR)** | | | |
| 6. | Explain the role of polymeric nanostructures for effective drug delivery. | CO4 | 20 |
|  |  |  |  |
| 7. | Explain bioconjugated nanoparticles for ultrasensitive detection of molecular biomarkers and infectious agents. | CO4 | 20 |
| **(OR)** | | | |
| 8. | Describe DNA / RNA transfection and the barriers associated. | CO5 | 20 |
|  | **Compulsory:** |  |  |
| 9. | Give a detailed account of :   1. cell-extra-cellular matrix interactions 2. cell behavior toward nanotopographic surfaces. | CO5 | 20 |