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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – April/May– 2017**

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| **Code :** | **16NT2002** | **Max Marks :** | **100** |
| **Sub. Name :** | **SYNTHESIS OF NANOMATERIALS** | **Duration :** | **3hrs** |

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

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| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Sketch the various steps involved in lithography process. | CO1 | 10 |
| b. | Diagramatically explain the mechanisms of sintering. | CO1 | 10 |
| (OR) | | | | |
| 2. |  | Discuss three different methods in which CNT can be synthesized ? | CO2 | 20 |
| 3. | a | Write a note on nanosprings and nanorings. | CO1 | 10 |
|  | b | Schematically explain the working principle of electrospinning. | CO1 | 10 |
|  |  | (OR) |  |  |
| 4 |  | Discuss in detail the template based synthesis of nano particles. | CO2 | 20 |
| 5. |  | Name the different stages involved in sonochemical method and explain how to prepare metallic copper nanoparticles using sonochemical method. | CO2 | 20 |
|  |  | (OR) |  |  |
| 6 | a | What are the steps involved in synthesis of nanoparticles using combustion technique. | CO2 | 10 |
|  | b | Draw a flow chart representing the various steps involved in synthesis of nano structures using sol-gel method. | CO2 | 10 |
| 7 |  | Discuss the construction and working of nano structure through PVD and CVD. | CO2 | 20 |
|  |  | (OR) |  |  |
| 8 | a | Explain in detail the instrumentation and working principle of. Molecular Beam Epitaxy (MBE). | CO1 | 15 |
|  | b | Explain self assembly. | CO2 | 5 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain the steps involved in synthesis of ZnO nano rods | CO2 | 14 |
|  | b. | Explain the following  0D, 1D, 2D and 3D nano structures | CO1 | 6 |