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

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

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

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

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | What are the three different methods in which CNT can be synthesized ? | CO2 | 20 |
| OR | | | | |
| 2. | a | Sketch the various steps involved in lithography process. | CO2 | 10 |
| b | Different types of chemical reactions involved in CVD. | CO2 | 10 |
|  |  |  |  |  |
| 3. |  | Explain in detail the instrumentation and working principle of Molecular Beam Epitaxy (MBE). | CO1 | 20 |
| OR | | | | |
| 4. |  | Discuss about the types of sputter deposition with a neat diagram. | CO1 | 20 |
|  |  |  |  |  |
| 5. | a | Draw a flow chart representing the various steps involved in synthesis of GO using Hummers modified method. | CO2 | 10 |
| b | Draw the graph between DOS and energy for 3D,2D,1D and 0D with an example. | CO1 | 5 |
| c | Difference between PVD and CVD. | CO2 | 5 |
| OR | | | | |
| 6. | a. | What are the steps involved in synthesis of ZnO nanorods using combustion technique. | CO2 | 10 |
| b | Write down the procedure for synthesis of CdS nanorods. | CO2 | 10 |
|  |  |  |  |  |
| 7. | a | Explain the working principle of Electroplaing. | CO1 | 10 |
| b | Briefly discuss the set up of Spray pyrolysis technique. | CO1 | 10 |
| OR | | | | |
| 8. |  | What are different types of high energy ball milling and explain them in detail with necessary diagrams. | CO1 | 20 |
| **Compulsory:** | | | | |
| 9. | a | Draw the flow chart for different types of Soft lithography. | CO1 | 5 |
| b | Diagramatically explain the types of replica moulding. | CO1 | 15 |