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



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

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| **Code :** | **16NT3005** | **Duration :** | **3hrs** |
| **Sub. Name :** | **FUNCTIONALIZATION 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. | a. | What are pyrazolinofullerenes? Write their formation and synthetic applications. | CO1 | 10 |
| b. | Explain the following reactions.  i) Turkevich synthesis ii) Brust and Schriffin synthesis | CO2 | 10 |
| **(OR)** | | | | |
| 2. | a. | Give the applications of CNT. | CO2 | 15 |
| b. | Differentiate between endohedral and exohedral fullerenes with examples. | CO1 | 5 |
|  |  |  |  |  |
| 3. | a. | What are the common ligand stabilizers used for gold clusters? Write notes on ligand stabilized gold clusters. | CO1 | 10 |
| b. | Discuss the properties of gold nano particles. | CO5 | 10 |
| **(OR)** | | | | |
| 4. |  | Explain the classification of core shell methods of synthesising nano materials. | CO4 | 20 |
|  |  |  |  |  |
| 5. | a. | Discuss the properties of graphene. | CO5 | 5 |
| b. | Give the applications of graphene. | CO4 | 15 |
| **(OR)** | | | | |
| 6. | a. | Write notes on the role of hydroxyl group on graphene oxide. | CO6 | 5 |
| b. | Write about the following reactions possible on graphene.   1. Diels Alder reaction ii) Bingel reaction | CO2 | 15 |
|  |  |  |  |  |
| 7. | a. | How will you synthesise magnetic nano particles? | CO3 | 10 |
| b. | Discuss the adsorption of organic ligand on iron oxide nanoparticles. | CO6 | 10 |
| **(OR)** | | | | |
| 8. |  | Explain the surface modifications possible on magnetic nanoparticles. | CO6 | 20 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | How quantum dots are stabilized using thiol and amine containing ligands? | CO5 | 10 |
| b. | Discuss the non-covalent binding of biomolecules to the surface of functionalized quantum dots. | CO3 | 10 |