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 – Nov/Dec – 2017**

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| **Code :** | **14CH2023** | **Duration :** | **3hrs** |
| **Sub. Name :** | **APPLIED NANOCHEMISTRY AND NEXT GENERATION MATERIALS** | **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. | How can you prepare 1D nano structure by using Bottom-Up method? | CO3 | 8 |
| b. | Write the preparation of nanoparticles by CVD method. | CO2 | 6 |
| c. | How will you prepare metallic nanoparticle? | CO4 | 6 |
| (OR) | | | | |
| 2. | a. | Explain how Sol Gel method used to fabricate nanoparticles | CO3 | 8 |
| b. | Discuss top down method and it is used to prepare 1D nano structure | CO3 | 8 |
| c. | Explain the uses of Ball milling | CO4 | 4 |
|  |  |  |  |  |
| 3. | a. | Discuss the three types nucleation modes with diagram | CO2 | 8 |
|  | b. | How will you prepare Spinal in the laboratory | CO4 | 6 |
|  | c. | What do you mean by epitaxy, explain with examples? | CO3 | 6 |
| (OR) | | | | |
| 4. | a. | Discuss the difference between sputtering and evaporation? | CO3 | 8 |
|  | b. | Describe the working principle of Electrospinning for the nanowire with diagram | CO3 | 10 |
|  | c. | Write any two physical properties of the nanomaterials | CO3 | 2 |
|  |  |  |  |  |
| 5. | a. | Discuss the methods of synthesis of Bucky Ball | CO3 | 10 |
|  | b. | Discuss the applications of carbon nanotubes. | CO3 | 4 |
|  | c. | Discuss the advantages and disadvantages of STM | CO3 | 6 |
| (OR) | | | | |
| 6. | a. | What is CNT? How will you prepare CNT and explain with diagram? | CO3 | 10 |
|  | b. | Define MBE? Discuss the instrumentation, working principles of MBE | CO3 | 10 |
|  |  |  |  |  |
| 7. | a. | In which microscopy, the cantilever is used and discuss its working principles? | CO4 | 10 |
|  | b. | Write brief notes on Scanning Tunneling Microscopy | CO3 | 10 |
| (OR) | | | | |
| 8. | a. | What do you mean by TEM? Narrate its working principle with diagram? | CO4 | 10 |
|  | b. | Discuss a short note on Organic-Inorganic hybrids and their its classes | CO3 | 10 |
|  |  |  |  |  |
|  | | Compulsory: |  |  |
| 9. | a. | Identify any five nanoparticles as a part of next generation materials and write its applications. | CO5 | 10 |
|  | b. | Discuss the concept of photolithography with diagram. | CO4 | 10 |

ALL THE BEST