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 – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14NT3021** | **Duration :** | **3hrs** |
| **Sub. Name :** | **Semiconductor Nanostructure & Nanoparticles** | **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. | Discuss various classes of materials and its importance in detail based on semiconductor applications. | CO1 | 10 |
| b. | Draw the hierarchy of electrical behavior of the material and its applications in detail? | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | What is mean by defects in nanostructures? Draw various representations of defects and explain its importance in detail. | CO1 | 10 |
| b. | Define absorption. Explain the various absorption process with neat diagram. | CO1 | 10 |
| 3. | a. | Define synthesis. | CO2 | 2 |
|  | b. | Describe the synthesis method of Solgel in nano materials and discuss its functions in detail. | CO2 | 18 |
| (OR) | | | | |
| 4. | a. | Write the advantages of CVD method over other synthesis methods? Explain CVD method in detail with neat sketch? | CO2 | 12 |
|  | b. | How synthesis of nano particle is performed using electrodeposition method? | CO2 | 8 |
| 5. | a. | Write down the various steps involved in bottom up process of nanomaterials and explain its process in detail. | CO2 | 20 |
| (OR) | | | | |
| 6. | a. | Explain in detail about thermal transport of nano-materials for electronic cooling applications. | CO3 | 20 |
| 7. | a. | What is the significance of Melting point in nonmaterial? Discuss various material properties based on Density and tensile strength? | CO3 | 20 |
| (OR) | | | | |
| 8. | a. | Define photovoltaic effect. | CO3 | 4 |
|  | b. | Write the significance of design parameters involved in PV solar cell and explain solar cell in detail. | CO3 | 16 |
|  | | **Compulsory:** |  |  |
| 9. | a. | List the applications of nanowires. | CO3 | 4 |
|  | b. | Design a multiple wall CNT based field effect transistor based on high frequency applications. | CO3 | 16 |

Course outcome:

CO1: Students will get an in-depth knowledge about the basics of semiconductor physics.

CO2:Students will get an in-depth knowledge about the basics of semiconductor nanoparticles,

semiconductor nanowires.

CO3: Gain knowledge in the applications of semiconductor nanowires.

ALL THE BEST