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 :** | **14NT2017** | **Duration :** | **3hrs** |
| **Sub. Name :** | **NANOSCALE SENSORS AND TRANSDUCERS** | **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. | Demonstrate the size rediction methodology so as to quantum confinement happens at different dimensions. | CO1 | 15 |
| b. | Define Nanotechnology and site some examples. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Explain some of the application of nanotechnology in electronic industry. | CO1 | 10 |
| b. | List out the change in properties with suitable example in nanoscale transformation to materials. | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Discuss about Surface acoustic wave and Bulk acoustic wave based transducers with a neat diagram. | CO2 | 8 |
|  | b. | Explain optical fiber based transducers with schematic diagram and explain about interferometric transducers. | CO2 | 12 |
| (OR) | | | | |
| 4. |  | Discuss in detail about piezoelectric effect and the transducer with a neat diagram. | CO2 | 20 |
|  |  |  |  |  |
| 5. | a. | Explain with necessary diagrams, about p-n diode and Schottky diode transducers. | CO2 | 10 |
|  | b. | Classify the various Cantilever based transducers with a neat diagram | CO2 | 10 |
| (OR) | | | | |
| 6. |  | Illustrate the magnetic tunneling junctions with a neat diagram | CO2 | 20 |
|  |  |  |  |  |
| 7. | a. | Explain the following: AMR, Giant and Colossal magneto resistors. | CO2 | 15 |
|  | b. | With a neat diagram explain the bio magnetic sensor. | CO2 | 5 |
| (OR) | | | | |
| 8. |  | Demonstrate the working of Nano optical sensors with a schematic diagram. | CO2 | 20 |
|  | |  |  |  |
|  | | **Compulsory:** |  |  |
| 9. | a. | Discuss the structure of Protein and explain in detail about protein in nanodevices. | CO2 | 10 |
|  | b. | Discuss about the function of Earthing, Grounding and instrumentation amplifiers. | CO1 | 10 |

ALL THE BEST