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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

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

**End Semester Examination – Nov/Dec - 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **10EI203/EI247** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **Sensors and Transducers** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | **Marks** |
| **PART-A(10X1=10 MARKS)** | | |
| 1. | What is direct measurement? | (1) |
| 2. | Give the example of null type instrument. | (1) |
| 3. | Write the example of analog transducer. | (1) |
| 4. | Name any one passive transducer. | (1) |
| 5. | Write the expression for measuring resistance of metal conductor. | (1) |
| 6. | List the various types of synchros. | (1) |
| 7. | What is Hall Effect? | (1) |
| 8. | Write the expression for measuring capacitance between two plates. | (1) |
| 9. | Mention any one sensor for measuring angular velocity. | (1) |
| 10. | What is digital transducer? | (1) |

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| **PART B(5 X 3= 15 MARKS)** | | |
| 11. | Explain the application of measurement systems. | (3) |
| 12. | Write short notes on primary sensing element. | (3) |
| 13. | Discuss the principle of thermistor. | (3) |
| 14. | What is piezoelectric effect? | (3) |
| 15. | State the importance of tachometer encoder. | (3) |

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| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. |  | With neat sketch, explain the principle of generalized measurement system with an example. | 15 |
| (OR) | | | |
| 17. | a. | Write short notes on the various types of errors in measurement. | 12 |
| b. | What are the static characteristics of an instrument? | 3 |
| 18. |  | Explain in detail about various classifications of Transducer with an example. | 15 |
| (OR) | | | |
| 19. |  | What are the characteristics of a transducer? Elaborate on the factors influencing the choice of transducers. | 15 |
| 20. | a. | Describe the construction and working principle of Resistance Thermometer. | 10 |
| b. | State the advantages and disadvantages of thermocouple. | 5 |
| (OR) | | | |
| 21. | a. | Define inductance transducer. | 3 |
| b. | Write short notes on principle of linear variable differential transformer for displacement measurement. | 12 |
| 22. |  | Elaborate the principles of capacitive transducer and obtain its frequency response with neat diagram. | 15 |
| (OR) | | | |
| 23. | a. | List the properties of piezo electric crystal. | 2 |
| b | Draw the equivalent circuit of piezo electric transducer. | 3 |
| c. | Explain in detail about the different modes of operation of piezo electric crystals. | 10 |
| 24. | a. | Describe the different applications of hall effect transducer with neat diagram. | 12 |
| b. | Mention the different components involved in seismic transducer. | 3 |
| (OR) | | | |
| 25. | a. | What is smart sensor? | 3 |
| b. | Write short notes on fiber optic sensor and its advantages. | 12 |