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 – April/May – 2017**

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| **Code** | **14EI3009** | **Duration :** | **3hrs** |
| **Sub. Name** | **INDUSTRIAL INSTRUMENTATION** | **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 working of any one ionization gauge in detail, with necessary diagrams. | CO1 | 7 |
| b. | Depict the working of the pressure measuring device, which is used for measuring very low pressures down to one hundred-thousandth of an inch of mercury with a neat diagram. | CO2 | 10 |
| c. | A U-tube manometer is fixed with the tube in which Kerosene is flowing, whose density is 810 kg /m3, moreover the density of manometeric fluid is 1000 kg/m³ and the acceleration due to gravity is 9.8 m/s2. Find the Differential Pressure in terms of N/m2 using U tube Manometer. | CO1 | 3 |
| (OR) | | | | |
| 2. | a. | Describe how bourdon tube is used for making industrial based pressure gauge with relevant diagrams. | CO3 | 8 |
| b. | Elaborate any three types of Manometers for pressure measurement in detail. | CO2 | 12 |
| 3. | a. | Elucidate the working of any two electrical methods of temperature measurements with necessary diagrams. | CO2 | 8 |
| b. | Illustrate the working of solid and gas expansion thermometers in detail, with necessary diagrams. | CO2 | 12 |
| (OR) | | | | |
| 4. |  | Explain the working of different types of Pyrometers in detail with necessary diagrams. | CO3 | 20 |
| 5. | a. | Explain the working of different types of Ultrasonic flowmeters in detail with necessary equations and diagrams. | CO3 | 15 |
| b. | Illustrate the working of a device, which is used to create permanent pressure loss in the flow with 19o to 23o inclined angle in the inlet cone and 5o to 15o inclined angle in the outlet cone. | CO2 | 5 |
| (OR) | | | | |
| 6. | a. | Explain the working of different types of Variable area flowmeters. | CO2 | 10 |
| b. | Describe the working of thermal flowmeters in detail with relevant diagrams. | CO1 | 10 |
| 7. | a. | Elaborate the working of bubbler tube liquid level measuring system with a neat sketch. | CO1 | 10 |
| b. | Demonstrate the working of Diaphragm based Metering pumps in detail. | CO2 | 10 |
| (OR) | | | | |
| 8. | a. | Elaborate the working of Radiation Level detector with a neat sketch. | CO1 | 8 |
|  | b. | Exaplain the different types of direct level measurements with necessary diagrams. | CO1 | 12 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Elaborate the different types of Viscosity measurement. | CO3 | 15 |
|  | b. | Discuss the need of pH measurements and its applications. | CO1 | 5 |

ALL THE BEST