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 :** | **14EI2041** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MEASURMENTS AND 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. | Discuss in detail the different types of systematic errors and the measures taken to minimize these errors. | CO 1 | 10 |
| b. | Why is damping torque necessary in indicating instruments? Sketch the curves showing the different damping conditions. | CO 1 | 10 |
| (OR) | | | | |
| 2. | a. | Describe the construction and working of Galvanometer instrument. Derive its torque equation. | CO 1 | 10 |
| b. | Explain the construction and working of a Series & Shunt Type Ohmmeter. | CO 1 | 10 |
|  |  |  |  |  |
| 3. | a. | Describe the working of Energy meter with its constructional diagram. | CO 1 | 10 |
|  | b. | A basic d’arsonval Movement with an internal resistance of 50 Ω and a full scale deflection current with an internal resistance of 2 mA is to be used as a mutirange voltmeter. Design the series string of multipliers to obtain the voltage ranges of 0-10 V, 0-50V, 0-100V, and 0-500V.The arrangement is shown in the following diagram. | CO 1 | 10 |
| (OR) | | | | |
| 4. | a. | Describe how an unknown capacitance is measured with the help of Wheatstone & Kelvin bridge. | CO 1 | 10 |
|  | b. | Discuss the working of Hay’s bridge for measurement of inductance. Derive the equations for balance. | CO 1 | 10 |
|  |  |  |  |  |
| 5. | a. | Narrate the measurement of Pressure using Mutual Inductance principle. | CO 2 | 10 |
|  | b. | Enumerate on measurement of pressure using a capacitive transducer. | CO 2 | 5 |
|  | c. | Give a brief note any one digital instrument used in speed measurement. | CO 2 | 5 |
| (OR) | | | | |
| 6. | a. | Discuss the principle and working of Thermocouple & RTD sensors. Sketch their typical characteristics. | CO 2 | 10 |
|  | b. | Explain the circuit of RC phase shift oscillators. Describe how Barkhausen criteria are satisfied in this oscillator. | CO 2 | 10 |
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| 7. | a. | Sketch the block diagram of Spectrum analyzer and describe its working. | CO 2 | 10 |
|  | b. | Describe the principle of working of Wien’s bridge oscillator. Give its advantages and disadvantages. | CO 2 | 10 |
| (OR) | | | | |
| 8. | a. | Draw and explain the principle of Harmonic distortion analyzer. | CO 2 | 10 |
|  | b. | Describe in detail the circuit and working of an Astablemultivibrator. | CO 2 | 10 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Describe the functioning of a basic type of strip chart recorder. Explain the different types of marking mechanisms used in it. | CO 1 | 7 |
|  | b. | Enumerate with a block diagram, the various elements involved in a digital data acquisition system. | CO 1 | 7 |
|  | c. | With suitable circuit diagram, the working of an XY recorder. Give its applications. | CO 1 | 6 |

ALL THE BEST