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**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| **Code :** | **14EI2048** | **Duration :** | **3hrs** |
| **Sub. Name :** | **INSTRUMENTATION AND CONTROL SYSTEMS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS 5 x 20 = 100 Marks**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Explain briefly the measurement Process and draw the block diagram of generalized measurement system with example. | CO1 | 15 |
| b. | What is calibration and reasons for having instruments calibrated? | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | What is recorder? How it is classified? Explain the working of XY recorder? | CO1 | 15 |
| b. | How galvanometer can be converted into a ammeter? | CO1 | 5 |
| 3. | a. | Explain briefly the construction and working of load cell for measurement  of pressure. | CO1 | 15 |
|  | b. | Explain briefly the integrating indicating with example. | CO1 | 5 |
| (OR) | | | | |
| 4. | a. | Explain briefly the construction and working of a Thermocouple for measurement of Temperature. | CO1 | 15 |
|  | b. | Explain how the Wheatstone bridge circuit may be utilized for the measurement of temperature. | CO1 | 5 |
| 5. | a. | With relevant diagram explain the different types of strain gauge. | CO1 | 15 |
|  | b. | What is Gauge Factor? What is its significance? | CO1 | 5 |
| (OR) | | | | |
| 6. | a. | Explain the working of a hot wire anemometer for constant current method. | CO1 | 15 |
|  | b. | Explain the working of Electromagnetic flow meter . | CO1 | 5 |
| 7. | a. | Use Mason’s gain formula for determining the overall transfer function of the system show in Fig. | CO3 | 15 |
|  | b. | What is control system? Explain open loop and closed loop control system with example? | CO3 | 5 |
| (OR) | | | | |
| 8. | a. | Construct Routh array and determine the stability of the system represented by the characteristic equation, s6+2s5+8s4+12s3+20s2 +16s+16=0.Comment on the location of the roots of characteristic equation. | CO2 | 15 |
|  | b. | What is the necessary condition for stability? Explain the relation between stability and coefficient of characteristic Polynomial. | CO2 | 5 |
|  | | **Compulsory:** |  |  |
| 9. | a. | The open loop transfer function of a unity feedback control system is given by. Sketch the polar plot and determine the phase margin and gain margin. | CO2 | 15 |
|  | b. | Find the type and order of the following system transfer function  i  ii | CO2 | 5 |

ALL THE BEST