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 – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14EI2009** | **Duration :** | **3hrs** |
| **Sub. Name :** | **PROCESS DYNAMICS AND CONTROL** | **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. | With neat block diagram, explain the components and different types of variables associated with process control. | CO1 | 15 |
| b. | Mention the need for process control. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Classify higher order systems.What is meant by non-interacting systems and derive the transfer function for non-interacting liquid system. | CO1 | 1 |
| b. | Bring out the difference between continuous and batch process. | CO1 | 5 |
| 3. | a. | Write about the on-off controller with its neutral zone and applications. | CO1 | 1 |
|  | b. | Discuss the characteristics and applications of Integral controller. | CO2 | 1 |
| (OR) | | | | |
| 4. | a. | Given the error values plot a graph of a PI controller output as a function of time Kp=5, Ki=1.0s-1, PI (0) =20% | CO2 | 15 |
|  | b. | Name the different types of control modes. | CO2 | 5 |
| 5. | a. | Discuss in detail about the controller tuning using Ziegler-Nicholas method. | CO2 | 10 |
|  | b. | Explain the dynamic behavior of closed loop response of the liquid level in a tank. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Discuss in detail about Control Valve sizing. | CO3 | 10 |
|  | b. | With neat diagram, explain the operation of direct action type spring and diaphragm actuators. | CO3 | 10 |
| 7. | a. | Draw neatly and explain the generalized block diagram of ratio control scheme. | CO3 | 12 |
|  | b. | Bring out the differences between feed forward and feedback control. | CO3 | 8 |
| (OR) | | | | |
| 8. | a. | Write briefly about selection and tuning of controllers for cascade control scheme. | CO3 | 10 |
|  | b. | Mention the advantages of cascade control scheme. | CO3 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | With a neat diagram, explain the operation of evaporators. | CO3 | 20 |

ALL THE BEST