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



**End Semester Examination – Nov / Dec – 2019**

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| **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. | Distinguish between batch process and continuous process with relevant examples. | CO1 | 8 |
| b. | Obtain the mathematical model for Mercury thermometer. | CO1 | 12 |
| **(OR)** | | | | |
| 2. | a. | Derive the mathematical model of the two tanknon-interacting liquid level system. | CO1 | 16 |
| b. | Write short notes on Self Regulation process. | CO1 | 4 |
|  |  |  |  |  |
| 3. | a. | Describe the working of On-Off controller with the necessary graph. | CO2 | 6 |
|  | b. | With necessary diagrams, explain the working of PID controller in detail. | CO2 | 14 |
| **(OR)** | | | | |
| 4. | a. | Design the PID Controller for the error as shown in figure below. For the given values Kp=5, KI = 0.7 s-1, KD= 0.5 s and pI(0) = 20%  New Doc 6 | CO2 | 20 |
|  |  |  |  |  |
| 5. | a. | Describe the procedure for finding controller parameters using sustained oscillation tuning method. | CO2 | 12 |
|  | b. | Discuss about the time integral performance criteria. | CO2 | 8 |
| **(OR)** | | | | |
| 6. | a. | Demonstrate the procedure and tuning rules of Cohen and Coon tuning method. | CO2 | 20 |
|  |  |  |  |  |
| 7. | a. | Classify the types of control valves and elaborate the working of any four types with necessary diagrams. | CO3 | 20 |
| **(OR)** | | | | |
| 8. | a. | Illustrate the working of various types of pneumatic actuators in detail. | CO3 | 20 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Describe the working of Cascade control with suitable examples. | CO3 | 16 |
|  | b. | Explain the working of ratio control in process control industries. | CO3 | 4 |