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



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

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| **Code :** | **17EI2043** | **Duration :** | **3hrs** |
| **Sub. Name :** | **PROCESS CONTROL FOR FOOD ENGINEERS** | **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. | Explain an automatic process control system with a neat diagram. | CO3 | 15 |
| b. | Give the difference between hydraulic and pneumatic systems. | CO1 | 5 |
| **(OR)** | | | | |  | | | | | | | | (OR) |
| 2. | a. | Explain in detail about the Construction and working of pneumatically operated Control valve with neat sketch. | CO6 | 15 |
| b. | Discuss in detail about on-off Controller with suitable example. | CO1 | 5 |
|  |  |  |  |  |
| 3. | a. | Use Mason’s gain formula for determining the overall transfer function of the system show in  Fig. | CO2 | 15 |
| b. | List the basic properties of signal flow graph. | CO2 | 5 |
| **(OR)** | | | | |  |  | |  | |  | |
| 4. | a. | Explain in detail the specific features of bourdon-tube pressure gauge. | CO5 | 15 |
| b. | Write short note on derivative control. | CO2 | 5 |
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| 5. | a. | Convert the block diagram into signal flow graph and find the overall transfer function using Mason’s gain formula. | CO2 | 15 |
| b. | Explain the rules used to reduce the block diagram. | CO6 | 5 |
| **(OR)** | | | | |  | |  | |  | |
| 6. | 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. | CO3 | 15 |
| b. | Discuss the necessary condition for stability. Explain the relation between stability and coefficient of characteristic Polynomial. | CO3 | 5 |
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| 7. | a. | Briefly explain about the principle of Inductive pressure transducer with a neat diagram. | CO4 | 15 |
| b. | Discuss in detail about the classification and principle of transducers. | CO4 | 5 |
| **(OR)** | | | | |
| 8. | a. | List the Non-contact type of level transducers and explain with the neat sketch, the construction and working principle. | CO5 | 15 |
| b. | Write the principle in measuring the level using Simple float system. | CO5 | 5 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain in detail about the construction and working of pH meter. | CO 6 | 15 |
| b. | With the neat diagram explain about Gas Chromatography. | CO 6 | 5 |