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 – 2017**

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| **Code :** | **14EI2046** | **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. | Derive the Laplace Transform of sin(at). | CO1 | 10 |
| b. | Outline the servomechanism concepts in food packaging. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Derivative controller cannot act alone without Proportional Controller. Justify. | CO3 | 10 |
| b. | Explain the construction and working of pneumatically operated control valve with neat sketch. | CO3 | 10 |
|  |  |  |  |  |
| 3. | a. | Use Mason’s gain formula to determine the overall transfer function of the system shown in Figure. | CO1 | 15 |
|  | b. | Convert the block diagram into signal flow graph. | CO1 | 5 |
| (OR) | | | | |
| 4. | a. | Determine the overall transfer function C(S)/R(S) for the system shown in figure using Block Diagram reduction rules. | CO1 | 15 |
|  | b. | Classify the transducers. | CO3 | 5 |
|  |  |  |  |  |
| 5. |  | Illustrate the construction and working of Gas Chromatography and Mass Spectrometer. | CO3 | 20 |
| (OR) | | | | |
| 6. | a. | Determine the stability of the system using Routh array method whose characteristics equation given by | CO2 | 15 |
|  | b. | Identify the Primary transducer for Pressure measurement. | CO3 | 5 |
|  |  |  |  |  |
| 7. | a. | Explain the principle of Capacitive - pressure transducer with a neat diagram. | CO3 | 10 |
|  | b. | List any two contact type of level transducers and explain its construction and working principle with neat sketch. | CO3 | 10 |
| (OR) | | | | |
| 8. | a. | State and explain the principle in measuring the level using Simple float system. | CO3 | 14 |
|  | b. | Outline the concept of measuring Density using Hydrometer and LVDT. | CO3 | 6 |
|  | |  |  |  |
|  | | **Compulsory:** |  |  |
| 9. | a. | Illustrate the construction and working of pH meter. | CO3 | 10 |
|  | b. | With the neat diagram explain the Non Dispersive photometer. | CO3 | 10 |

ALL THE BEST