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 :** | **14EI2020** | **Duration :** | **3hrs** |
| **Sub. Name :** | **INSTRUMENTATION AND CONTROL IN PETROCHEMICAL INDUSTRIES** | **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 with a neat P&I diagram the Reboiler control by maintaining Boilup rate. | CO2 | 10 |
| b. | How can one maintain the desired feed temperature in the distillation column using cascade control? | CO2 | 10 |
| (OR) | | | | |
| 2. | a. | Illustrate the different schemes of pressure control in distillation column. | CO2 | 15 |
| b. | Draw the basic structure of distillation column and explain about preheater. | CO1 | 5 |
| 3. |  | With neat P&ID diagrams, explain the control of batch dryers in detail. | CO2 | 20 |
| (OR) | | | | |
| 4. | a. | Describe the pressure control in the chemical reactor by throttling the flow of vent gas. | CO2 | 6 |
| b. | Discuss about the cooling and heating capability of cascade temperature control in chemical reactors. | CO2 | 14 |
| 5. | a. | Define Degrees of freedom. | CO1 | 2 |
| b. | Explain about the various Instrumentation and controls involved in condenser. | CO2 | 15 |
| c. | Draw the P&ID diagram of Heat Exchanger. | CO1 | 3 |
| (OR) | | | | |
| 6. | a. | Elaborate the different types of control implicated in Liquid-to-Liquid Heat exchanger. | CO2 | 16 |
|  | b. | Write short notes on reboiler. | CO1 | 4 |
| 7. | a. | Elucidate the different types of Evaporators in detail with necessary diagrams. | CO2 | 16 |
| b. | Discuss about the terms co-current & counter-current operations in evaporator. | CO2 | 4 |
| (OR) | | | | |
| 8. | a. | Explain about the implementation of Cascade control scheme in evaporators. | CO2 | 12 |
| b. | Illustrate the measurement and control of absolute pressure in an evaporator. | CO1 | 8 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Illustrate the concept of batch chemical oxidation in the waste water treatment with relevant chemical equations. | CO3 | 15 |
| b. | Describe the hazardous effects of water pollution and explain the various treatments involved in reducing its effect. | CO3 | 5 |

ALL THE BEST