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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

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

**End Semester Examination – Nov/Dec - 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **12EI236** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **Instrumentation and Control in Petrochemical Industries** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | | **Marks** |
| **PART-A(10X1=10 MARKS)** | | | |
| 1. | Name any two by-products obtained from the Petroleum refinery process. | | (1) |
| 2. | \_\_\_\_\_\_\_\_\_\_\_\_ is used to heat the bottom liquid leaving the column. | | (1) |
| 3. | List out few continuous dryers. | | (1) |
| 4. | Sketch the typical drying curve. | | (1) |
| 5. | \_\_\_\_\_\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_= Degrees of freedom. | | (1) |
| 6. | Draw the P&ID diagram of Cooling vapour. | | (1) |
| 7. | What is Single effect evaporator? | | (1) |
| 8. | How many effects of evaporation are used in desalination plant? | | (1) |
| 9. | What is ORP? | | (1) |
| 10. | What is the electrode potential of the cyanide waste solution? | | (1) |
| **PART B(5 X 3= 15 MARKS)** | | | |
| 11. | With a neat sketch, write shorts on basic distillation equipment. | | (3) |
| 12. | Distinguish between Batch and Continuous dryers. | | (3) |
| 13. | Draw the Piping & Instrumentation diagram of steam heater. | | (3) |
| 14. | What is evaporator? List any two applications of evaporators. | | (3) |
| 15. | What is Precipitation? | | (3) |
| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. | a. | Explain about the column feed temperature control. | 6 |
| b. | Illustrate the working of the various control strategies involved in the Reboiler. | 9 |
| (OR) | | | |
| 17. |  | Elaborate the working of various pressure control methods of distillation column with necessary diagrams. | 15 |
| 18. |  | Discuss in detail about the operation of batch and continuous type of Fluid Bed dryers. | 15 |
| (OR) | | | |
| 19. | a. | Explain the pressure control in a chemical reactor by throttling the flow of vent gas. | 6 |
| b. | Describe about the temperature control involved in chemical reactors. | 9 |
| 20. | a. | Discuss the Instrumentation and control involved in the condenser. | 10 |
| b. | Write short notes on the variables of Heat Exchanger and determine its Degrees of freedom. | 5 |
| (OR) | | | |
| 21. |  | Explain the different types of control implicated in Liquid-to-Liquid Heat exchanger. | 15 |
| 22. | a. | Describe about the cascade control of evaporators in detail. | 9 |
| b. | Demonstrate the measurement and control of absolute pressure in an evaporator. | 6 |
| (OR) | | | |
| 23. |  | With a neat sketch, elaborate the working of all the different types of Evaporators in detail. | 15 |
| 24. | a. | Explain the use of Biological Control in waste-water treatment. | 8 |
| b. | Describe the schematic control system of an acid waste neutralization system. | 7 |
| (OR) | | | |
| 25. | a. | Illustrate the concept of Chemical Oxidation with relevant chemical equations. | 10 |
| b. | Describe the need of water treatment and classify the different types of water treatment. | 5 |

ALL THE BEST