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Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



SEVENTH SEMESTER B.TECH (INSTRUMENTATION AND CONTROL ENGINEERING) END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: INSTRUMENTATION AND CONTROL IN PETROCHEMICAL INDUSTRIES [ICE 441]

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ANY FIVE FULL** questions.
- ❖ Missing data may be suitably assumed.

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| 1A. | Explain the process of vapour recompression pressure control in a distillation column. | 4 |
| 1B. | Describe feed rate control in a distillation column with neat diagram | 4 |
| 1C. | Draw the diagram of distillation column with all its necessary supporting equipment's. | 2 |
| 2A. | Explain horizontal-tube evaporator with neat diagram. | 4 |
| 2B. | Describe simple feedback control of evaporator with neat diagram. | 4 |
| 2C. | Define the following: | 2 |
| | (i) Economy (ii) Multiple-effect evaporation | |
| 3A. | Explain temperature-pressure cascade control of a heat exchanger. | 4 |
| 3B. | Define the steady state gain of liquid-liquid heat exchanger process. | 2 |
| 3C. | Draw the diagram of a feedforward control loop for a heat exchanger. | 4 |
| 4A. | Explain the various curves in batch dryer. | 5 |
| 4B. | Describe continuous fluid bed dryer with necessary diagram. | 5 |
| 5A. | Define and elaborate on the various time constants in a reactor. | 4 |
| 5B. | Explain cascade control of a reactor with recirculation. | 4 |
| 5C. | Differentiate between batch and continuous reactor. | 2 |
| 6A. | Describe the process of fuel control in boiler with neat diagram. | 5 |
| 6B. | Explain the working and construction of centrifugal pump. | 5 |