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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SECOND SEMESTER M.TECH DEGREE EXAMINATION, APRIL/MAY 2018

Branch: Electrical and Electronics

Stream(s): Control Systems, Guidance and Navigational Control, Power Control and Drives

Course Code & Name:

01EE6112 – Process Control & Industrial Automation

Answer any two full questions from each part

Limit answers to the required points.

Max. Marks: 60

Duration: 3 hours

PART A

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|----|----|---|---|
| 1. | a. | With a neat block diagram explain the various process control elements. | 6 |
| | b. | What is transportation lag? | 3 |
| 2. | a. | Explain about a second order system with a suitable example | 5 |
| | b. | Write a short note on heat exchangers | 4 |
| 3. | a. | Explain the steps involved in PID controller tuning by ZN method? | 5 |
| | b. | What are the precautions to be taken in ZN tuning? | 4 |

PART B

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|----|----|---|---|
| 4. | a. | How a feed forward control system is different from a feedback control system? Explain with an example. | 6 |
| | b. | Explain the position form of digital PID controller | 3 |
| 5. | a. | Explain about any one of the control structure used in systems with time delay | 5 |
| | b. | Compare MPC and Model reference adaptive control schemes | 4 |
| 6. | a. | What is the control structure in internal mode control? | 5 |
| | b. | Explain about over-ride control system with a suitable example | 4 |

PART C

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|----|----|---|---|
| 7. | a. | Describe the PLC operation? | 4 |
| | b. | Explain the different SCADA generations in detail | 8 |
| 8. | a. | Explain the significance of IEC 61508 | 4 |
| | b. | With a neat diagram , explain about safety life cycle | 5 |
| | c. | What are the advantages of PLC? | 3 |
| 9. | a. | What is distributed control system? And what are it's typical applications? | 4 |
| | b. | Implement AND,NOT,OR and NAND logic in ladder diagram | 4 |
| | c. | Explain about IEC 61511 | 4 |