

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
V SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

Course Code: MR305

Course Name: PLC AND DATA ACQUISITION SYSTEMS

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks.

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| 1 | What is the need of a computer in a control system? | 5 |
| 2 | Write short note on dual slope ADC | 5 |
| 3 | What is aliasing? How it is eliminated? | 5 |
| 4 | Explain briefly about scan cycle. | 5 |
| 5 | Write short note on data comparison instructions. | 5 |
| 6 | Demonstrate the working of counters with the help of an example. | 5 |
| 7 | What is the need of HMI? | 5 |
| 8 | Explain briefly about Interlocking in PLC? | 5 |

PART B

Answer any three questions, each carries 10 marks.

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| 9 | a) Draw the functional block diagram of a computer control system and explain. | 5 |
| | b) Explain briefly on SCADA. | 5 |
| 10 | a) Explain about isolation amplifier. | 5 |
| | b) Draw and explain weighted resistor DAC. | 5 |
| 11 | Explain briefly the interfacing between ADC and microprocessor with the help of a neat diagram. | 10 |
| 12 | Draw and explain in detail about the PLC architecture. | 10 |
| 13 | What is PLC? What are the types of PLC? Discuss about the I/O modules used in PLC. | 10 |

PART C

Answer any two questions, each carries 15 marks.

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| 14 | a) Design a ladder program to convert temperature in Fahrenheit to Celsius. The equation for conversion is given below
$(^{\circ}\text{F} - 32) \times 5/9 = ^{\circ}\text{C}$ | 10 |
| | b) Write a note on PID instructions | 5 |
| 15 | Describe the timers and counters in PLC with suitable examples | 15 |

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|----|----|---|----|
| 16 | a) | What is meant by human machine interface? Explain how PLCs are interfaced with HMI. | 10 |
| | b) | Explain the types of HMI | 5 |
| 17 | a) | Explain requirement of communication networks of PLC | 6 |
| | b) | Write the steps for connecting PLC to computer | 9 |