Roll No. ....

Total Pages : 3

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B.Tech. 6th Semester
COMPUTER BASED INSTRUMENTATION AND CONTROL
(EIC-308)

Time : 3 Hours]

[Max. Marks : 60

Instructions :

(i)   It is compulsory to answer the questions of Part -1. Limit your answers within 20-40 word in this part.

(ii) Answer any four questions from Part -2 in detail.

(iii) Different parts of the same question are to be attempted adjacent to each other.

(iv) Assume suitable standard data wherever required, if not given.

PART–1

1. (a) "Velocity algorithm of DDC is immune to integral windup". Justify the statement.   (2)

   (b) Differentiate between Timer and counter operation performed by a PLC. When and how you intend to reset the counter?   (2)

   (c) Why guard bands are used in FDM?   (2)

   (d) Draw the schematic diagram of ADC interface to PC.   (2)

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(e) Compare two position and multi-position control mode. (2)

(f) Discuss the relative advantages and disadvantages of feedforward and feedback control system. (2)

(g) What are various electrical characteristics of RS-232? (2)

(h) Explain the program scan. (2)

(i) Distinguish between dedicated and distributed control system. (2)

(j) Explain the concept of electronic Control System? (2)

PART-2

2. (a) Explain the Building Automation and Control systems with different elements and system operations. (5)

(b) List and explain the benefits of Automation in a plant. (5)

3. (a) Explain different I/O function blocks available in any DCS system (5)

(b) What is the fastest method of ADC conversion? Define: conversion time and linearity of A/D converters. Also list the factors on which these characteristics depend. Find the number of comparators required in a 3 bit comparator type ADC. (5)

4. (a) What are various data transfer mode? Give example of each. (5)

(b) What are advantages and Disadvantages of Simulation? How can we offset the disadvantages of simulation? (5)

5. (a) Differentiate between position and velocity algorithms. Derive the output of PID controller using Position Algorithm. (5)

(b) Explain the various steps involved developing PLC based automation projects. (5)

6. (a) Explain about the selection of controllers for different processes. (5)

(b) Explain the characteristics of ON-OFF, P, I & D controllers with graphs. (5)

7. (a) What is the structure of industrial automation? Explain automation of thermal power plant. Write down all functions performed at different levels for automation of thermal power plant. (10)

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