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009504

Jan. 2022

B.Tech. (EIC) - V SEMESTER

Virtual Instrumentation//Virtual / Intelligent Instrumentation Computer Architecture

(OEL-503//EIEL-503)

Time : 90 Minutes]

[Max. Marks : 25

Instructions :

1. *It is compulsory to answer all the questions (1 mark each) of Part-A in short.*
2. *Answer any three questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) What are various elements of an intelligent instrument? (1)

(b) What is software-based instrumentation. (1)

(c) If the speed of I/O devices does not match the speed of the microprocessor, what type of data transfer techniques is used? (1)

(d) Built a VI to find factorial of a number. (1)

(e) Enlist advantages of graphical programming-based software like LABVIEW. (1)

(f) Explain in short interfacing methods of connecting DAQ Devices to Computers? (1)

(g) Write short note on Wavelet analysis. (1)

(h) What is the role of filters in signal analysis? (1)

(i) Differentiate between IIR and FIR filters. (1)

(j) Explain signal leakage problem in long segmentation of signal. (1)

PART-B

2. (a) Explain dump and intelligent instruments with Example. (3)

(b) Enlist limitation of data flow and graphical programming techniques in virtual instrumentations. (2)

3. (a) Explain the working of RS232 in serial interfacing. (2)

(b) Explain optical fiber communication system with the help of block diagram. (3)

4. Describe VIs and sub-VIs used in LabVIEW. Create a VI to select between two input clusters using a toggle switch and display in an output cluster. (5)

5. (a) A 8 bit D/A Converter has a referenced voltage of 12 V. It uses a weighted resistive network. Find the minimum value of resistance R to be connected to MSB input circuit such that maximum output current does not exceed 10 mA. Find the smallest quantified value of current. (3)

(b) Define VI's loops and charts. (2)

6. (a) Explain wait state generator implementation required for memory interfacing in detail. (2)

(b) Discuss various types of signals used in memory decoding while microprocessor interfacing. (3)