

Roll No.

Total Pages : 3

306504

December, 2019

B.Tech. (ECE/EIC)- V SEMESTER

Virtual/Intelligent Instrumentation (EIEL503/OEL503)

Time : 3 Hours] [Max. Marks : 75

Instructions :

1. It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.
2. Answer any four 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? (1.5)
(b) What is software based instrumentation. Explain the role of microcontroller? (1.5)
(c) What are the differences between a sensor and a transducer? (1.5)
(d) Built a VI to find factorial of a number. (1.5)

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- (e) Explain the advantages of graphical programming based software like LABVIEW. (1.5)
- (f) What are the interfacing methods of connecting DAQ Devices to Computers? (1.5)
- (g) Built a VI to find the sum of array elements. (1.5)
- (h) What is the role of filters in signal analysis? (1.5)
- (i) Differentiate between IIR and FIR filters. (1.5)
- (j) Explain signal leakage problem in long segmentation of signal. How it can be rectified? (1.5)

PART - B

- 2. (a) What is intelligent instrumentation? What do you understand by dumb and intelligent instruments? Explain with Example. (10)
- (b) Discuss the data flow and graphical programming techniques in virtual instrumentations. Also write their limitations. (5)
- 3. (a) Draw the bus diagram of RS232 in serial interfacing. Explain the working of it with suitable example. (5)
- (b) Explain optical fibre communication system with the help of block diagram. Enlist down its advantages and disadvantages. (10)

- 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. (15)
- 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. (5)
- (b) Explain about VI's loops, charts, arrays, graphs, clusters. (10)
- 6. (a) Explain wait state generator implementation required for memory interfacing in detail. (5)
- (b) Discuss various types of signals used in memory decoding while microprocessor interfacing. Also draw timing diagram of each of them. (10)
- 7. Write short notes on :
 - (i) Wavelets.
 - (ii) Clusters in VI.
 - (iii) Network Topologies. (15)