

# CBCS SCHEME

15MT52

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## Fifth Semester B.E. Degree Examination, July/August 2022 Virtual Instrumentation

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Define Virtual Instrumentation. Explain the Architecture of Virtual Instrumentation. (08 Marks)
- b. Explain the following : i) Single Ended Inputs ii) Differential Inputs. (08 Marks)

OR

- 2 a. Explain the Operation of PC based DAQ System, with neat block diagram. (08 Marks)
- b. Explain the concept of Universal DAQ System. (08 Marks)

### Module-2

- 3 a. Define Sampling. Explain the operation sample and Hold circuit, with neat diagram. (08 Marks)
- b. Explain the steps involved in Installation of Hardware using NI - MAX. (08 Marks)

OR

- 4 a. Explain the operation of Digital to Analog Converters, with neat block diagram. (08 Marks)
- b. Explain the concept of Timer and Counters. (08 Marks)

### Module-3

- 5 a. Define LabVIEW. Explain the important components of LabVIEW in detail. (08 Marks)
- b. Explain the following : i) Case structures ii) Flat structures. (08 Marks)

OR

- 6 a. Explain the Operation of File input/output using an example. (08 Marks)
- b. Explain the following :  
i) One – dimensional Array ii) Two – dimensional Array. (08 Marks)

### Module-4

- 7 a. Comparison between RS – 232 , RS – 422 and RS – 485. (08 Marks)
- b. Explain the Architecture of IEEE 488 Bus system, with neat diagram. (08 Marks)

OR

- 8 a. Explain the Operation of OSI model, with neat diagram. (08 Marks)
- b. Explain the Architecture of CAN Controller, with neat diagram. (08 Marks)

### Module-5

- 9 Write a short note on :  
a. Windowing and Filtering  
b. Fourier Transform  
c. Power Spectrum  
d. Correlation. (16 Marks)

OR

- 10 a. Design and implement Simple temperature indicator using LabView. (08 Marks)
- b. Design and implement Simple second order system using LabView. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

