



CBBCS SCHEME

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18MT53

Fifth Semester B.E. Degree Examination, Dec.2023/Jan.2024 Virtual Instrumentation

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Define Virtual Instrumentation and explain the working architecture of Virtual Instrumentation with neat sketch. (10 Marks)
- b. Explain the concept of multiplexing the analog inputs and briefly explain the types. (10 Marks)

OR

- 2 a. Analyze the working operation of single ended input and differential ended inputs in DAQ with a neat diagram. (10 Marks)
- b. Explain the PC band based data acquisition system with its respective components. (10 Marks)

Module-2

- 3 a. Define Sampling and explain the operation of sample and hold system. (10 Marks)
- b. Sketch and explain the operation of an 4 bit successive approximation type ADC with an example. (10 Marks)

OR

- 4 a. Draw an Dual slope ADC and explain its working. (10 Marks)
- b. Explain different types of I/O techniques used in data acquisition using a flow chart. (10 Marks)

Module-3

- 5 a. Write the difference between for and while loop. Sketch an VI to find the factorial of any number using both for and while loop. (10 Marks)
- b. Define Labview. Explain the block diagram Front panel , Connector panel of Labview. (10 Marks)

OR

- 6 a. Using Arrays, find the determinant of 2×2 matrix in Labview. (10 Marks)
- b. With an example, explain how to use clusters in Labview. (10 Marks)

Module-4

- 7 a. Compare RS 232 , RS 422 and RS 485. (10 Marks)
- b. Explain Architecture of ISO model. (10 Marks)

OR

- 8 a. With the neat diagram, explain MODBUS protocol. (10 Marks)
- b. Explain Architecture of USB and need for USB. (10 Marks)

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.

Module-5

- 9 a. Design a temperature monitoring system for continuously monitoring heat exchanger using Labview. (10 Marks)
b. Describe the built in Self test using PID controller. (10 Marks)

OR

- 10 a. Build a V.I for simple second order system using Labview. (10 Marks)
b. Write a short note on :
i) Fourier Transform.
ii) Windowing and Filtering tools.
iii) Power spectrum. (10 Marks)
