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Sr. No. 017505

December 2023

B. Tech.(EEIoT)- V SEMESTER

Virtual Instrumentation (EEN-EL1-502)

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

Q1 (a) What is the For Loop Auto-Index in LabVIEW? (1.5)

(b) Discuss the use of subVIs in LabVIEW programming. How do they contribute to modular programming? (1.5)

(c) What is shift register? How it is implemented in LabVIEW? (1.5)

(d) Explain the difference between local and global variables in LabVIEW. When would you choose one over the other? (1.5)

(e) How mixed data types are combined and passed from one file or place to the other in LabVIEW? (1.5)

(f) Explain the concept of data types in LabVIEW. How does LabVIEW handle different data types, and what are the considerations for data type compatibility? (1.5)

(g) Write a program in LabVIEW to display factorial of a number. (1.5)

(h) List out various plots under control palette used in LabVIEW? (1.5)

(i) Explain the significance of the graphical programming approach in LabVIEW. How does it benefit users in comparison to text-based programming languages? (1.5)

(j) Write a program in LabVIEW to display the cube of the number upto given an integer. (1.5)

PART -B

Q2 (a) Write a program in LabVIEW to perform different arithmetic operation using case structure from same set of numbers. (10)

(b) Explain the concept of dataflow programming in LabVIEW. How is it implemented, and why is it important? (5)

Q3 (a) What is graphical system design in virtual instrumentation? Compare text-based and graphical programming language. (5)

(b) Design a VI with Numeric controls for two operands and a String control for the operation (+, -, *, /). (10)

Q4 Explain the concept of indexing in LabVIEW arrays. How is it used to access and modify individual elements within an array? Explain the concept of array bundling and unbundling in LabVIEW. When might you use these functions in a VI? (15)

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Q5 (a) What is the plug in DAQ device? Draw and explain the various functions in the I/O files. (5)

(b) Write the LabVIEW program to create a code that contains the numerical signals from Square and Sine Waves using 2-D arrays. (10)

Q6 (a) Create a VI with a Boolean control to simulate an LED. Use a While Loop to toggle the Boolean value at a specific rate. (10)

(b) Write a program in LABVIEW to convert a given decimal number to binary form. (5)

Q7 Write short notes on: (15)

(i) GPIB Communication

(ii) Built VI for Fibonacci series using shift registers

(iii) Graphs and Charts in LabVIEW

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