

Sl. No. of Ques. Paper : 1498 F-7
Unique Paper Code : 2511702
Name of Paper : ELI-DC-I-702 : Virtual Instrumentation
Name of Course : B.Tech. Instrumentation
Semester : VII
Duration : 3 hours
Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt five questions in all. Question No. 1 is compulsory.

All questions carry equal marks. Non-Programmable Scientific Calculator is allowed.

1. (a) Explain the basic difference between traditional instruments and software-based virtual instruments. 3
(b) What is auto indexing feature in LabVIEW? 3
(c) What is the functional difference between using the conditional terminals, Stop if True and Continue if True in a while loop? 3
(d) What is a waveform chart? How is it different from a waveform graph? 3
(e) Differentiate between text based programming and graphical programming. 3
2. (a) What are the major components of a PC-based data acquisition system? 7
(b) The salary of X is input. His dearness allowance is 40% of basic salary and house rent allowance is 20% of basic salary. Build a VI to calculate his gross salary. 5
(c) Create a VI to find whether the given number is odd or even. 3
3. (a) Define sub VI in LabVIEW. Create a VI to compute full adder logic using half adder logic as sub VI. 7
(b) Create a VI to find the factorial of the given number using for loop and shift registers. 5
(c) What is the difference between viewing subVIs as icons and expandable nodes? 3
4. (a) Create a 1D numeric array which consists of ten elements and rotate it ten times. For each rotation display the equivalent binary number of the first array element in the form of a Boolean array. Also display the reversed Boolean array. Provide delay to view the rotation. 7

- (b) Build a VI to execute the following expression using stacked sequence structure:

$$(A+B)/[(A+B)]*2$$

The three cases are:

Case 1 : $A+B$

Case 2 : $(A+B)/2$

Case 3 : $(A+B)/[(A+B)]*2$

5

- (c) What is the difference between Bundle and Bundle By Name functions?

3

5. (a) Build a VI to plot a circle in the XY graph using a for loop.

7

- (b) Build a VI to create a seven-segment LED display.

5

- (c) What are flat and stacked sequence structures?

3

6. (a) Build a VI which finds the number of occurrences of a particular string in an array of strings.

7

- (b) Explain the advantages of using the DAQ Assistant and list its main inputs and outputs.

5

- (c) List the advantages of Write LabVIEW Measurement File and Read LabVIEW Measurement File.

3

7. (a) Explain GPIB communication, configuration and addressing.

7

- (b) What is VISA? List its advantages.

5

- (c) What is the use of Instrument I/O Assistant?

3