B.E. DEGREE EXAMINATIONS: NOV/DEC 2010

Seventh Semester

MECHATRONICS ENGINEERING

U07MHE08: Virtual Instrumentation

Time: Three Hours   **Maximum Marks: 100**

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. Virtual Instrumentation is one which has ---------------

   (a) Modular hardware and shared power supply   (b) Measurement of system

   (c) Firmware   (d) Fixed User Interface

2. Virtual Instrumentation consists of -----------

   (a) Hardware alone   (b) Software alone

   (c) Hardware and software   (d) Fixed function

3. Advantages of LABVIEW are ----------

   (a) GUI and scalability   (b) High level development tools

   (c) Flexibility and Repeatability   (d) All of the above.

4. Nodes are defined as -------

   (a) Object   (b) Function element

   (c) Tool element   (d) All of the above

5. Shift Registers are used for --------

   (a) Accessing data from pre loops   (b) accessing data from terminals

   (c) Shifting of data from one node to another   (d) Shifting of data from one
                                                         terminal to another.

6. While Loops are executed in ----------

   (a) Pretest mode   (b) Posttest mode   (c) Both (a) & (b) modes   (d) none of the above.

7. DAQ hardware is used for ---------

   (a) Interfacing the computer and field device   (b) Terminal connections of
                                                    communicating device

   (c) Accessories interfacing   (d) Analog and digital interfacing

8. Why signal grounding is done in DAQ?

   (a) To provide proper grounding   (b) To provide proper amplification

to signal source   on SCU and DAQ board

(c) Cabling for connecting the component together   d) All of the above.

9. TIFF is abbreviated as

(a) Tagged instruction file format   (b) Tagged information file format

(c) Tagged image file format   (d) Tagged indicator file format.

10. Property nodes are used for

(a) Read and write operation   (b) Test operation

(c) Execute operation   (d) All the above

PART-B (10 x 2 = 20 Marks)

11. Define virtual instrumentation.
12. List out the advantages of VI.
13. What do you mean by data flow programming?
14. What are the various types of palettes available in VI?
15. Define local and global variable.
16. What is the use of formula node and case structure in VI?
17. List out the types of signals available in DAQ.
18. What are the various steps involved in connecting an analog input to a DAQ card?
19. What do you mean by Pattern Matching? Give its application.
20. Give the various types of communicating devices used in VI.

PART C (5x14 = 70 Marks)

21. a) Explain VI with a neat block diagram and compare it with traditional
    instruments.   **(OR)**
    b) Explain about analog interfaces and physical architecture in detail.

22. a) Explain in detail about editing debugging and running a VI.   **(OR)**
    b) What do you mean by G-programming? Explain with various palettes and
       tools.

23. a) Explain the various types of array and cluster operations in detail.   **(OR)**
    b) Discuss the various types of graphs, charts and conditional loops in detail.

24. a) Explain the concept of DAQ in detail with its block diagram and signals.   **(OR)**
    b) Discuss in detail about real time DAQ and interfacing of analog signals to DAQ.

25. a) Discuss briefly about image acquisition in VI   **(OR)**
    b) Discuss about motion control in VI.

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