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C 3397

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2008.

Seventh Semester

Mechatronics Engineering

MH 1004 — VIRTUAL INSTRUMENTATION

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are Virtual Instruments?
2. Compare the basic difference between Conventional and a Virtual Instrument.
3. What does LabVIEW stand for?
4. What are controls and indicators?
5. List the palettes available in LabVIEW.
6. What are structures?
7. Compare the basic difference between an array and a cluster.
8. What is the function of DAQ?
9. What is a PXI system?
10. Explain the purpose of image acquisition.

PART B — (5 × 16 = 80 marks)

11. (a) What are the Key Elements of Virtual Instruments? Compare Virtual Instruments with Traditional Instruments. (16)

Or

(b) What is the role of hardware and software in virtual instrumentation? (16)

12. (a) Explain the purpose of the three graphical, floating palettes. Draw and explain how the front panel (user interface) is created. (16)

Or

(b) Explain LabVIEW as a data flow programming language with typical examples. Also explain some of the debugging techniques in LabVIEW.(16)

13. (a) Draw and explain how WHILE loops are used and explain what are clusters, cluster order, bundle and unbundling of clusters in LabVIEW? (16)

Or

(b) What are arrays and list some array functions? Explain the purpose of waveform graphs and XY graphs in LabVIEW. (16)

14. (a) What is the fundamental task of a DAQ system and what are its components? What is the purpose of Measurement and Automation Explorer (MAX)? (16)

Or

(b) What can Data Acquisition perform and what are DAQ Assistant Express VIs? (16)

15. (a) Draw the front panel and block diagram of a simple program in VI to create the slope of a line. Explain why PXI Modular instrumentation is used in industries for advanced analysis and measurements. (16)

Or

(b) Explain how image acquisition and processing can be performed in LabVIEW. What are the application and advantages of image acquisition using LabVIEW? (16)
