Reg. No. : | | | | | | | | | | | |

K 4401

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2009.

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. Compare traditional and virtual instrument (any four).
2. Define user interfaces.
3. What are controls and indicators?
4. Define data types and their colours in Lab VIEW.
5. What are shift registers?
6. When are local and global variables used?
7. Define measurements and automation explorer (MAX).
8. What is DAQ Assistant?
9. What is the function of TCP/IP?
10. Define PXI and list its application.

PART B — (5 × 16 = 80 marks)

11. (a) Draw and explain the general functional description of a conventional digital instrument. Compare it with a virtual instrument and list the advantages and disadvantages. (16)

Or

(b) Draw a block diagram to explain the architecture of a virtual instrument. Explain the hardware used to measure physical quantities and software environment to analyze and present measured data. (16)

12. (a) Explain LabVIEW as a graphical programming and data flow programming language with typical examples. (16)

Or

(b) Explain the use of the three palettes and how do they help in programming with LabVIEW. Draw simple examples to support the explanation. (16)

13. (a) Use while loop to build a VI that generates random numbers until the number generated matches a number specified. The iteration terminal records the number of random numbers generated until a march occurs. Draw the front panel and block diagram and explain. (16)

Or

(b) Draw and explain with examples what are clusters, cluster order, error clusters, bundle, unbundled clusters and bundle /unbundled by name. (16)

14. (a) Draw the block diagram of the DAQ system hardware and software components and explain the function of each. (16)

Or

(b) Explain the basics functions and applications of digital and analog I/O function and buffered I/O function in data acquisition and measurements. (16)

15. (a) Explain how image acquisition and processing can be performed in Lab VIEW with a the help of an example? (16)

Or

(b) Draw the block diagram and explain the various components of a motion control system. (16)
