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22/11/13 AN

Reg. No. :

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Question Paper Code : 33447

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Eighth Semester

Electronics and Instrumentation Engineering

EI 1004 — VIRTUAL INSTRUMENTATION

(Common to Instrumentation and Control Engineering)

(Regulation 2004/2007)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Nyquist criterion.
2. How is accuracy of an ADC specified?
3. Mention the typical specification of a Data Acquisition card.
4. Which is the preferable type of input so that noise cancel?
5. Specify the data frame format as serial standards.
6. What is the relation between data transfer speed and cabling distance in RS485 standards?
7. Outline about subVI.
8. Name the type of programming in LabVIEW.
9. List a few sensors used for measurement of temperature.
10. Write few applications of Fourier transforms.

PART B — (5 × 16 = 80 marks)

11. (a) Write short notes on :
- (i) Quantisation error. (8)
 - (ii) Sample and hold circuit in DAQ cards. (8)

Or

- (b) Explain the necessity of ADC and DAC with necessary schematic diagrams. (16)

12. (a) (i) Differentiate between Traditional instruments and Virtual instruments. (8)
- (ii) Highlight the importance of resolution of ADC card in data acquisition. (8)

Or

- (b) Explain the different strategies for sampling of multi-channel analog inputs. (16)

13. (a) Explain the difference between RS 232, RS 422 and RS 485 standards. (16)

Or

- (b) Explain the various topologies in which GPIB instruments can be connected for data acquisition. How does data transfer take place in them? (16)

14. (a) Write short note on :

- (i) Charts (8)
- (ii) Graphs (8)

Or

- (b) Write short note on :

- (i) Types of data in LabVIEW (8)
- (ii) Local and Global variables. (8)

15. (a) Develop an ON/OFF controller using Virtual instrumentation technique for a suitable process. Explain the function blocks used. (16)

Or

- (b) Explain the hardware and software aspects in the development of a CRO emulator. (16)