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Question Paper Code : 23447

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 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 — ($10 \times 2 = 20$ marks)

1. Draw sample and hold circuit and list its importance.

2. Define sampling theorem.

3. What is multiplexing of analog inputs?

4. How is single ended different from differential inputs?

5. What is the basic function of RS232?

6. List the purpose of bus protocols?

7. What are tunnels and shift registers?

8. Why is data type important in programming?

9. How can Fourier transform be used for solving simple VI application?

10. List the salient steps in generation of HTML page.

PART B — (5 × 16 = 80 marks)

11. (a) How are analog signals represented in digital domain? What is the importance of ADC and DAC in digital instrumentation? Explain with neat sketches. (16)

Or

(b) Draw and explain sampled values, nearest quantization levels, code number and binary representation of a base band signal. Explain quantization in time and amplitude axis.

12. (a) How are virtual instruments different from conventional instruments? Explain the basic concept of virtual instrumentation with neat diagrams. (16)

Or

(b) What is the purpose of measurements and automation explorer (MAX)? Draw and explain the typical on board DAQ card capable of measuring analog and digital I/Os and also counters and timers. What is a universal DAQ card?

13. (a) Explain the importance of interfacing external instruments to a PC using RS 422 USB standards and IEEE 488 standard. What is the purpose of ISO_OSI model serial bus? Draw simple examples to support the explanation. (16)

Or

(b) Describe the need for MOD bus and CAN bus. Draw the block diagram and explain the applications of MOD and CAN bus? (16)

14. (a) (i) What is a VI and a sub VI? Explain VI and subVI with the help of an example and neat diagrams. (8)

(ii) What is autoindexing in loops? Consider a problem and explain how to solve it using a while loop. (8)

Or

(b) (i) How is graphical programming different from text based programming. (8)

(ii) What are local and global variables? When are local and global variables used? (8)

15. (a) Consider a VI and explain how windowing and filtering tools can be used as analysis tools for a simple application. (16)

Or

(b) Explain how analysis tools can be used to simulate a simple second order system for the simple application. (16)

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