Reg. No. :

Question Paper Code: 46601

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Sixth Semester

Electronics and Instrumentation Engineering

14UIC601-MODERN ELECTRONIC INSTRUMENTATION

(Regulation 2014)

Duration: Three Phours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. An average-reading digital multimeter reads 10V when fed with a triangular wave, symmetric about the time-axis. For the same input an rms-reading meter will read

    (a) $20/\sqrt{3}$ (b) $10/\sqrt{3}$ (c) $20\sqrt{3}$ (d) $10\sqrt{3}$

2. A digital frequency counter can be converted to DVM by addition of a suitable

    (a) Voltage controlled oscillator   (b) D/A converter
    (c) Power amplifier   (d) Operational amplifier

3. Two sinusoidal signals of equal amplitude and frequency are applied to X and Y plate of CRO respectively. The observed Lissajous pattern is a straight line. The phase shift between signals is Cathode

    (a) zero   (b) 90˚   (c) Either zero or 180˚   (d) Either 90 ˚ or 270˚

4. A dual beam CRO uses

    (a) electronic switch   (b) two electron guns
    (c) one electron gun   (d) two time base generator circuits

5. Maximum Distance of EIA 422 has

   (a) 1000 metres   (b) 2000 metres
   (c) 4500 metres   (d) 1500 metres

6. The data rates of EIA-232 has

   (a) 150K   (b) 115K   (c) 200K   (d) 300K

7. Control palette contains

   (a) indicators   (b) controls   (c) functions   (d) controls & indicator

8. The string function in Lab VIEW can be represented with the following colour coding

   (a) Orange   (b) Blue   (c) Pink   (d) Green

9. Identify the resolution of a 12-bit data converter?

   (a) 0.00024%   (b) 0.0041%   (c) 0.024%   (d) 0.41%

10. What would be a typical settling time for a general-purpose 8-bit ADC?

    (a) 1 ns to 10 ns   (b) 10 ns to 100 ns   (c) 1 ms to 10 ms   (d) 100 ms to 1s

PART - B (5 x 2 = 10 Marks)

11. Define resolution and sensitivity of digital meters.

12. List the various controls on the front panel of a signal generator.

13. What are the applications of current loop?

14. Define virtual Instrumentation.

15. Define resolution and write its formulae.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Explain the principle of successive approximation type DVM. (8)

    (ii) With a neat block diagram, discuss in detail about the micro processor based DMM. (8)

Or

    (b) Explain in detail how frequency and period are measured in digital instruments. (16)

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17. (a) (i) Describe with diagram the operation of a Sampling CRO. (8)

(ii) Explain with the help of a block diagram the operation of a function generator. (8)

Or

(b) (i) Describe the operation of an X-Y recorder with the help of block diagram. List four applications of an X-Y recorder. (8)

(ii) Explain the operation of a data logger. State the functions of each block. (8)

18. (a) Analyze the differences exist between RS 232, RS 422 and RS 485 communication interfacing standards. (16)

Or

(b) (i) Describe the operation of 4-20 mA converters. (8)

(ii) Explain the working of EIA 422 interface standard. (8)

19. (a) (i) Explain different types of loops used in Lab VIEW. (8)

(ii) Create a VI to find the factorial of a given number using a While loop. (8)

Or

(b) (i) Compare and contrast a traditional instrument with a virtual instrument. (8)

(ii) Discuss the customizing components of chart and graph in Lab VIEW. (8)

20. (a) (i) Give the detailed installation steps involved in interfacing DAQ hardware with PC. (8)

(ii) Describe the steps to be followed for simulating a DAQ device with PC. (8)

Or

(b) Explain with necessary sketch how ON/OFF controller for temperature application is designed. (16)

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