Reg. No. :

Question Paper Code: 41453

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Fifth Semester

Electronics and Communication Engineering

14UEC503 - ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

(Regulation 2014)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The most common method for measurement of low resistance is

    (a) Wheatstone bridge   (b) Potentiometer method
    (c) Voltmeter-ammeter method   (d) Kelvin's double bridge

2. Moving iron instruments can be used without much error upto a frequency of

    (a) 50 Hz   (b) 100 Hz   (c) 1000 Hz   (d) 1500 Hz

3. The principle of operation of Q-meter is based on

    (a) Self-inductance   (b) Mutual inductance
    (c) Series resonance   (d) Parallel resonance

4. The resolution of a DVM with 4 digit

    (a) 1/4   (b) 1/10   (c) 1/1000   (d) 1%

5. Which of the following is a null detection device?

    (a) Ballistic galvanometer   (b) D'Arsonval galvanometer
    (c) Potentiometer   (d) Ammeter

6. No eddy current and hysteresis losses occur in

    (a) Electro-static instruments   (b) PMMC type instruments
    (c) Moving iron instruments   (d) Electrodynamometer instruments

7. The temperature coefficient of resistance for thermistors is

    (a) Low and negative   (b) Low and positive

    (c) High and negative   (d) High and positive

8. The device used to measure the voltage, current and resistance is known as

    (a) Voltmeter   (b) Ammeter   (c) Wattmeter   (d) Multimeter

9. The form factor in AC means the ratio of

    (a) Peak value to average value   (b) Peak value to RMS value

    (c) R.M.S. value to average value   (d) R.M.S. value to peak value

10. The rating of a battery is given by

    (a) KW   (b) KVA   (c) Ampere-hours   (d) VARh

PART - B (5 x 2 = 10 Marks)

11. List any four static characteristics of a measuring system.

12. What are the Main Parts of CRT?

13. Give the functions of an attenuator in a signal generator.

14. What is the principles of ramp type DVM?

15. Write any two instrument used in computer controlled instrumentation.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain in details about the various types of errors in measurement systems.   (16)

Or

    (b) Describe the circuit of Kelvin's double bridge used for measurement of low resistance. Derive the conditions for balance.   (16)

17. (a) With neat sketch explain the block diagram of digital storage oscilloscope.   (16)

Or

    (b) Describe the working of the following measurement systems

        (i) Dual trace oscilloscope   (8)

        (ii) Dual beam oscilloscope   (8)

41453

18. (a) (i) Explain the functional block diagram of Function generator and mention its features. (8)

(ii) Describe the working of a spectrum analyzer with its basic circuit. (8)

Or

(b) Enlist the various applications of spectrum analyzer along with the description of its working. (16)

19. (a) Describe a digital multimeter with a help of a block diagram. (16)

Or

(b) (i) With a block schematic, explain the frequency mode and the frequency ratio mode operation of a frequency counter. (8)

(ii) Draw and explain the circuit of digital frequency meter. (8)

20. (a) Draw and explain the block diagram of data acquisition system. (16)

Or

(b) (i) Explain with block diagram the automatic test system to analyses an audio amplifier and radio receiver. (8)

(ii) What are the objectives of data acquisition system? (8)

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3

41453