Reg. No. :

Question Paper Code: 45403

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

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. As the deflection of the moving system increases, the controlling torque in an indicating instrument_____.

    (a) remains the same   (b) increase
    (c) decrease   (d) becomes zero

3. A pattern displayed by oscilloscopes which has a steady characteristic is called

    (a) Lissajous pattern   (b) Nyquist pattern
    (c) Barkhausen's criterian   (d) Fermat's pattern

4. A true rms reading voltmeter uses two thermocouples in order

    (a) to increase sensitivity
    (b) that the second thermocouple cancels out the no-linear effects of the first
        thermocouple
    (c) to prevent drift in the d.c amplifier
    (d) all the above

5. In signal generators

    (a) energy is created

    (b) energy is generated

    (c) energy is converted from a simple d.c source into a.c energy at some specific frequency

    (d) all the above

6. Harmonics are very closed in signal frequency hence _____ to distinguish.

    (a) difficult   (b) easy   (c) very simple   (d) uncomplicated

7. The period mode preferred for measurement of _____ frequency in a frequency counter

    (a) very High   (b) high   (c) very low   (d) low

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

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

9. The main component of data acquisition system is a

    (a) Function generator   (b) Ammeter   (c) Sensor   (d) Voltmeter

10. _____ instrument is used in computer controlled instrumentation

    (a) Signal generator   (b) Spectrum analyzer

    (c) Sweep generator   (d) Q meter

PART - B (5 x 2 = 10 Marks)

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

12. What is Vector voltmeter?

13. Write any three applications of wave analyzer.

14. What is automatic zeroing?

15. Write short notes on data loggers.

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) Briefly explain the Q-factor meter with a circuit diagram.   (16)

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) Classify the different types of digital voltmeter. Explain the operation of ramp type digital voltmeter.   (16)

Or

(b) Describe in details about the computer controlled test system with suitable example.   (16)

20. (a) Explain the characteristics of the IEEE 488 bus. How it is used as an interface? Give its advantages and disadvantages.   (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)

3

45403

45403