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Question Paper Code: 45403

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

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)

- The most common method for measurement of low resistance is
 - Wheatstone bridge
 - Potentiometer method
 - Voltmeter-ammeter method
 - Kelvin's double bridge
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- Post acceleration is needed in a CRO if the frequency of the signal is
 - less than 1 MHz
 - more than 1 MHz
 - more than 10 MHz
 - more than 10 Hz
- A true rms reading voltmeter uses two thermocouples in order
 - to increase sensitivity
 - that the second thermocouple cancels out the non-linear effects of the first thermocouple
 - to prevent drift in the d.c amplifier
 - all the above
- Harmonics are very close in signal frequency hence _____ to distinguish.
 - difficult
 - easy
 - very simple
 - uncomplicated

6. Which of the following is a null detection device?
- (a) Ballistic galvanometer (b) D'Arsonval galvanometer
(c) Potentiometer (d) Ammeter
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. IEEE 488 standard based on the transmission of
- (a) 8 bit data words with a parallel 8 bit data bus
(b) 16 bit data words with a parallel 16 bit data bus
(c) 24 bit data words with a parallel 24 bit data bus
(d) 32 bit data words with a parallel 32 bit data bus

PART - B (5 x 2 = 10 Marks)

11. List any four static characteristics of a measuring system.
12. What is Vector voltmeter?
13. Give the functions of an attenuator in a signal generator.
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) (i) Identify a suitable A.C bridge to measure the unknown capacitance. Explain the same bridge at a balanced condition to measure the unknown capacitance . (10)
(ii) Explain the various types of errors. (6)

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) What are the basic elements of a function generator? Explain how to generate the square wave, triangle wave and sine wave using function generator. (8)

(ii) Explain the operation of sweep generator. (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) Explain in detail about fully automatic digital instruments. (16)

20. (a) What are the elements of digital data acquisition system and explain each with a diagram. (16)

Or

(b) Explain the characteristics of the IEEE 488 bus. How it is used as an interface? Give its advantages and disadvantages. (16)

