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Question Paper Code: 45403

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

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. A set of readings has a wide range and therefore it has
 - (a) low precision
 - (b) high precision
 - (c) low accuracy
 - (d) high accuracy
2. A quantity whose magnitude has a definite repeating time cycle is called a
 - (a) transient
 - (b) steady state periodic
 - (c) steady state a periodic
 - (d) transient state periodic
3. Post acceleration is needed in a CRO if the frequency of the signal is
 - (a) less than 1 MHz
 - (b) more than 1 MHz
 - (c) more than 10 MHz
 - (d) more than 10 Hz
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. In a sweep frequency generator two oscillators one with frequency range of 3 GHz to 5GHz is heterodyned with a second oscillator having a fixed frequency output of 3 GHz, the output frequency varies from

(a) 0 to 2 GHz	(b) 6 GHz to 8 GHz
(c) 0 to 3 GHz	(d) 0 to 5 GHz

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

(a) very High	(b) high	(c) very low	(d) low
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8. The device used to measure the voltage, current and resistance is known as

(a) Voltmeter	(b) Ammeter	(c) Wattmeter	(d) Multimeter
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9. The main component of data acquisition system is a

(a) Function generator	(b) Ammeter	(c) Sensor	(d) Voltmeter
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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. Permanent magnet moving coil instrument has uniform scale. Why?
12. List out the applications of Q meter.
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) Draw the constructional details of moving iron instrument and explain the operation. Also derive its torque equation. (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) Draw the block diagram of general purpose CRO and explain the principle of operation. Also list its applications. (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) (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)