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Question Paper Code: 51429

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Second Semester

Electronics and Communication Engineering

15UEC209 - BASIC ELECTRONIC MEASUREMENTS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- Precision measurement of resistances is generally carried out by:
 - Potentiometer method
 - CRO method
 - Voltmeter-ammeter method
 - Bridge method
- The mathematical expression for Coulomb's law is
 - $F = Q_1 Q_2$
 - $F = k(Q_1 Q_2 / r^2)$
 - $F = k/Q_1 Q_2$
 - $F = kQ_1 Q_2$
- The basic law for electromagnetic torque equation can be expressed as
 - $T = BIN$
 - $T = BAN$
 - $T = BAIN$
 - $T = IN$
- Moving iron instruments can be used without much error upto a frequency of
 - 50 Hz
 - 100 Hz
 - 1000 Hz
 - 1500 Hz
- Wagner earthing device:
 - Does not affect AC bridges
 - Affects DC potentiometer
 - Makes possible very high accuracy in measurement
 - Reduces the frequency and waveform errors in AC bridges

6. In balanced bridge the condition for admittance is

(a) $Y_1 Y_4 = Y_2 Y_3$

(b) $Y_1 Y_2 = Y_3 Y_4$

(c) $Y_2 Y_4 = Y_1 Y_3$

(d) $Y_1 Y_1 = Y_2 Y_2$

7. The time base signal in a CRO is a

(a) Rectangular waveform

(b) High frequency sinusoidal wave form

(c) High frequency saw tooth wave form

(d) Square wave form

8. The Sampling oscilloscope uses a different approach to improve the performance of

(a) High voltage

(b) High gain

(c) High frequency

(d) Better efficiency

9. The time required for the pulse to increase from 10 percent to 90 percent of its normal amplitude is called as

(a) Rise time

(b) Fall time

(c) Delay time

(d) Sag

10. The another name of astable multivibrator is

(a) free running multi vibrator

(b) Monostable multivibrator

(c) Bistable multivibrator

(d) Oscillator

PART - B (5 x 2 = 10 Marks)

11. A set of independent voltage measurements taken by four observers was recorded as 117.02 V, 117.11 V, 117.08 V, 117.03 V. Calculate the average voltage.

12. List the general precautions observed when using voltmeter.

13. Define the expression for balance of the Wheatstone bridge.

14. How to calculate cut off frequency in delay line?

15. Define duty cycle.

PART - C (5 x 16 = 80 Marks)

16. (a) Compose notes on statistical analysis, probability of error and limiting error. (16)

Or

- (b) (i) Discuss in detail about different types of errors in standard measurement system. (10)
- (ii) Write short notes on IEEE standards. (6)
17. (a) Illustrate DC voltmeter with a suitable diagram. (16)
- Or
- (b) (i) Derive the expression for ohms-per-volt rating. (8)
- (ii) Write notes on multiplier resistor. (8)
18. (a) With supporting equations explain in detail about Hay bridge. (16)
- Or
- (b) Derive the expression for Kelvin's bridge along with circuit diagram. (16)
19. (a) Discuss in detail about horizontal deflection system. (16)
- Or
- (b) Explain in detail about digital storage oscilloscope. (16)
20. (a) Describe frequency divider generator with suitable block diagram. (16)
- Or
- (b) Draw a general block diagram and explain in detail about sweep frequency generator. (16)
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