Reg. No. : | | | | | | | | | | |

Question Paper Code: 51242

B.E. / B.Tech. DEGREE EXAMINATION, JUNE 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)

1. Precision measurement of resistances is generally carried out by:

   (a) Potentiometer method (b) CRO method
   (c) Voltmeter-ammeter method (d) Bridge method

2. Subtracting 437 ± 4 from 462 ± 4 would yield a result with percentage error-of

   (a) ± 4% (b) ±16% (c) ± 8% (d) ±32%

3. The internal resistance of an ammeter should be

   (a) Very small (b) Medium (c) High (d) Infinity

4. 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*

5. Wagner earthing device:

   (a) Does not affect AC bridges
   (b) Affects DC potentiometer
   (c) Makes possible very high accuracy in measurement
   (d) Reduces the frequency and waveform errors in AC bridges

6. Wein bridge finds application in

(a) Frequency determination (b) Resistance measurement only
(c) Harmonic distortion analyzer (d) both (a) and (c)

7. The time base signal in a CRO is a

(a) Rectangular waveform (b) High frequency sinusoidal wave form
(c) High frequency sawtooth wave form (d) Square wave form

8. The horizontal deflection system is also referred to as

(a) Alternate sweep (b) Linear sweep
(c) Multiple sweep (d) Trace sweep

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 frequency range of frequency divider generator is

(a) 256 - 512 *MHz* (b) 10 - 12 *GHz*
(c) 128 - 56 *KHz* (d) 64 - 512 *MHz*

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 quantities that characterize the motion of a moving coil in a magnetic field?

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

14. Calculate the minimum frequency response required of an oscilloscope that is to reproduce without distortion a pulse that has a 15-*ns* rise time.

15. Illustrate some of the applications of spectrum analyzer.

PART - C (5 x 16 = 80 Marks)

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

Or

(b) Name the electrical standards and explain any two in detail. (16)

17. (a) Illustrate DC voltmeter with a suitable diagram. (16)

Or

(b) Derive the expression for shunt type ohmmeter. (16)

18. (a) (i) With suitable diagram derive the expression for frequency by using Wein bridge. (8)

(ii) Explain about Wagner ground connection. (8)

Or

(b) Derive the expression for Kelvin's bridge along with circuit diagram. (16)

19. (a) Examine vertical deflection system with neat diagram. (16)

Or

(b) Explain in detail about digital storage oscilloscope. (16)

20. (a) Describe frequency divider generator with suitable block diagram. (16)

Or

(b) (i) Explain in detail about function generator. (10)

(ii) Illustrate the circuit for linearization in a sweep generator. (6)

———————