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Question Paper Code: 54036

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Fourth Semester

Electrical and Electronics Engineering

15UEE406 - ELECTRICAL MEASUREMENTS AND INSTRUMENTATION

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- For an instrument the degree of repeatability or reproducibility in measurements is an alternative way of expressing its
 - Precision
 - Accuracy
 - Sensitivity
 - Linearity
- The output reading of an instrument is
 - Linearly proportional to the quantity being measured
 - Inversely proportional to the quantity being measured
 - Exponentially proportional to the quantity being measured
 - Not related to the quantity being measured
- The most commonly used moving iron instruments are
 - repulsion type
 - attraction type
 - a combination of attraction and repulsion type
 - none of these
- A moving iron instrument can be used for
 - dc only
 - ac only
 - both dc and ac
 - dc and high frequency ac
- Heating effect of current is used in
 - ammeters
 - voltmeters
 - both ammeters and voltmeters
 - wattmeters

6. Magnetic deflection is inversely proportional to
 (a) voltage (b) (voltage)^{0.5} (c) (voltage)^{1.5} (d) (voltage)²
7. If σ is standard deviation, variation is
 (a) $\sigma - 1$ (b) $\sigma^{1.5}$ (c) σ^2 (d) σ^3
8. X-Y recorders
 (a) Record one quantity with respect to another quantity
 (b) Record one quantity on X-axis with respect to time on Y-axis
 (c) Record one quantity on Y-axis with respect to time on X-axis
 (d) Record two quantities
9. An ohmmeter is a
 (a) moving coil instrument (b) moving iron instrument
 (c) dynamometer instrument (d) induction instrument
10. The output of a Piezoelectric crystal has
 (a) low amplitude and low impedance (b) high amplitude and low impedance
 (c) low amplitude and high impedance (d) high amplitude and high impedance

PART - B (5 x 2 = 10 Marks)

11. Write the main static characteristics.
12. Give the importance of iron loss measurement.
13. Write the two conditions to be satisfied to make an a.c. bridge balance.
14. List few disadvantages of frequency modulation recording.
15. Give the 2 types of principles for the operation of optical transducers.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain with block diagram functional elements of an instrument. (16)

Or

- (b) What are the different types of calibration? Explain. (16)

17. (a) Explain the working principle of moving iron instrument. (16)

Or

- (b) Explain the function of three phase wattmeter and energy meter. (16)

18. (a) With diagram explain working of duo-range D.C. potentiometer. (16)

Or

(b) Explain how inductance is measured by using Maxwell's bridge. (16)

19. (a) Explain the block diagram of oscilloscope with a neat sketch. (16)

Or

(b) Write Short Notes on Data Logger and its Applications. (16)

20. (a) Discuss in Detail about inductive and capacitive transducer. (16)

Or

(b) Explain the working principle of various types of ADC with neat sketches. (16)
