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Question Paper Code: 53502

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

Third Semester

Electronics and Instrumentation Engineering

15UEI302 - ELECTRICAL AND ELECTRONIC MEASUREMENTS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. No eddy current and hysteresis losses occur in
 - (a) Electro-static instruments
 - (b) PMMC type instruments
 - (c) Moving iron instruments
 - (d) Electrodynamometer instruments

2. Low resistance is measured by
 - (a) De Sauty's bridge
 - (b) Maxwell's bridge
 - (c) Kelvin's double bridge
 - (d) Wien bridge

3. The power delivered to a 3-phase load can be measured by the use of 2-wattmeter only when the
 - (a) Load is balanced
 - (b) Load is unbalanced
 - (c) 3-phase load is connected to the source through 3-wires
 - (d) 3-phase load is connected to the source through 4-wires

4. In an electro-dynamometer type of wattmeter
 - (a) the current coil is fixed
 - (b) the pressure coil is fixed
 - (c) any of the two coils
 - (d) both the coils should be movable

5. Precision measurement of resistances is generally carried out by

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

6. Current transformers and potential transformers are used to increase the ranges of

(a) DC ammeter and DC voltmeter	(b) AC ammeter and DC voltmeter
(c) AC ammeter and AC voltmeter	(d) DC ammeter and AC voltmeter

7. The resolution of a DVM with 4 digit

(a) 1/4	(b) 1/10	(c) 1/1000	(d) 1%
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8. In a ramp type DVM, the multi vibrator determines the rate at which the

(a) clock pulses are generated	(b) measurement cycles are initiated
(c) It oscillates	(d) Its amplitude varies

9. The time base signal in a CRO is a

(a) Rectangular waveform	(b) High frequency Saw tooth waveform
(c) High frequency Sinusoidal waveform	(d) Square waveform

10. X-Y recorders is the type of

(a) Graphic recorders	(b) Oscillosgraphic recorders
(c) Magnetic tape recorders	(d) Digital recorders

PART - B (5 x 2 = 10 Marks)

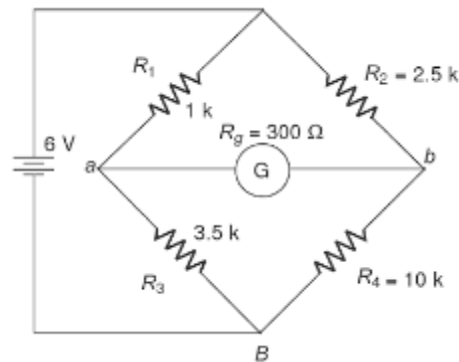
11. How a PMMC meter can be used as voltmeter and ammeter?
12. What is meant by creep adjustment in three phase energy meter?
13. Differentiate the principle of dc potentiometer and ac potentiometer.
14. List out the essential parts of the ramp type DVM.
15. State the principle of sampling oscilloscope.

PART - C (5 x 16 = 80 Marks)

16. (a) Describe the construction details and working of an electro-dynamometer type instrument. (16)

Or

- (b) (i) Explain the theory and working principle of Wheatstone's bridge. Derive an expression to find unknown resistance. (10)
- (ii) An unbalanced Wheatstone bridge is given in below figure. Calculate the current through the galvanometer. (6)



17. (a) With a neat diagram, explain the construction and working principle of dynamometer type Wattmeter. (16)

Or

- (b) (i) Elaborate the constructional details and principle of working of single phase induction type energy meter. (16)

18. (a) Describe the construction and working of a co-ordinate type AC potentiometer. How is it standardized? Explain how an unknown voltage can be measured with it. (16)

Or

- (b) List the types of Instrument transformer and brief any one of them in detail with construction and working. (16)

19. (a) Explain how the Q-meter can be used for the measurement of Q-factor and effective Resistance and discuss the source of error. (16)

Or

(b) With a neat block diagram explain the following:

(i) Dual slope integrating type DVM. (8)

(ii) Ramp type DVM. (8)

20. (a) Sketch the block diagram of the CRO and illustrate the operation with its merits and demerits. (16)

Or

(b) Explain with a neat sketch of Seven Segment display and Data Logger. (16)
