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Question Paper Code: 50532

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

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. If an induction type energy meter runs faster, it can be slowed down by
 - (a) Lag adjustment
 - (b) Light load adjustment
 - (c) Adjusting the position of the braking magnet and making it closer to the center of the disk
 - (d) Adjusting the position of the braking magnet and making it move away from the center of the disk

5. Precision measurement of resistances is generally carried out by

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

6. The potentiometer can be categorized category of

(a) Standard instruments	(b) Indicating instruments
(c) Comparison instruments	(d) Calibrating instruments

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. High quality factor (Q) of an inductor can be measured by

(a) Hay's bridge	(b) Anderson bridge
(c) Wien bridge	(d) Schering bridge

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. The following detector is generally used in AC bridges for audio frequency range

(a) AC volt meter	(b) C.R.O
(c) Headphones	(d) Vibration galvanometer

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. List the basic components of a magnetic tape recorder.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain the working of moving iron instruments with neat diagram. (16)

Or

- (b) Derive the balance equation for Wheatstone bridge and Wein bridge discuss the application. (16)

17. (a) Interpret the construction of Electrodynamometer type watt meter and discuss the power measurement and errors in detail. (16)

Or

(b) Explain the construction and working of single phase induction type energy meter. (16)

18. (a) Distinguish between DC and AC potentiometers, and discuss in detail about student type potentiometer. (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) List the standard signals that can be generated using function generator and discuss the frequency measurement. (16)

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)
