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

Question Paper Code: 53502

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

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. Frequency can be measured by

   (a) Maxwell's bridge (b) Schering bridge
   (c) Heaviside bridge (d) Wien bridge

2. The bridge method commonly used for finding mutual inductance is

   (a) Heaviside Campbell bridge (b) Schering bridge
   (c) De Sauty 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 electrodynamometer 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. The transfer instrument which is used for standardization of a polar type AC potentiometer is

(a) An electrostatic instruments (b) A moving coil instruments
(c) A dynameter instruments (d) A thermal instruments

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%

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. In CRO saw tooth voltage is applied at the

(a) vertical deflecting plates (b) horizontal deflecting plates
(c) accelerating anode (d) cathode

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. Define Phantom loading.

13. Classify AC potentiometers. Also give its applications.

14. What are the advantages of digital instruments?

15. State the principle of sampling oscilloscope.

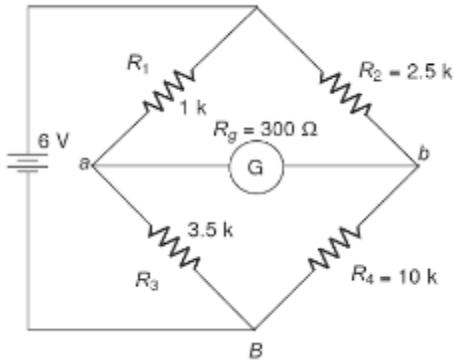
PART - C (5 x 16 = 80 Marks)

16. (a) Describe the construction details and working of an electrodynamometer 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. (10)

(ii) With necessary figures, explain the calibration of single phase energy meter. (6)

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) Discuss the operation of micro processor based DMM with auto ranging and self diagnostic features, with relevant diagram. (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) With a neat block diagram, elaborate the construction and working principle of general purpose oscilloscope. (16)

Or

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

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