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

Question Paper Code: 53502

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 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. Frequency can be measured by

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

2. Low resistance is measured by

   (a) De Sauty'sbridge (b) Maxwell's bridge
   (c) Kelvin's double bridge (d) Wien bridge

3. 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

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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%

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. 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. Name the sources of errors in AC bridge measurements.

12. Draw the circuit diagram of low power factor wattmeter.

13. Differentiate the principle of dc potentiometer and ac potentiometer.

14. What are the advantages of digital instruments?

15. State the principle of sampling oscilloscope.

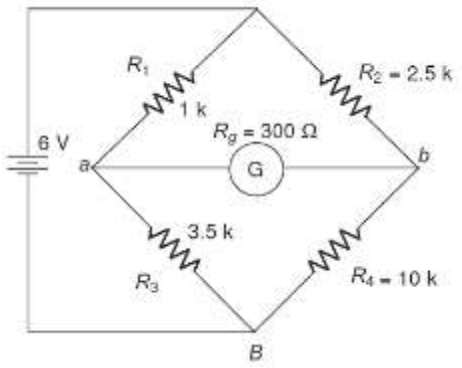
PART - C (5 x 16 = 80 Marks)

16. (a) Explain the working of moving iron instruments with neat diagram. (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) Interpret the construction of Electrodynamometer type watt meter and discuss the power measurement and errors in detail. (16)

Or

(b) (i) Elaborate the constructional details and principle of 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) Draw and explain the circuit of a frequency measurement. What are the different methods used for high frequency determination. (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) Explain about X – Y recorders and describe its applications. (16)

Or

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

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