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

Question Paper Code: 53052

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

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. Digital instruments have input impedance of the order of

(a) Ω (b) k Ω (c) MΩ (d) mΩ

9. X-Y recorders is the type of

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

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. 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) Describe the construction details and working of an electrodynamometer type instrument. (16)

Or

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

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

Or

(b) 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) Draw the equivalent circuit and phasor diagram of a current transformer. Derive the expression for ratio and phase angle errors. (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) List the standard signals that can be generated using function generator and discuss the frequency measurement. (16)

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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