A

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

Question Paper Code: 54306

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

Fourth Semester

Electrical and Electronics Engineering

15UEE406- ELECTRICAL MEASUREMENTS AND INSTRUMENTATION

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Which of the following instruments indicate the instantaneous value of the electrical quantity being measured at the time at which it is being measured? CO1- R

   (a) Absolute instruments (b) Indicating instruments

   (c) Recording instruments (d) Integrating instruments

2. The force provided in order to bring the pointer to rest within a short time is CO1- R

   (a) Damping force (b) deflection force (c) Controlling force (d) all the above

3. Which of the following are integrating instruments ? CO2- R

   (a) Ammeters (b) Voltmeters

   (c) Wattmeters (d) Ampere-hour and watt-hour meters

4. Which of the following essential features is possessed by an indicating instrument ? CO2- R

   (a) Deflecting device (b) Controlling device

   (c) Damping device (d) All of the above

5. For measurement of inductance having high value, we should use_____ CO3- R

   (a) Maxwell's bridge (b) Maxwell Wein bridge

   (c) Hay's bridge (d) Schering bridge

6. A Potentio meter is basically a CO3- R

(a) Deflect ional type instrument

(b) null type instrument

(c) deflectional as well as null type instrument

(d) digital instrument

7. Two sinusoidal signals of equal amplitude and frequency are applied to X and Y plate of CRO respectively. The observed Lissajous pattern is a straight line. The phase shift between signals is CO4- R

(a) Zero (b) 90°

(c) Either zero or 180 (d) Either 90° or 270°

8. Magnetic tape is made up of _____ materials CO4- R

(a) magnetic iron oxide (b) iron oxide

(c) magnetic oxide (d) none of these

9. The linear variable differential transformer transducer is CO5- R

(a) Inductive transducer (b) Non-inductive transducer

(c) Capacitive transducer (d) Resistive transducer

10. Thermocouple works on the principle _____ CO5- R

(a) Piezo-electric effect (b) Hall effect (c) Seeback effect (d) None

PART – B (5 x 2= 10 Marks)

11. Give the international standards of instruments CO1-R

12. Why PMMC ammeters are mostly widely used instrument? CO2-R

13. Write the necessary balance conditions for a Schering bridge? CO3- R

14. Explain the classification of printer. CO4 -R

15. Illustrate piezo-electric effect? CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) Explain in detail different static and dynamic characteristics of measurement system with example. CO1- U (16)

Or

	(b)	Analyze the following: (i) Arithmetic mean (ii) Deviation (iii) Average deviation (iv) Standard deviation (v) Variance	CO1- U	(16)
17.	(a)	Explain the construction and working of PMMC instruments. Derive the equation for deflection	CO2- App	(16)
		Or		
	(b)	(i) Write short notes on instrument transformer.	CO2 -U	(8)
		(ii) what are the different methods used for the measurement of frequency? Explain any one method.	CO2 -U	(8)
18.	(a)	Illustrate the construction and working of laboratory type DC potentiometer with a neat sketch	CO3- Ana	(16)
		Or		
	(b)	Illustrate the construction and working of Maxwell Bridge with a neat sketch. Derive the condition for balance	CO3- Ana	(16)
19.	(a)	(i) With a neat block diagram, explain the working of digital storage oscilloscope	CO4 - U	(12)
		(ii) Compare and contrast between the features of LED and LCD display.	CO4 - U	(4)
		Or		
	(b)	Explain the block diagram of dot matrix display with a neat sketch.	CO4- Ana	(16)
20.	(a)	(i)Write briefly the Piezoelectric transducer.	CO5- U	(8)
		(ii) With neat diagram explain capacitive transducer for pressure measurement.	CO5- U	(8)
		Or		
	(b)	Explain the construction and working of LVDT with a neat sketch	CO5- U	(16)