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Question Paper Code: 93306

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

Third Semester

Electrical and Electronics Engineering

19UEE306 - ELECTRICAL MEASUREMENTS AND INSTRUMENTATION

(Regulation 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The fact as to how closely the instrument reading follows the measured variables is called the CO1- R
(a) precision (b) fidelity (c) accuracy (d) sensitivity
2. The difference between the upper and lower limit in instrument range is CO1- R
(a) Span (b) Drift (c) Range (d) Sensitivity
3. The PMMC instruments is used for _____ measurement CO2-R
(a) DC (b) AC (c) DC & AC (d) None
4. The instrument used for measurement of energy is called ____ CO2-R
(a) Watt meter (b) PMMC (c) Energy meter (d) Moving iron
5. A Potentio meter is basically a CO3- R
(a) Deflectional type instrument (b) null type instrument
(c) deflectional as well as null type instrument (d) digital instrument
6. The inductance of a high Q inductor can be measured using a CO3- R
(a) Schering bridge (b) Wein bridge
(c) Maxwell bridge (d) Hay bridge
7. Magnetic tape is made up of _____ materials CO4- R
(a) magnetic iron oxide (b) iron oxide
(c) magnetic oxide (d) None of the above

8. Digital X-Y plotters is also called as _____ CO5- R
 (a) Recorder (b) Plotter
 (c) Digital Plotter (d) Analog X-Y recorder
9. Which transducer does not require external power source for its operation. CO5- R
 (a) Active transducer (b) Passive transducer
 (c) Both a & b (d) none
10. Thermocouple works on the principle _____ CO5- R
 (a) Piezo-electric effect (b) Hall effect (c) Seebeck effect (d) Watt/m

PART – B (5 x 2= 10 Marks)

11. Examine the Accuracy of an instrument? CO1-U
12. Classify the types of instruments used as ammeter and voltmeter. CO2-U
13. Outline the circuit diagram of Maxwell bridge CO3-U
14. Classify the different methods of magnetic tape recording. CO4-U
15. Explain any 4 types of analog to digital convertor? CO5-U

PART – C (5 x 16= 80Marks)

16. (a) Explain the functional elements of measurement system with neat diagram CO1-U (16)
 Or
 (b) If the rms value of reading in volts are observed in a digital CRO, were **3.5, 3.452, 3.620, 3.523** CO1-U (16)
 Calculate (i) Arithmetic mean (ii) Deviation (iii) Average deviation
 (iv) Standard deviation
17. (a) Illustrate the construction and working of PMMC instruments. CO2- U (16)
 Derive the equation for deflection.
 Or
 (b) Explain the construction and working of moving iron instruments. CO3- U (16)
 Derive the equation for deflection
18. (a) Explain the circuit of Kelvin double bridge used for measurement of low resistance. Derive the condition for balance. CO3- U (16)

Or

- (b) Illustrate the construction and working of laboratory type DC potentiometer with a neat sketch. CO3- U (16)
19. (a) Illustrate the working principle of digital storage oscilloscope to display the waveforms. CO4- U (16)
- Or
- (b) Bring out how data loggers measure and record data effortlessly, accurately and quickly explaining the working of them. What is data logger? CO4- U (16)
20. (a) Explain the construction and working of LVDT with a neat sketch CO5- U (16)
- Or
- (b) Explain the binary weighted resistor technique of D/A conversion. CO5- U (16)

