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Question Paper Code | 11692

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022
Third Semester
Electronics and Instrumentation Engineering
(Common to Instrumentation and Control Engineering)
20EIPC301 - ELECTRICAL AND ELECTRONIC MEASUREMENTS
(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

		Marks, K-Level, CO
1.	Define the basic principle of PMMC instrument.	2,K1,CO1
2.	Obtain the expression for unknown resistance in Wheatstone bridge.	2,K1,CO1
3.	Differentiate between current coil and pressure coil of electrodynamometer wattmeter.	2,K1,CO2
4.	Define phantom loading.	2,K1,CO2
5.	List the applications of DC potentiometer.	2,K1,CO3
6.	Identify the need for instrument transformers in constructing measuring devices.	2,K1,CO3
7.	List the advantages of digital instruments over analog instruments.	2,K1,CO4
8.	Describe why the DVM are using auto range and self diagnostic features.	2,K1,CO4
9.	Distinguish the Data logging and data acquisition.	2,K1,CO5
10.	Mention the different materials used on LED.	2,K1,CO5

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

11. a) Describe with neat diagram the construction and working principle of attraction and repulsion type MI instruments. — 13,K1,CO1

OR

b) (i) Describe the working of Schering bridge for the measurement of capacitance with neat diagram. — 7,K1,CO1

(ii) Derive the equations for capacitance and dissipation factor. — 6,K1,CO1

12. a) Explain the construction and working of induction type single phase energy meter. — 13,K1,CO2

OR

b) The following readings are obtained for one month of 30 days KVAhr meter = 38,830, kwh meter =291940, Demand indicator =1400kw. Find out the average monthly load factor and power factor. — 13,K2,CO2

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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13. a) Draw the circuit diagram of Crompton's potentiometer and explain its working. Describe the steps used when measuring an unknown resistance. *13,K1,CO3*

OR

b) State the working principle of Current Transformer in detail and draw the phasor diagram. *13,K1,CO3*

14. a) Explain in detail about successive approximation type DVM. *13,K1,CO4*

OR

b) With the help of a neat block diagram explain the working and operation of a Digital Multimeter. *13,K1,CO4*

15. a) Explain about XY Recorders with neat diagram. *13,K1,CO5*

OR

b) Explain about IOT Enable based Recorders in detail. *13,K1,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) During the measurement of a low resistance using potentiometer the following readings were obtained: *15,K2,CO1*
   (i) Voltage drop across the low resistance under test = 0.4221 V
   (ii) Voltage drop across a 0.1 standard resistance = 1.0235 V
   Calculate the value of unknown resistance, current and the power loss in it.

OR

b) Explain with neat diagram about Microprocessor based DMM with auto ranging and self diagnostic features. *15,K1,CO4*