R15

Code No: 126ZH

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year II Semester Examinations, February - 2023
ELECTRICAL AND ELECTRONICS INSTRUMENTATION
(Electrical and Electronics Engineering)

Time: 3 hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART - A

(25 Marks)

1.a)	Write two sources of error in moving iron instrument.	[2]
b)	Write is the extension procedure of electrostatic voltmeter.	[3]
c)	Compare current transformers and potential transformers.	[2]
d)	Explain the term standardization of a potentiometer.	[3]
e)	Which errors are possible to occur in wattmeter?	[2]
f)	Explain briefly the methods of measurement of reactive power in three phase circuits.	[3]
g)	What are the different methods for measurement of medium resistance?	[2]
h)	What are the limitations of D'sauty's bridge and how are they overcome by using modified D'sauty's bridge?	[3]
i)	Compare passive and active transducers.	[2]
j)	Explain the principle of operation of strain Gauge.	[3]

PART - B

(50 Marks)

2. Explain the construction and working principle of attraction type moving iron instrument. [10]

OR

3. Explain the construction and working of an attracted disc type Kelvin absolute electrometer in detail. [10]

4. Discuss the operation of Co-ordinate type potentiometers. [10]

OR

5. Derive the expressions for ratio and phase angle of errors of a current transformer with its equivalent circuit and phasor diagram. [10]

6. An electrodynamometer-type wattmeter has a current coil with a resistance of 0.1 Ω and a pressure coil with resistance of 6.5 kΩ. Calculate the percentage errors while the meter is connected as (a) current coil to the load side, and (b) pressure coil to the load side. The load is specified as (i) 12 A at 250 V with unity power factor, and (ii) 12 A at 25 V with 0.4 lagging power factor. [10]

OR

7. Explain the construction of a single-phase induction type energy meter and its principle of operation with the help of neat sketches. [10]

8. Discuss the principle of working of a Kelvin's double bridge for measurement of unknown low resistances. Explain how the effects of contact resistance and resistance of leads are eliminated. [10]

OR

9. Describe the working of Hay's bridge for measurement of inductance and derive the equations for balance. [10]

10. Explain its working principle of LVDT with necessary diagrams and characteristics. Mention its advantages and uses. [10]

OR

11. Discuss the working of CRO with a neat block diagram. [10]

---ooOoo---