Department of Electrical Engineering
Sessional Test -1
Electrical Measurements - I [EES -401]

M.M- 15

Time – 1 Hour

Question No.1: Answer the short following questions (1 x 5)

I. Explain the significance of measurement with regard to space exploration?

II. Differentiate between deflection and null type instruments.

III. Differentiate between absolute error and relative error with the help of suitable examples.

IV. Explain error curve.

V. If you measure a reading in an instrument other than the range it was connected to, then what is the type of error you would land up to?

Question No.2: Solve the following questions. (2.5 x 2)

I. Differentiate between Mechanical, Electrical and Electronics instruments with reference to parameters such as sensitivity, accuracy and cost.

II. A voltmeter has true value of 4.8V in a scale of 0-20V that reads 4.55V. Find the absolute error, absolute correction, relative error and relative error w.r.t. F.S.D.

Question No.3: Derive the combined limiting error of X when it is sum of X_1 and X_2. The solution for an unknown resistance for a Wheatstone bridge is: $R_x = \dfrac{R2.R3}{R1}$; Where R1 = 100 ± 0.5% Ω, R2 = 1000 ± 0.5% Ω and R3 = 842 ± 0.5% Ω. Determine the magnitude of the unknown resistance and limiting error in percentage and in ohm for the unknown resistance R_x.

(5 x 1)

Department of Electrical Engineering

Sessional Test -2

Electrical Measurements - I [EES -401]

M.M- 15

Time – 1 Hour

Question No.1: Answer the following questions briefly (1 x 5)

1. Compare between MI type instruments and PMMC with at-least 3 points of difference.
2. Discuss eddy current damping with proper diagram.
3. Explain sensitivity of rectifier type instruments.
4. Show the two bushing arrangements of potential transformer in substations.
5. Write the equation of phase angle error and transformation ratio for P. T.

Question No.2: Solve the following questions. (2.5 x 2)

1. Discuss the construction of C.T. in detail with help of proper diagrams.
2. Derive the torque equation for d'Arsonval type galvanometer.

Question No.3: A current transformer with a bar primary has 300 turns in its secondary winding. The resistance and reactance of secondary circuits are 1.5 ohm and 1.0 ohm respectively including the transformer winding. With 5A flowing in the secondary winding, the magnetizing mmf is 100A and the iron loss is 1.2 W. determine the ratio and phase angle errors. [Assume missing data if any] (5 x 1)

Department of Electrical Engineering
Sessional Test -2
Electrical Measurements - I [EES -401]

M.M- 15

Time – 1 Hour

Question No.1: Answer following questions briefly (1 x 5)

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2. Discuss eddy current damping with proper diagram.
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B.Tech (Electrical) IV Semester
2nd Sessional Test , 2014
EES-401(Electrical Measurement-I)

MM-15   Time-1 Hour
Note: All questions are compulsory. Assume any missing data, if any.

Q.1. Describe how high currents and voltages are measured with the help of instrument transformers. Draw diagrams to illustrate your answer. Describe the advantages of instrument transformers as regards extension of range of current and voltage on high voltage a.c. systems.   (6)

Q.2. Give the constructional details of an Electrodynamometer type wattmeter. Derive the expression for torque and comment about the shape of scale.   (6)

Q.3. Explain in details the effect of opening the secondary circuit of a current transformer when the primary winding is energized.   (3)