

2023-24 Odd Semester
Assignment 2
Unit III: Potentiometer, DC and AC Bridges
Subject Name: Electrical Measurements & Instrumentation
Subject Code: BEE-302
Date of Assignment:
Date of Submission: 02/02/2024

Attempt all questions. Long answer questions.

Q.No	Questions	Marks	CO	KL
1	Derive balance equation of Maxwell's Inductance Capacitance bridge along with its phasor diagram. Also find the storage factor for this bridge. Mention advantages and disadvantages of this bridge.	5	3	K1
2	Derive the equation of balance of Schering bridge. Also draw its phasor diagram. Discuss how dissipation factor of a capacitor can be measured by it.	5	3	K4
3	Derive and illustrate the condition for balance with suitable diagram for Kelvin's Double bridge.	5	3	K4
4	Describe the Ammeter Voltmeter method for measurement of low resistance with circuit diagram.	5	3	K2
5	Describe the method of measurement of capacitance using Wein's bridge with help of circuit diagram, phasor diagram and derivation of formula. How can frequency be measured by this bridge	5	3	K2

CO-Course Outcomes mapped

with respective question KL-

Bloom's Knowledge Level (K1,

K2, K3, K4, K5, K6)

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

Note: Use a Separate copy to write their answer. Avoid copying assignments

2023-24 Odd Semester

Assignment 3

Unit II: Measurement of Power and Energy

Subject Name: Electrical Measurements & Instrumentation

Subject Code: BEE-302

Date of Assignment:

Date of Submission: 05/02/2024

Attempt all questions. Long answer questions.

Q.No	Questions	Marks	CO	KL
1	Classify different types of Wattmeter. Explain the working principle with relevant equations of Induction type wattmeter.	5	2	K1
2	Explain the working of single phase dynamometer. Derive equations and draw phasor diagram.	5	2	K2
3	Explain deflecting torque and controlling torque. Derive True (Active) Power equation for 2 wattmeter method measurement of power of 3 phase supply.	5	2	K4
4	Explain the working of three phase Induction type energy meter.	5	2	K2
5	Explain the working of Power factor meter OR frequency meter	5	2	K2

CO-Course Outcomes mapped

with respective question KL-

Bloom's Knowledge Level (K1,

K2, K3, K4, K5, K6)

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

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Assignment 4

Unit V: Transducers

Subject Name: Electrical Measurements & Instrumentation

Subject Code: BEE-302

Date of Assignment:

Date of Submission: 08/02/2024

Attempt all questions. Long answer questions.

Q.No	Questions	Marks	CO	KL
1	Define Transducer and explain different classifications of Transducer – Primary and secondary, Active and Passive, Transducer and Inverse Transducer, Analog and Digital. What are advantages of electrical Transducer?	5	5	K1
2	Describe construction and working of L.V.D.T. (Linear Variable Differential Transformer) with advantages and disadvantages.	5	5	K2
3	Explain the principle, construction and working of Strain Gauge Transducer and formulate the expression for Gauge Factor in form of Poisson's ratio.	5	5	K2
4	Discuss factors for selecting Transducers. Explain Pressure Capacitance Transducer with a neat diagram. State advantage and disadvantage of Capacitive Transducer	5	5	K4
5	Explain the working of any three: a. Thermocouple b. Thermistor c. Photo electric transducers d. Photo voltaic e. Photo Diodes	5	5	K2

CO-Course Outcomes mapped

with respective question KL-

Bloom's Knowledge Level (K1,

K2, K3, K4, K5, K6)

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

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2023-24 Odd Semester

Assignment 1

Unit I: Electrical Measurements and Introduction to Measuring Instruments

Subject Name: Electrical Measurements & Instrumentation

Subject Code: BEE-302

Date of Assignment:

Date of Submission:

Attempt all questions. Long answer questions.

Q.No	Questions	Marks	CO	KL
1	Illustrate the construction and operation of Moving Iron type of Instruments. Also derive the expression of deflecting torque. Enlist the advantages and disadvantages of these instruments.	5	1	K2
2	What is error of an instrument? Discuss about various types of errors in Measurement. Two resistance R1 and R2 are connected in parallel with R1 = 10k ohm + or – 5%, R2= 5k ohm + or – 10%. Calculate the percentage error.	5	1	K4
3	Explain the following terms – Drift, Sensitivity and Resolution. An instrument that indicates 100 A at FSD (Full Scale Deflection) has a specified accuracy of 1%. Calculate the upper and lower limits of measured current and percentage error in measurement for i) FSD, ii) 0.5 FSD	5	1	K3
4	Sketch the basic construction of a typical PMMC (Permanent Magnet Moving Coil) instrument and show how a PMMC can be used as DC Voltmeter. Explain the circuit operation in detail.	5	1	K2
5	Explain the static and dynamic characteristics of instruments	5	1	K1

CO-Course Outcomes mapped
with respective question KL-
Bloom's Knowledge Level (K1,
K2, K3, K4, K5, K6)

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

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Assignment 5

Unit IV: Instrument Transformers and Electronics Measurement

Subject Name: Electrical Measurements & Instrumentation

Subject Code: BEE-302

Date of Assignment: 15.02.2024

Date of Submission:

Attempt all questions. Long answer questions.

Q.No	Questions	Marks	CO	KL
1	Derive the transformation ratio for a Potential transformer using Phasor diagram.	5	4	K2
2	Draw the equivalent circuit and phasor diagram of a current transformer. Derive the expression for ratio and phase angle.	5	4	K4
3	Describe the construction and working of general purpose CRO (Cathode Ray Oscilloscope) using block diagram and explain its components in details.	5	4	K2
4	A current transformer of turns ratio 1:199 is rated as 1000/5 A, 25 VA. The core loss and magnetizing component of the primary current are 4A and 7A under rated conditions. Determine the phase angle and ratio errors for the rated burden and rated secondary current of 0.8 p.f. lagging and 0.8 p.f. leading. Neglect the resistance and leakage resistance of secondary winding	5	4	K3
5	Classify different types of digital voltmeter. Describe integrated type of digital voltmeters with the help of circuit diagrams.	5	4	K1

CO-Course Outcomes mapped

with respective question KL-

Bloom's Knowledge Level (K1,

K2, K3, K4, K5, K6)

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