

Registration No :

--	--	--	--	--	--	--	--	--	--

Total Number of Pages : 02

B.TECH
PEL31104

3rd Semester Back Examination 2019-20
ELECTRICAL AND ELECTRONICS MEASUREMENT

BRANCH : EEE

Max Marks : 100

Time : 3 Hours

Q.CODE : HB685

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 Only Short Answer Type Questions (Answer All-10) (2 x 10)

- Write the major cause of creeping for single phase inductive type energy meter.
- In a D'Arsonval galvanometer, an iron core is usually used between the permanent magnet pole faces, explain with reasons.
- A moving coil instrument gives full scale deflection of 15mA when the potential difference across its terminals is 300mV . Calculate, the shunt resistance for measuring upto 25 Amp.
- Give two examples of (i) Integrating type of Instruments (ii) Secondary Instruments.
- Give at least two most common methods for measurement of low resistance.
- For 20A, 230V energy meter, the revolution per Kilowatt-hour is 480. If upon test at full load unit power factor the disc makes 40 revolution in 66 seconds, calculate the error in the energy meter.
- Differentiate between sensors and transducers.
- Briefly explain, "standardization" in a slide wire potentiometer.
- What are the advantages of electronics voltmeter compared to electromechanical type voltmeter?
- Give Reasons, the secondary of a CT is never left open circuited.

Part- II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- What are the differences between static and dynamic characteristics of instruments?
- State various types of frequency meters and explain the working of a vibrating reed type frequency meter.
- Derive the equation of balance of a Schering Bridge. Draw the phasor diagram under null conditions and explain how loss angle of capacitor can be calculated.
- The following readings were obtained during the measurement of a low resistance using a potentiometer. Voltage drop across a 0.1Ω standard resistance is 1.0235V Voltage drop across the low resistance under test=0.4221V Calculate the value of unknown resistance, current and

power lost in it.

- e) Briefly explain the calibration and adjustments of a single-phase induction type energy meter.
- f) Derive the equation of balance of a Schering Bridge. Draw the phasor diagram under null conditions and explain how loss angle of capacitor can be calculated.
- g) Explain the Kelvin's Double bridge and obtain the balance condition.
- h) Explain the term standardization of a potentiometer. Describe the procedure of standardization of a d.c potentiometer.
- i) Explain the operation of LVDT, with help of a diagram.
- j) How the frequency is converted to an analog signal? Explain.
- k) Explain any one bridge circuit for measurement of Inductance.
- l) Discuss the common sources of error in an AC bridge. How are they eliminated?

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

- Q3 a) Describe the construction and working of PMMC instrument. Derive the equation for deflection if the instrument is spring controlled. (10)
- b) Discuss the theory and principle of operation of Electro-Dynamometer type wattmeter. (6)
- Q4 a) What is a megger? Why is it used? Explain the working principle of Megger with relevant diagram. (10)
- b) Discuss the importance of Wagner Earthing Device in AC bridges. (6)
- Q5 a) Describe the working of a Ballistic Galvanometer and compare it with a D'Arsonval Galvanometer. (10)
- b) Discuss the constructional features of a Polar type Potentiometer. (6)
- Q6 a) With a neat diagram explain the main parts and working of Cathode Ray Oscilloscope. With a neat schematic, explain the operation of a dual slope analog to digital conversion. (10)
- b) Describe a true r.m.s reading voltmeter with neat sketches. (6)