CBCS SCHEME

USN

Third Semester B.E. Degree Examination, Jan./Feb.2021
Electrical & Electronics Measurements

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a. With a neat sketch, explain Kelvins double bridge , obtain an expression for the unknown low resistance. **(08 Marks)**
    b. Discuss fall of potential method of measurement of Earth resistance. **(07 Marks)**
    c. The four impedances of ac bridges are,
    $z_1 = 400\angle50°\,\Omega$, $z_2 = 200\angle40°\,\Omega$, $z_3 = 800\angle-50°\,\Omega$, $z_4 = 400\angle20°\,\Omega$
    Find out whether bridge is balanced under there condition or not. **(05 Marks)**

OR

2   a. Explain Maxwell's Inductance bridge with neat diagram with advantages and disadvantages. **(08 Marks)**
    b. With a neat circuit diagram, explain operation of modified Desautys bridge. **(06 Marks)**
    c. Discuss the method of determine capacitace and dissipation factor using voltage schering bridge. **(06 Marks)**

Module-2

3   a. Discuss the errors and their compensating techniques used in dynamometer type wattmeter. **(08 Marks)**
    b. With a neat sketch explain operation of Weston frequency meter. **(06 Marks)**
    c. A wattmeter has a current coil of resistance $0.2\ \Omega$ and pressure coil of resistance $5000\ \Omega$ is connected to measure the power consumed by load. Calculate the percentage error in the reading of wattmeter when the load takes 20 A at 250 V with 0.8 power factor when,
    (i)   The pressure call is connected on supply side.
    (ii) When current coil is connected on supply side.
    (iii) What load current would give equal errors with two connections? **(06 Marks)**

OR

4   a. Explain working principle and construction of single phase electrodynamometer power factor meter. **(08 Marks)**
    b. Explain operation of Lpf dynamometer type wattmeter. **(07 Marks)**
    c. The name plate of single phase energymeter reads as 250 V, 20 A, 1800 rev/kWH. The meter is tested at $\frac{3}{4}^{th}$ load and upf. The meter makes 20 revolutions in 10 seconds. Determine the % error in the reading of the energy meter. **(05 Marks)**

Module-3

5   a. Describe with a neat sketch measurement of Iron loss using wattmeter method. **(08 Marks)**
    b. With a current of 25 mA, if the coil of the instrument has a resistance of $10\ \Omega$, how it can be adopted to work as,
    (i)   Ammeter of range 0 – 20 A.
    (ii) Voltmeter of range 0 – 120 V. **(05 Marks)**
    c. Difference between CT and PT and explain errors in CT. **(07 Marks)**

OR

6 a. Explain the measurement of leakage factor using search coil. (08 Marks)
  b. Explain Hopkinson's permeameter. (06 Marks)
  c. What is shunt? How it is used to extend range of an ammeter? (06 Marks)

Module-4

7 a. Explain the operation of true rms reading voltmeter. (07 Marks)
  b. With a neat diagram, explain the working of electronic multimeter. (07 Marks)
  c. Explain the working of Ramp type digital voltmeter. (06 Marks)

OR

8 a. Explain working of an electronic energy meter, list the drawbacks of traditional energy meter. (08 Marks)
  b. Explain integrating type DVM with neat sketch. (07 Marks)
  c. A coil with a resistance of 12 Ω is connected in direct connection mode of Q meter resonance occurs. When oscillator frequency is 1 MHz and the resonating capacitor is set at 75 pf. Calculate % error introduced in calculate value of Q by 0.02 Ω insertion resistance. (05 Marks)

Module-5

9 a. Write a note on Nixie tube with neat sketch. (07 Marks)
  b. With a neat diagram, explain LED display. (07 Marks)
  c. Write a note on Dot Matrix display. (06 Marks)

OR

10 a. With a neat sketch, explain working of X-Y recorder. (07 Marks)
   b. Write a note on LVDT type recorder. (07 Marks)
   c. Explain the block diagram of ECG (Electro Cardio graph) (06 Marks)

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