

CBCS SCHEME

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Third Semester B.E. Degree Examination, July/August 2021 Electrical and Electronic Measurements

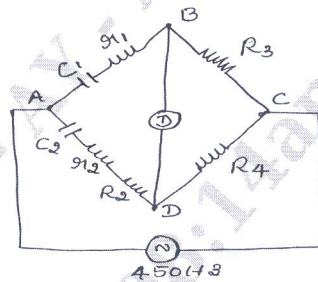
Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- Define the sensitivity of Wheat Stone's bridge, with the necessary circuit diagram. Hence deduce the expression for sensitivity of the bridge 'SB'. (08 Marks)
 - Derive the balancing equation for Anderson's bridge. (08 Marks)
 - Write a short note on types of Sources and detectors used in A.C. Bridges. (04 Marks)
- Derive the balancing equation for Kelvin's double bridge. (08 Marks)
 - With the help of neat diagram, explain the operation of a megger. (06 Marks)
 - The bridge is shown in Fig. Q2(c). At balance $R_2 = 4.8\Omega$, $R_3 = 200\Omega$, $R_4 = 2850\Omega$, $C_2 = 0.5\mu\text{F}$, $r_2 = 0.4\Omega$. Calculate the value of C_1 , r_1 and also dissipation factor of this capacitor. (06 Marks)

Fig. Q2(c)



- Derive the torque equation of single phase electro-dynamometer type wattmeter. (06 Marks)
 - With necessary figures, explain the calibration of single phase energy meter. (08 Marks)
 - If the reading on two wattmeters in a 3-phase balanced load are 836W and 224W, the later reading being obtained after the reversal of current coil connections. Calculate the power and p.f of the load. (06 Marks)
- With the help of neat sketch, explain the construction and working of Weston frequency meter. (08 Marks)
 - For a 20A, 230V energy meter, the revolutions per kilo watt-hour is 480. If upon test at full load upf the disc makes 40 revolutions in 66 seconds. Calculate the error. (06 Marks)
 - Write a short note on rotating type phase sequence indicator. (06 Marks)
- What is Shunt? How it is used to extend the range of an ammeter? (06 Marks)
 - Explain the measurement of flux or flux density, with a neat sketch. (08 Marks)
 - Explain the advantages of Instrument transformers. (06 Marks)
- With a neat circuit diagram, explain Silsbee's method of testing of C.T. (08 Marks)
 - Explain with a neat sketch, the measurement of magnetizing force (H). (06 Marks)
 - A moving coil meter takes 25mA to produce full scale deflection and the resistance of the meter is 10Ω . Design a suitable scheme so as to use the instrument as an ammeter reading 0-20A and as a voltmeter reading 0-120V. (06 Marks)

- 7 a. With a neat sketch, explain the working of a true R.M.S responding voltmeter. (06 Marks)
b. With a neat sketch, explain the measurement of low impedance components using Q - meter. (08 Marks)
c. With a neat block diagram, explain the working of Ramp type DVM. (06 Marks)
- 8 a. With a neat block diagram, explain the working of electronic multimeter. (06 Marks)
b. With a neat block diagram, explain the working of electronic energy meter. (06 Marks)
c. List the performance characteristics of Digital Volt Meter (DVM). (08 Marks)
- 9 a. With a neat sketch, explain the working of X – Y recorders. (08 Marks)
b. Explain LED and LCD displays. (08 Marks)
c. Write a short note on Nixie tube. (04 Marks)
- 10 a. Write a short notes on types of Segment displays. (08 Marks)
b. With the help of neat block diagram, explain ECG machine. (08 Marks)
c. Write a short notes on Strip Chart recorder. (04 Marks)
