

# CBCS Scheme

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15EE36

## Third Semester B.E. Degree Examination, June/July 2017 Electrical & Electronic Measurements

Time: 3 hrs.

Max. Marks: 80

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

### Module-1

- 1 a. Derive the dimensions of, (i) emf (ii) Magnetic flux density (iii) Electric flux density (iv) Current density (v) Permeability (vi) Resistivity in LMTI system of dimensions. (06 Marks)
- b. With neat sketch, explain the operation of the Megger. (06 Marks)
- c. The four impedances of ac bridge are  $z_1 = 400\angle 50^\circ \Omega$ ,  $z_2 = 200\angle 40^\circ \Omega$ ,  $z_3 = 800\angle -50^\circ \Omega$ ,  $z_4 = 400\angle 20^\circ \Omega$ . Find out whether the bridge is balanced under these condition or not. (04 Marks)

OR

- 2 a. Mention the applications and limitations of wheatstone bridge. (06 Marks)
- b. With neat circuit diagram, explain the operation of modified Desautys bridge. (06 Marks)
- c. Show that  $w^2 I C$  is non dimensional,  $w$  being the angular frequency of the applied voltage. (04 Marks)

### Module-2

- 3 a. What are the errors and adjustments in dynamometer type wattmeter? (06 Marks)
- b. With a neat sketch, explain the operation of Weston frequency meter. (05 Marks)
- c. A 230 V single phase watt-hour meter has a constant load of 4 A passing through it for 6 hrs at unity power factor. If the meter disc makes 2208 revolution during this period. What is the meter constant in revolution per kwh? Calculate the power factor of the load if the number of revolution made by the meter are 1472 when operating at 230 V, 5 A for 4 hrs. (05 Marks)

OR

- 4 a. Explain the operation of LPI dynamometer type wattmeter. (06 Marks)
- b. Explain the working principle and construction of single phase electrodynamic power factor meter. (06 Marks)
- c. Write a note on phase sequence indicator. (04 Marks)

### Module-3

- 5 a. Describe with neat sketch measurement of iron loss using wattmeter method. (06 Marks)
- b. Explain the construction and working principle of a power transformer. (06 Marks)
- c. Write a note on turns compensation used in current transformer. (04 Marks)

OR

- 6 a. What are shunts and multipliers? Derive an expression for shunts and multipliers with reference to the meters used in electric circuit. (06 Marks)
- b. Explain the measurement of leakage factor using search coil. (06 Marks)
- c. What are the advantages of instrument transformer? (04 Marks)

**Module-4**

- 7 a. Explain the operation of true rms reading voltmeter. (06 Marks)  
b. Explain with the help of block diagram the function of integrating type digital voltmeter. (06 Marks)  
c. Write a note on performance parameters of digital voltmeter. (04 Marks)

**OR**

- 8 a. Explain the operation of successive approximation digital voltmeter. (06 Marks)  
b. With a neat block diagram, explain the principle of working of electronic energy meter. (06 Marks)  
c. Mention the advantages of electronic instruments over conventional meters. (04 Marks)

**Module-5**

- 9 a. Explain with suitable circuit diagram working of an cathode ray tube (CRT). (06 Marks)  
b. Explain the principle of operation of galvanometer recorder and state its advantages. (06 Marks)  
c. Write a note on display devices. (04 Marks)

**OR**

- 10 a. Explain the block diagram of an Electro Cardio Graph (ECG). (06 Marks)  
b. Write a note on:  
(i) Dot matrix display.  
(ii) Bar matrix display. (06 Marks)  
c. Distinguish between frequency modulation recording and direct recording. (04 Marks)

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