1173

Code : 15EE-42T

Register Number | | | | | | | |

IV Semester Diploma Examination, April/May-2017

ELECTRICAL MEASUREMENTS AND MEASURING INSTRUMENTS

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **six** questions from Part-**A**. (Each question carries **5** marks)

(ii) Answer any **seven** full questions from Part-**B**. (Each full questions carries **10** marks)

PART – A

1. Define error. Mention the types of errors. **5**

2. List merits and demerits of moving coil instruments. **5**

3. Explain the use of shunts for range extension of d.c. ammeters. **5**

4. A balanced three phase star connected load draws power from 430 V supply. The two wattmeters connected indicates W_1 = 6 kW and W_2 = 2.4 kW. Calculate power and power factor of the circuit. **5**

5. Explain measurement of unknown resistance using Wheatstone bridge. **5**

6. Compare analog and digital multimeters. **5**

7. List merits and demerits of digital tachometer. **5**

8. List the applications of bolometer. **5**

9. Mention the parameters on which transducers can be selected. **5**

PART – B

10. (a) Explain the general classification of electrical measuring instruments and give example for each. 5

(b) List advantages and disadvantages of moving iron meters. 5

11. (a) Explain the calibration of voltmeter using potentiometer with a neat circuit arrangement. 5

(b) Design a shunt to extend the range of D.C. ammeter from 1000 mA to 6 amps. The internal resistance of meter is 15 ohms. 5

12. (a) Explain with diagram the construction and operation of moving coil instruments. 7

(b) List the application of moving coil instruments. 3

13. (a) Describe the calibration of single phase energy meter with neat sketch. 7

(b) List the errors in energy meters. 3

14. (a) Explain with diagram construction and working of dynamometer type wattmeter. 6

(b) Explain with circuit diagram two wattmeter method of three phase power measurement in star connected load. 4

15. (a) Explain with block diagram operation of digital non contact type tachometer. 5

(b) The Schering bridge employs standard air capacitor C_2 of 100 pF, a non reactive resistance R_4 of 300 ohm in parallel with variable capacitor C_4 and a variable resistance R_3. The balance is obtained with C_4 = 0.4 μF and R_3 = 250 ohm. Calculate the R_x and C_x. 5

16. (a) Explain with diagram operation of digital tong tester. 7

(b) List the application of LCR meter. 3

17. (a) Draw and explain the block diagram of digital pf meter. 7

(b) List the advantages of digital synchroscope. 3

18. (a) Explain the construction and operation of thermocouple with sketch. 7

(b) List the application of thermocouple. 3

19. (a) Explain the construction and working of LVDT with sketch. 7

(b) List the applications of Piezoelectric transducers. 3