22325

23124

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Illustrate your answer with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) Use of Non-programmable Electronic Pocket Calculator is permissible.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following: **10**

a) State significance of measurement.

b) Enlist types of errors in measuring instruments. (Any five)

c) Compare D.C. and A.C. voltmeter.

d) List the advantages of permanent magnet moving coil instrument. (Any four)

e) Draw a neat sketch of wattmeter connection.

f) State the difference between unity p.f. wattmeter and low p.f. wattmeter.

g) List the errors occurring in single phase electronic energy meter.

Marks

2. Attempt any THREE of the following: **12**

a) Sketch neat labelled diagram and describe the working principle of full wave rectifier type A.C. voltmeter.

b) Sketch and explain the construction and working of dynamometer type wattmeter.

c) Describe the constructional features of single phase electronic energy meter with neat labelled diagram.

d) Explain with neat diagram working of function generator.

3. Attempt any THREE of the following: **12**

a) With neat sketch of PMMC instrument explain it's working.

b) Explain the error occurred due to pressure coil inductance of the electrodynamometer type wattmeter. How this error is compensated?

c) Describe the circuit diagram of the calibration of single phase electronic energy meter using direct loading?

d) State need and construction of megger with suitable sketches.

4. Attempt any THREE of the following: **12**

a) State difference between analog and digital instruments.

b) Explain working of clamp-on-meter.

c) A three phase 500V motor load has a power factor of 0.4. Two wattmeters are connected to measure the input. They show input to be 30 kW. Find the reading of each wattmeter.

d) Draw a neat block diagram of three phase electronic energy meter.

e) Draw the block diagram of trivector meter. State the various measurements possible from trivector meter.

Marks

5. Attempt any TWO of the following: **12**

a) State why calibration is needed in all types of measuring instruments? Explain the procedure for calibration of given instruments.

b) Explain the labelled sketches the construction and working of synchroscope.

c) Draw and explain the block diagram of signal generator.

6. Attempt any TWO of the following: **12**

a) Describe the errors and their compensation in details related to three phase electronic energy meter.

b) Describe the procedure for the measurement of earth resistance by using earth tester.

c) Draw the block diagram of CRO and describe with suitable example; frequency measurement by Lissajous pattern on CRO.
