

22325

23124

3 Hours / 70 Marks

Seat No.

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- 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.

P.T.O.

- 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 electrodynamicometer 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.

- 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.
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