

Total No. of Questions : 8]

PA-1206

SEAT No. :

[Total No. of Pages : 2

[5925]-228

S.E. (Electrical)

**ELECTRICAL MEASUREMENTS AND INSTRUMENTATION
(2019 Pattern) (Semester - III) (203144)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right indicate full marks.*
- 3) *Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam table is allowed.*
- 4) *Assume suitable data, if necessary.*

- Q1) a)** Explain in detail the working of dynamometer types wattmeter with a neat diagram. Also, state its advantages and disadvantages. **[9]**
- b) A 3 - phase, 500 V motor load has a power factor of 0.4. Two wattmeters are connected to measure the input. They show the input to be 30 kW. Find the reading of each instrument. **[8]**

OR

- Q2) a)** Derive the torque equation of dynamometer type wattmeter. Explain the errors and its compensation in dynamometer type wattmeter. **[9]**
- b) Two wattmeters connected to measure the input to a balanced 3-phase circuit indicate 2000 W and 500 W respectively. Find the power factor of circuit:
- i) When both the readings are positive
 - ii) When the latter reading is obtained after reversing the connections to the current coil of first instrument. **[8]**

- Q3) a)** Explain in detail the working and construction of single phase induction type energy meter with a neat diagram. **[9]**
- b) What is the need of calibration? Explain one method of calibration of energy meter. **[8]**

OR

P.T.O.

- Q4)** a) Explain electronic energy meter with a neat diagram. [9]
b) What are the different types of errors and adjustments in single phase energy meter? [8]

- Q5)** a) How the following measurement can be done using CRO: [9]
i) Current measurement
ii) Voltage measurement
iii) Time period measurement
b) What are the classification of transducers? Explain any 2 in detail. [9]

OR

- Q6)** a) Draw and explain the block diagram of DSO. [9]
b) Explain low pressure measurement by McLeod gauge. [9]

- Q7)** a) Explain the construction, and working of LVDT. [9]
b) Explain nucleonic method for level measurement with a neat diagram. [9]

OR

- Q8)** a) Explain ultrasonic method for level measurement with a neat diagram. [9]
b) Explain foil strain gauge with a neat diagram. Also, state its advantages. [9]
