22325

23242

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

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

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

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

(7) 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) Differentiate between conventional ammeter and clip-on ammeter.

b) State the various errors in 1ϕ electronic energy meter.

c) State any two advantages of electronic energy meter.

d) Give any four applications of digital multimeter.

e) Differentiate between absolute and secondary instruments.

f) Write any two factors on which earth resistance depends.

g) Write the function of controlling torque.

Marks

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

a) List the types of systematic errors and state the reasons due to which these errors occur.

b) Define the following terms.

i) sensitivity

ii) Repeatability

iii) Drift

iv) Resolution

c) Differentiate between analog and digital instruments.

d) PMMC instrument can not measure A.C. quantities. Justify.

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

a) Explain the working of series type of ohmmeter with the help of circuit diagram.

b) Two wattmeters connected to measure 3 phase power gives reading of 3000 W and 1000 W respectively. Find power factor of circuit.

i) When both readings positive.

ii) When reading of 1000 W is obtained after reversing current coil of second wattmeter.

c) Explain with diagram, the construction of dynamometer type wattmeter.

d) Explain the process of calibration of single phase electronic energy meter using direct loading.

Marks

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

a) Describe working of 1ϕ electronic energy meter with help of block diagram.

b) Draw block diagram of function generator and explain its working.

c) With help of block diagram, explain working of signal generator.

d) Explain working of weston type of frequency meter with help of diagram.

e) Explain working of rotary type of phase sequence indicator.

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

a) Draw neat labelled diagram of PMMC instrument and state its advantages.

b) What is the necessity of sychroscope in power system? Explain with neat sketch, the working of sychroscope.

c) Explain following errors occurred in dynamometer type wattmeter and explain how these error can be compensated.

i) Error due to pressure coil inductance.

ii) Error due to pressure coil capacitance.

iii) Error due to stray magnetic field.

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

a) Explain with neat sketch the construction and working of megger.

b) Draw circuit diagram of two wattmeter method for star connected load and give its advantages and disadvantages.

c) Explain with block diagram, the construction and working of 3ϕ electronic energy meter.