[Total No. of Questions - 5] [Total No. of Printed Pages - 2]

Dec-24-0091 (CBCS/NEP)

EEPC-312 (Electrical Measurements and Measuring Instruments)

B.Tech. 3rd

Time : 3 Hours Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Solve one question in each of the Sections A, B, C and D. All questions are compulsory in Section E.

SECTION - A

1. Define the different operating torques needed in an electromechanical indicating instrument. Why controlling torque is necessary in an analog instrument? What would happen in absence of controlling torque? (12)

OR

Draw and explain the different damping systems of indicating instrument. Also, compare the methods in terms of its merits and demerits. (12)

SECTION - B

2. Describe the working principle of electrodynamometer wattmeter. With help of circuit diagram, explain the error caused because of connections. If the power loss is to be taken into account, which connection would give better accuracy? (12)

OR

Two wattmeters connected to measure the input to a balanced three phase circuit indicate 3000 W and 1500W respectively. Find the power factor of circuit (a) when both readings are positive, (b) when the latter reading is obtained by reversing the

connections to the current coil of first instrument. Mention the method of measuring the reactive power using three phase wattmeter. (12)

SECTION - C

3. Explain the methods of measurement of high resistance. Draw and describe the fall of potential method to find out earth resistance. (12)

OR

Draw the schematic diagram of Varley-Murray loop test to determine (A) Ground Fault (b) Short Circuit Fault. (12)

SECTION - D

4. Describe the construction and working principle of power factor meters. List the advantages and disadvantages of Moving Iron power factor meter. (12)

OR

Explain the working of Digital Storage Oscilloscope (DSO) with a neat diagram and labelled components. Why is DSO considered better than Analog Oscilloscopes? (12)

SECTION - E (Compulsory)

5. Solve all of the following:

(a) Define 1. Resolution, 2. Accuracy.

(b) How to extend the range of indicating instruments?

(c) List the existing tariff structures for different type of loads.

(d) Draw connection diagram of Schering bridge.

(e) List the methods of measurement of low resistance.

(f) What is the advantage of Varley loop method over Murray Loop method? (6×2=12)