B. Tech. Sem –III (Electrical Engg.) 2014 COURSE) (CBCS) :
SUMMER - 2019

SUBJECT: ELECTRICAL MEASUREMENTS AND INSTRUMENTATION

Day: Wednesday
Date: 15/05/2019

S-2019-2565

Time: 02.30 PM TO 05.30 PM
Max. Marks: 60

N.B:

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.

Q.1 **a)** Explain the working of Schering bridge and derive the relation for Unknown Capacitance. **(05)**

b) What is burden and CT? Why the secondary of CT should not be open circuited? **(05)**

OR

Q.1 **a)** Explain the working of Maxwell's Indications bridge and derive the explain for Unknown inductance and desistance. **(05)**

b) Explain the purpose of Instrument transformers. State the method of extension of range of ammeter and voltmeter. **(05)**

Q.2 **a)** An Energy meter whose constant is 1500 Rev/kWh it makes 20 Rev in 30 seconds. Calculate the load in "KW". **(05)**

b) Explain in detail construction and working of single phase dynamometer type wattmeter. **(05)**

OR

Q.2 **a)** Power supply of 3 phase load was measured by two watt meters. The readings were 7.8kW and -3kW. The supply voltage was 450V. Determine load power factor. **(05)**

b) Draw a neat sketch and label the parts of two element type of 3 phase – 3 wire energy meter. **(05)**

Q.3 Explain the following terms related with electronic devices used for measurements **(10)**

i) Automatic Meter Reading (AMR)
ii) Advanced Metering Infrastructure (AMI)
iii) Meter Reading Instruments (MRI)

OR

Q.3 Explain the function of wave analyzer. Draw and explain the frequency selective wave analyzer and heterodyne wave analyzer. **(10)**

P.T.O.

Q.4 **a)** LVDT is an active transducer. For LVDT small residual voltage is always present at the null position. Why? **(05)**

b) Discuss the constructional details of various bonded type metal strain gauge with applications. **(05)**

OR

Q.4 **a)** Draw and explain the ultrasonic sensor transducer for level measurement. **(05)**

b) Explain the basic principle and working of capacitance type displacement transducer. Also state its applications. **(05)**

Q.5 **a)** Explain the constructional details of Pirani Gauge. Mention its applications. **(05)**

b) Explain any one method of measurement of high pressure using electric transducer as secondary transducer. **(05)**

OR

Q.5 **a)** Give classification of Pressure. Explain the electrical methods of electrical transducer for pressure measurement. **(05)**

b) Give the electrical methods for resistance measurements. Draw the constructional details of Bimetallic thermometer. **(05)**

Q.6 **a)** Draw and explain the Turbine Flow meter. Also state the difference between contact and contactless type flow meters. **(05)**

b) State the difference between LED and LCD. **(05)**

OR

Q.6 **a)** Draw and explain the ultrasonic flow meter. **(05)**

b) Differentiate between Strip chart recorder and X-Y recorder. **(05)**

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