BACHELOR OF TECHNOLOGY (C.B.C.S.) (2021-COURSE)
B. Tech. Sem - II ELECTRICAL : WINTER- 2022
SUBJECT : INSTRUMENTATION & MEASUREMENTS

Day : Monday | Time : 10:00 AM-01:00 PM

Date : 28-11-2022 | W-24079-2022 | Max. Marks : 60

N.B.

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Use of non programmable **CALCULATOR** is allowed.
4) Draw neat and labeled diagrams **WHEREVER** necessary.
5) Assume suitable data **WHEREVER** necessary.

Q.1 **a)** What are the different types of errors in measurement? Explain in brief. **[05]**

b) Explain loss of charge method for measurement of insulation resistance of cables. **[05]**

OR

Q.1 **a)** Draw the circuit diagram and explain Maxwell's inductance bridge. **[06]**

b) Explain the terms in measurement system: **[04]**
i) Static error **ii)** Scale range **iii)** Precision **iv)** Backlash

Q.2 Derive the expression for deflecting torque in single phase induction type energy meter. Explain the sources of errors in single phase induction type energy meter. **[10]**

OR

Q.2 **a)** Draw the circuit diagram of measurement of power using Instrument Transformer and explain. **[05]**

b) With the help of circuit diagram explain electrodynamometer wattmeter in detail. **[05]**

Q.3 **a)** Draw the block diagram of frequency selective wave analyzer and explain. **[05]**

b) Draw the circuit diagram of difference amplifier type electronic voltmeter. **[05]**

OR

Q.3 Draw the block diagram of a general purpose CRO and explain the function of each block in detail. **[10]**

Q.4 **a)** Discuss the importance of level measurement. **[04]**

b) State the types of strain gauges. Describe construction and working of bonded type stain gauge. **[06]**

OR

Q.4 **a)** Describe construction and working principle of electromagnetic flow meter. **[05]**

b) Explain construction and working principle of load cell. **[05]**

Q.5 **a)** Describe low pressure measurement with neat diagram. **[05]**

b) How velocity can be measured using photo-electric tachometer. **[05]**

OR

Q.5 **a)** State the types of pressure measurement devices. Explain anyone. **[05]**

b) Describe 3 lead and 4 lead RTD. **[05]**

Q.6 **a)** State the advantages of Digital Instruments. **[04]**

b) Explain LED and LCD with neat diagram. **[06]**

OR

Q.6 **a)** Discuss requirements of recording. **[04]**

b) Explain analog recorders. **[06]**

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