

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

Day : Monday  
Date : 1/8/2022

**S-24079-2022**

Time : 10:00 AM-01:00 PM  
Max. Marks : 60

**N. B.**

- 1) All Questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate **FULL** marks.
- 3) Draw the neat diagram wherever necessary.
- 4) Assume suitable data, if necessary.

- Q. 1**
- a) Draw the circuit of a wheatstone bridge and derive the condition of balance. (05)
  - b) What is error in measurement, explain the following terms: (05)  
i) Static error ii) Relative error

**OR**

- a) Explain the loss of charge method for measurement of insulation resistance of cables. (05)
- b) Derive the equation of balance for an Anderson's bridge. Write its disadvantages. (05)

- Q. 2**
- Draw the neat circuit diagram and explain how power can be measured in a three phase circuit with the help of two wattmeter method. (10)

**OR**

- a) Describe any two types of errors in electro-dynamometer type wattmeter. (05)
- b) Derive the expression for deflecting torque in single phase induction type meter. (05)

- Q. 3**
- Explain the advantages of electronic voltmeters over conventional type voltmeter with respect to following points (10)

- i) Detection of low level signal
- ii) Power consumption
- iii) Frequency range and
- iv) Loading effect

**OR**

Draw the block diagram of general purpose CRO and explain the function of following control i) intensity ii) focus iii) Horizontal and Vertical positioning (10)

- Q. 4**
- a) Describe the difference criteria for selection of Transducers for a particular application. (06)

- b) Explain the different principles of working of capacitive transducers. (04)

**OR**

- a) Explain the measurement of liquid level with variable permeability method. (05)
- b) Explain the ultrasonic flow transducers. (05)

- Q. 5**
- a) Discuss the types of pressure measurement devices. (05)
  - b) Describe 3 lead and 4 lead RTD for temperature measurement. (05)

**OR**

- a) Explain the measurement of Angular velocity by using Electrical tachometers (05)
- b) Explain the measurement of low pressure using Pirani gauge (05)

- Q. 6**
- a) Discuss the necessity of Recorders. (04)
  - b) Define the terms: (06)

- i) Resolution
- ii) Sensitivity
- iii) Accuracy

**OR**

- a) Explain with neat diagram X-Y Recorder. (07)
- b) State the advantages of Digital Instruments. (03)

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