

Roll No. ....

**3116**

**B. Tech. 4th Semester (ME)  
Examination – May, 2023**

**INSTRUMENTATION & CONTROL**

**Paper : PCC-ME-210-G**

**Time : Three hours ]**

**[ Maximum Marks : 75**

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*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

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**Note :** Attempt *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. (a) Define Instrumentation.  $2.5 \times 6 = 15$
- (b) Differentiate between accuracy and precision.
- (c) What do you mean by transducer element ? List its key attributes.
- (d) Explain principle and uses of rotameter.
- (e) What is thermal screening ? Explain its principle.
- (f) List application of control system engineering.

## UNIT – I

2. (a) Discuss in detail functional element of measurement system. 7
- (b) What are the criterion for the selection of an instrument? 8
3. Classify instruments and discuss them with neat sketch. 15

## UNIT – II

4. (a) Differentiate between analog and digital transducer. 7
- (b) What do you mean by resistance strain gauge transducer? Classify and explain them. 8
5. (a) With neat sketch discuss the working of LVDT. Also discuss its application, advantages and limitation in measurement system. 7
- (b) Write short notes on : 8
- (i) Piezo-electric Transducer
- (ii) Opto-electrical Transducer

## UNIT – III

6. (a) Discuss various electromechanical methods of force measurement. 7
- (b) List various types of Dynamometers for measurement of torque. Discuss them with neat sketch. 8

7. (a) Discuss various electrical types of temperature measuring instrument. 8

(b) With neat sketch discuss selective radiation pyrometer. Also state its advantages and limitation. 7

#### UNIT – IV

8. List different flow meters. Explain operating principle of ultrasonic flow meter. Also list its advantages and limitation. 15

9. (a) Differentiate between open and closed loop control system. Also draw their block diagram. - 7

(b) What do you mean by Controllers ? Classify and explain them. 8

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