

Printed Pages – 4

Roll No.

328355(28)

B. E. (Third Semester) Examination, Nov.-Dec. 2021

(New Scheme)

(ET & T Branch)

INDUSTRIAL INSTRUMENTATION

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt all questions. Part (a) of each unit is compulsory and carries 2 marks. Attempt any two parts from (b), (c) and (d) and carry 7 marks. Assume suitable data if required.

Unit-I

1. (a) What is CRT?

2

328355(28)

PTO

[2]

- (b) What are Display Devices? Explain any one of them with suitable diagram. 7
- (c) Discuss the working of a generalized measurement system with the help of its block diagram. 7
- (d) Draw the block diagram of general purpose CRO. Explain its functioning. 7

Unit-II

2. (a) Define Transducer's sensitivity. 2
- (b) Strain Gauge with gauge factor of 2 is fastened to a metallic member, subjected to a stress of 1000 kg/cm³. The modulus of elasticity of the metal is 2 × 10⁶ kg/cm³. Calculate the percentage change on resistance of the strain gauge. What is the value of Poisson's Ratio? 7
- (c) With a neat sketch prove that for differential arrangement of the capacitive transducer. 7
- $$S = \Delta E / x = E / d$$
- (d) Explain the construction and working of LVDT with

[3]

the help of neat sketch. How the magnitude and direction of core of LVDT are detected? 7

Unit-III

3. (a) Define the term Humidity. What are its types? 2
- (b) Describe the working principle of moving magnet type velocity transducers. 7
- (c) While measuring speed of a steam turbine with stroboscope, single line images were observed for stroboscope rating of 3000, 4000, 5250 rpm. Calculate the speed of turbine. 7
- (d) Explain the working of resistive transducer to measure liquid level with neat diagram. 7

Unit-IV

4. (a) Define Temperature. Write some units also. 2
- (b) Define Thomson Effect. Explain the laws of thermocouples. 7
- (c) With the help of neat sketch and expression explain the principle of single column manometer. 7

[4]

- (d) With the help of neat sketch explain working of Bourdon Gauge and specify how angularity error can be controlled. 7

Unit-V

5. (a) Define Reynolds number. 2
- (b) Explain any one photoelectric transducer with suitable graph and diagram. 7
- (c) Write the classification of fluid flow measurement technique. Explain any one with neat diagram. 7
- (d) Derive the expression for the flow rate of an incompressible fluid through a variable head flow meter. 7