

TED (15/19)-4213  
(Revision- 2015/19)

**A21-03682**

Reg.No.....  
Signature. ....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/  
COMMERCIAL PRACTICE – APRIL -2021.

**INDUSTRIAL INSTRUMENTS-I**

(Maximum Marks : 75)

[Time : 2.15 hours]

**PART-A**

Marks

**I.** Answer **any three** questions in one or two sentences. Each question carries 2 marks.

1. List the any four units of pressure measurement.
2. Define pressure head.
3. Write down any four direct methods of level measurement.
4. Define temperature.
5. List any two types of thermocouple with its wire combination. (3x2=6)

**PART - B**

**II** Answer **any four** of the following questions . Each question carries 6 marks.

1. With neat sketch outline the pressure measurement using strain gauge.
2. Explain the basic principle of operation of capacitive type pressure gauge.
3. Explain a method to measure level of corrosive liquid contained in a tank.
4. Illustrate the basic principle and operation of bimetallic thermometer.
5. Convert to degree celsius scale:  
(i) 150<sup>0</sup> Fahrenheit (ii)50<sup>0</sup> Fahrenheit (iii)373.16K (iv)250K
6. State Seebeck effect, Peltier effect, and Thomson effect
7. State the law of intermediate metals and law of intermediate temperature.

[4x6 =24]

**PART - C**

(Answer **any of the three units** from the following. Each full question carries 15 marks)

**UNIT I**

**III** (a) Describe construction and working of U tube manometer. (7)

(b) Explain the calibration of pressure gauge using dead weight tester. (8)

**OR**

- IV** (a) With neat diagram explain the construction and working of C type bourdon tube pressure gauge. (8)
- (b) Describe the working of piezo-electric pressure sensor. (7)

**UNIT- II**

- V** (a) Describe the construction and working of air purge system for level measurement. (8)
- (b) Explain the working of ultrasonic level gauge. (7)

**OR**

- VI** (a) With neat sketch explain the operation of level switch. (7)
- (b) Explain the working of level measurement by radiation absorption method. (8)

**UNIT- III**

- VII** (a) With neat sketch explain the construction and working of radiation pyrometer. (8)
- (b) Explain the construction and working of Hg in steel thermometer. (7)

**OR**

- VIII** (a) Explain the construction and working of optical thermometer. (8)
- (b) Describe the working of vapour pressure thermometer. (7)

**UNIT – IV**

- IX** (a) Describe the construction details of different types of thermistors. (8)
- (b) Compare the characteristics of RTD, Thermistor and Thermocouple. (7)

**OR**

- X** (a) Explain the construction and working of thermocouple. (8)
- (b) Describe the construction and working of thermopile. (7)

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