

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2023**

INDUSTRIAL INSTRUMENTS - I

[Maximum Marks: 100]

[Time: 3 Hours]

PART-A

[Maximum Marks: 10]

I. (Answer *all* questions in one or two sentences. Each question carries 2 marks)

1. List 4 units of pressure.
2. Name a method for level measurement of closed tank.
3. Define temperature.
4. List 4 types of industrial thermocouples.
5. Name a temperature measurement method, without contact with the hot body. (5 x 2 = 10)

PART-B

[Maximum Marks: 30]

II. (Answer *any five* of the following questions. Each question carries 6 marks)

1. Define pressure, gauge pressure and vacuum pressure.
2. With necessary figure illustrate the working of float type level gauge.
3. List 3 temperature scales and conversion between them.
4. State the law of intermediate metals and the law of intermediate temperature.
5. Describe the working of bell type manometers, with necessary figure.
6. With necessary figure, describe the working of ultrasonic level gauge.
7. With necessary figure illustrate the working of mercury in steel thermometer. (5 x 6 = 30)

PART-C

[Maximum Marks: 60]

(Answer *one* full question from each Unit. Each full question carries 15 marks)

UNIT – I

- III. a. With figure, explain construction and working of Bourdon tube pressure gauge. (12)
- b. List any three errors in manometer. (3)

OR

- IV. a. With figure, illustrate vacuum measurement, using McLeod gauge. (8)
b. With figure, describe working of fibre optic pressure gauge. (7)

UNIT – II

- V. a. With figure, explain working of displacer and torque tube type level gauge. (8)
b. With figure, describe capacitive type level gauge. (7)

OR

- VI. a. With figure, illustrate the working of radiation absorption type level gauge. (7)
b. With figure, describe air purge type level gauge. (8)

UNIT- III

- VII. a. With figure, explain working principle of bimetallic thermometer. (7)
b. With necessary figures, illustrate working of optical pyrometer. (8)

OR

- VIII. a. With figure, describe working of vapour pressure thermometer. (7)
b. With figure, illustrate working of total radiation pyrometer. (8)

UNIT - IV

- IX. a. With figure, describe construction and working of resistance temperature detector. (8)
b. Illustrate Seebeck effect and Peltier effect. (7)

OR

- X. a. With figure, describe construction of any three types of thermistors. (9)
b. With figure, describe construction and working of thermopile. (6)
