

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, APRIL – 2024**

INDUSTRIAL INSTRUMENTS I

[Maximum Marks : 100]

[Time : 3 hours]

PART – A
(Maximum Marks : 10)

Marks

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

1. Define gauge pressure.
2. List any two indirect level measurement techniques.
3. List the advantages of sight glass level measurement.
4. Why Mercury is used in thermometers?
5. List the types of thermistors.

(5x2=10)

PART – B
(Maximum Marks : 30)

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

1. How to calibrate a pressure gauge using Dead weight Tester?
2. Describe pressure measurement using U tube manometer.
3. Convert the following temperature to given scale
(a) $373^{\circ}\text{K} = \dots\dots\dots^{\circ}\text{C}$ (b) $122^{\circ}\text{F} = \dots\dots\dots^{\circ}\text{C}$ (c) $65^{\circ}\text{C} = \dots\dots\dots^{\circ}\text{F}$
4. Describe the working of capacitance type level indicator.
5. Explain sight glass level indicator.
6. Explain Law of intermediate temperature, Law of intermediate metals.
7. List any six applications of Thermistors

(5x6=30)

PART – C

(Maximum Marks : 60)

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

UNIT – I

- III.** (a) Explain piezo electric pressure sensor. (7)
(b) Explain the construction and working of Pirani gauge. (8)

OR

- IV.** (a) Explain well type manometer. (7)
(b) Explain the constructional details and working of c-type bourdon gauges. (8)

UNIT – II

- V.** (a) Briefly explain level switches. (7)
(b) Explain float type level indicator method with a neat diagram. (8)

OR

- VI.** (a) Illustrate the working of Ultrasonic level gauge. (7)
(b) Explain Air purge type level indicator with a neat sketch. (8)

UNIT –III

- VII.** (a) Describe different temperature scales and conversions. (7)
(b) Explain Mercury in steel thermometer with a neat diagram. (8)

OR

- VIII.** (a) Explain Vapour pressure thermometer. (7)
(b) Illustrate the Construction and working of radiation pyrometer. (8)

UNIT – IV

- IX.** (a) Explain the construction and working of resistance temperature detectors. (7)
(b) Explain the different types of industrial thermocouples. (8)

OR

- X.** (a) Explain (a) Seebeck effect (b) Peltier effect (c) Thomson effect. (7)
(b) Compare the characteristics of Thermocouple, RTD and Thermistor. (8)
