

Seat No.: _____

[47]

SARDAR PATEL UNIVERSITY
T.Y.B.Sc Vth Semester Examination, (under CBCS)
USO5CINS02 (Process Measurement Technique -I)
Wednesday, 13th November 2019
10.00 A.M. – 01.00 P.M.

Marks: 70

Que 1 Multiple choice questions.

[10]

- (1) The temperature scale of the ice point is _____.
(a) 273.15 (b) 273.05 (c) 273.24 (d) 273.25
- (2) _____ filled under pressure in the steel bulb.
(a) Copper (b) Gas (c) Liquid (d) Mercury
- (3) The sensing element of the industrial pressure thermometer is usually made of _____.
(a) brass (b) platinum (c) steel (d) constant
- (4) Manometer measure by _____.
(a) temperature (b) pressure (c) resistance (d) voltmeter
- (5) The diaphragm gauge are generally fabricated from _____ material.
(a) Cu (b) Ni (c) Al (d) Zn
- (6) The bourdon gauge to measure _____ pressure.
(a) zero (b) static (c) differential (d) atmospheric
- (7) 1 micro bar = _____ dyne/cm²
(a) 1 (b) 2 (c) 3 (d) 4
- (8) The piezometer is used for measuring _____ pressure.
(a) gauge (b) absolute (c) precision (d) sensitivity
- (9) The liquid level refer to the position or height of a _____ surface above a _____ line.
(a) liquid, solid (b) liquid, vapor (c) solid, datum (d) liquid, datum
- (10) In level measurement, the capacitive method equation is defied by _____.
(a) $C = AKD$ (b) $C = DA/K$ (c) $C = KD/A$ (d) $C = KA/D$

Que 2 Short answer types question (Any Ten)

[20]

- (1) Define: Seeback effect.
- (2) State the advantages of liquid-in-glass thermometer.
- (3) A platinum resistance thermometer has a resistance of 240.5ohm and 200 ohm at 100⁰C and 0⁰C respectively. If its resistance becomes 305.3 ohm when it is in contact with a hot gas, determine the temperature of the gas. The temperature coefficient of platinum is 0.0039⁰C⁻¹.
- (4) Draw diagram for the relation between absolute, gauge and atmospheric pressure.

(1)

(PTO)

- (5) State the characteristics of ionization gauge.
- (6) Draw a diagram of ring balance manometer.
- (7) Define: Vacuum pressure.
- (8) State the limitations of thermal conductivity gauge.
- (9) Define: Types of pressure measuring instruments and range.
- (10) Give only names of electrical and non-electrical method.
- (11) Define: Density and Specific gravity.
- (12) Draw a figures of float and shaft type level measurement.

Que 3 (a) Explain the electrical resistance thermometers with typical NTC diagram in brief. [06]

(b) Write a short note on pressure thermometer. [04]

OR

Que 3 (a) Discuss the Bimetallic thermometer in briefly. [06]

(b) Write a note on solid rod thermometer. [04]

Que 4 (a) Derive the equation of U-tube double column manometer. [06]

(b) Write a short note on static pressure and total pressure. [04]

OR

Que 4 (a) Discuss the U-tube double reservoir manometer. [06]

(b) State the characteristics of manometric liquid. [04]

Que 5 (a) Discuss the ionization gauge with necessary figure. [06]

(b) Write a short note on Pirani gauge. [04]

OR

Que 5 (a) Write a note on Burdon gauge and its applications. [06]

(b) Enlist the advantages of McLeod gauge. [04]

Que 6 Discuss and derive the expression for capacitive and ultrasonic method in brief and also they advantages and disadvantages. [10]

OR

Que 6 (a) Discuss the direct method and hydrometer method. [06]

(b) Write a short note on pressure method in liquid measurement. [04]

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(2)