Paper / Subject Code: 41102 / Transducers -II

ITO1324-SE(INSTRV) IV (27/11/18)

Q.P. Code : 38553

[Time: Three Hours] [Marks:80]

N.B: 1. Question.No.1 is compulsory.
2. Attempt any three questions from remaining five questions.
3. Assume suitable data wherever necessary.

1 Answer the following 20
a Compare variable head meter with variable area meter for flow measurement.
b Explain vena contracta with pressure and velocity profile.
c Explain need of temperature compensation for strain gauge sensor.
d Define gauge pressure, vacuum and absolute pressure.

2 a State and derive Bernoulli's equation. 10
b Explain vacuum measurement using Pirani Gauge. 10

3 a Draw and explain pH measurement set up. 10
b An Orifice meter with orifice diameter 15 cm is inserted in a pipe of 30 cm diameter. The pressure difference measured by a mercury oil differential manometer on the two sides of the orifice meter gives a reading of 50 cm of mercury. Find the rate of flow of oil of specific gravity 0.9 when the Cd is 0.64. 10

4 a Explain the working of instrument used for calibration of pressure gauges. 10
b A Wheatstone bridge has R1=120.4 ohm, R2 = 119.0 ohm and R3= 119.7 ohm. What resistance must R4 have for bridge balance? If R4 has a value of 121.2 ohm and if the input voltage is 12 V d.c. what is the output voltage of the bridge assuming it to be voltage sensitive bridge? 10

5 a List various techniques of density measurement and explain any two in detail. 10
b Explain pressure measurement using LVDT. 10

6 Write short note on any two 20
a Mass flow meter
b Dynamometer
c Smart sensors

****