SE / IV / Transducer - II / INST / 17.12.15

QP Code : 5488

(Hours) [Total Marks :80

N.B. : (1) Question no. 1 is compulsory.
(2) Answer any three out of remaining five questions.
(3) Assume suitable data if needed.

1. Attempt any four:- 20
   (a) What is 'ORP'? Why it is required to measure?
   (b) Explain 'Vena contracta' with pressure diagram.
   (c) Derive Bernoull's equation.
   (d) Explain types of strain gauges.

2. (a) Classify flow transducers. Explain with diagram variable Area type flow meter. 10
   (b) Explain working of 'Mcleod Gauge' 10

3. (a) Compare venturi meter and orifice meter. 10
   (b) A strain gauge is bonded to a beam 0.1 m long and has a cross sectional arc 10
   a 4 cm^2. Youngs modulus for steel is 207 Gn/m. The stain gauge has an unstrained resistance of 240 Ω and gauge factor of 2.2 when a load is applied, the resistance of gauges changes by 0.013 Ω. Calculate the change in length of the steel beam and an amount of force applied to the beam.

4. (a) Explain with neat diagram pressure measurement scheme using primary and 10
   secondary transducer
   (b) Explain conductivity measurement scheme using suitable diagram. Also explain 10
   details about electrodes.

5. (a) List the different flow measurement systems. Explain with diagram Ultrasonic 10
   flow measurement system.
   (b) Classify pressure transducers. Draw neat sketches of pressure sensing elastic 10
   elements. Explain with diagram different types of manometers. Also give their mathematical expressions.

6. Write a short notes on (any two):- 20
   (a) Dead weight Tester
   (b) Bulk modulus
   (c) Force measurement

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