Total No. of printed pages = 3

CAI-612/II/6th Sem/2016/N

INDUSTRIAL INSTRUMENTATION

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) With a neat diagram, explain linear velocity measurement using electromagnetic transducer. 5

   (b) Explain Stroboscope. 4

   (c) A strain gauge is bonded to a steel beam of 0.1m long and has a cross section area of $3m^2$. Modulus of elasticity for steel is 207 GN/m^2. The strain gauge has an unstrained resistance 150Ω and a gauge factor of 2.2. When a load is applied, the resistance of the gauge changes by 0.015Ω. Calculate : 5

   (i) change in length of the steel beam.

   (ii) the amount of force applied to the beam.

[Turn over

2. Explain the construction and working of the following :

   (a) Float type densitometer 4

   (b) Saybolt viscometer 5

   (c) Piezoelectric accelerometer. 5

3. Explain the construction and working of D.C and A.C tachometers. 14

4. (a) Explain the construction and working of any two types of accelerometer. 12

   (b) Explain Seebeck effect. 2

5. Explain the construction and working of the following :

   (a) Thermistor 5

   (b) Thermocouple 5

   (c) Optical pyrometer. 4

6. Explain the construction and working of thermal conductivity pressure gauge and ionization pressure gauge. 14

7. (a) With a neat diagram, explain pressure measurement using LVDT and bourdon tube. 8

(b) Explain dead weight tester. 6