Registration No. : | | | | | | | | | | |

Total number of printed pages – 2

B. Tech

CPEN 5301

Fifth Semester (Special) Examination – 2013

SENSORS AND SIGNALS

BRANCH : AEIE

QUESTION CODE : D312

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*
The figures in the right-hand margin indicate marks.

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1. Answer the following queations : 2×10

   (a) Explain the basic principle behind RTD and thermistor as temperature measuring device.

   (b) Describe three types of sensor for the measurement of displacement, location or position

   (c) Explain the operating priciple of diaphragm pressure sensor.

   (d) Compare the principle of photovoltaic and photo diode detector.

   (e) Draw the circuit diagram of an instrumentation amplifire.

   (f) Define the carrier-type as signal conditioning system.

   (g) Explain the purpose of analog signal conditioning.

   (h) Compare LED and LCD.

   (i) What is successive approximation logic at A to D Conversion ?

   (j) How turbine transducer work and when it can be suitable use ?

2. (a) Explain with neat sketch the working principle of LVDT and its characteristics. 5

   (b) Define how piezoelectric effect can be use as sensing element. Explain with suitable examples. 5

P.T.O.

3. (a) What are the various application of A/D and D/A converters in the field of instrumentation. Describe the operation of a D/A convertor with the help of circuit diagram. 5

(b) What do you mean by sample and hold circuit ? 5

4. (a) Design an resistive deflection bridge as signal condition circuit with an example. 4

(b) Define the terms : 6

(i) sampling

(ii) Quantization

(iii) Encoding.

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5. (a) Represent a pointer scale element with its working principle as a data presentation system. 7

(b) What is the advantages and dis advantages of pneumatic measurement system ? 3

6. (a) Explain with neat sketch of the frequency to digital conversion technique. 6

(b) Describe different type of radiation sensor used in measuring system. 4

7. (a) State the working principle and application of variable inductance displacement sensor. 6

(b) Explain intrinsically safe electronics measurement system. 4

8. Write short notes on any **two** of the followings : 5×2

(a) Intelligent transmitter

(b) Analoge chart recorder

(c) Differential pressure transducer

(d) Capacitive sensing element.