Printed Pages: 3 **EIC-401**

(Following Paper ID and Roll No. to be filled in your Answer Books)	
Paper ID : 132401	**Roll No.**

B.TECH.

Theory Examination (Semester-IV) 2015-16

TRANSDUCERS AND SENSORS

Time : 3 Hours ***Max. Marks : 100***

Section-A

1. Attempt all the parts : (10×2 = 20)

(a) Write name of voltage measurement methods.

(b) What is pressure-type thermometer?

(c) What do you mean by Accuracy and Precision.

(d) Define Gaussian and Non GAussian distribution.

(e) What do you mean by Threshold, Resolution.

(f) Write two hysteresis effect for instruents.

(g) Define Linearit with example.

(h) What is Diffusid Sensor Transducers?

(i) What do you mean by conductive sensors.

(j) Give application of Hot-film Anemometers?

Section-B

2. Attempt any five parts of the following : (5×10=50)

(a) Extimate the percentage of total power found above 10μm for black body radiation at T = 400K. Explain the dis-advantage of a large time constant in a thermal-radiation detector using a chopper.

(b) Consider a pressure type thermometer to explain the concepts of an instrument for a measurement system.

(c) Explain the followings :

(i) Gas-thermometer temperature scale with diagram.

(ii) Liquid in glass Thermometer and Pressure thermom-eter.

(d) Analyze the error in flow-rate measurement caused by thermal expension of an orifice plate. Also explain Dynamic wind-vector indicator working operation.

(e) What are the different types of gages for low pressure (vacuum) measurement. Describe McLeod gage.

(f) Describe the working of servo controlled dynamometer with diagram.

(g) What are the three major classes of digital transducers. Explain translational and rotary encoders.

Section-C

Attempt any two of the following : 2×15=30

3. Water flows in a 1-in-diameter pipe at 10ft/s. If a pilot-static tube of 0.5-in diameter is inserted. What velocity will be indicated? Assume one dimensional frictionless flow. Find the pitot-static-tube diameter needed to reduce the above error to 1 percent.

4. Explain with block diagram volume flow meter plus density measurement method.

5. If because of temperature changes a potentiometer changes resistance, what effect does this have on motion measurement?