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Total Number of Pages: 2

M.TECH
EIPC101

1st Semester Regular/Back Examination – 2015-16
INSTRUMENTATION DEVICES & SYSTEMS
BRANCH(S): E & I / A E & I
Time: 3 Hours
Max marks: 70
Q.CODE-T1252

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

- Q1 Answer the following questions: (2 x 10)
- a) Write few advantages of Micro Sensors.
 - b) What is meant by Conductivity of a liquid solution?
 - c) Distinguish Chemical and Biochemical sensors.
 - d) Write one application of sensor matrix for two dimensional measurements.
 - e) Write few advantages of Optical sensor.
 - f) What is Meteorology?
 - g) List few sensors used in space applications.
 - h) What is Resolver?
 - i) Write basic principle of operation of Servo.
 - j) Why the minimum magnitude of signal output of a Transmitter is kept at 4 mA instead of zero mA?
- Q2 a) Describe construction and principle of operation of Surface Micro Machined Capacitive Pressure sensor. (5)
- b) Describe construction and principle of operation of Integrated Flow sensor. (5)
- Q3 a) Explain basic principle of measurement of Hydrogen Sensitive MOSFET. (5)
- b) Describe principle of operation of (i) Tri-oxide sensor and (ii) Schottky diode type sensor. (5)
- Q4 a) What is Ecolocation? Explain it's principle of operation. (5)
- b) Describe construction and explain basic principle of operation of any ONE sensor used in environmental application. (5)
- Q5 a) What is Chemo Receptor? Explain principle of operation of Hot and Cold Receptors. (5)
- b) Explain principle of operation of the following sensors. (i) Smell (ii) Vision. (5)
- Q6 a) Describe construction and principle of operation of Fibre Optic Gyroscope. (5)

- b) Describe construction and principle of acceleration measurement. (5)
- Q7 a) Explain important characteristics and considerations in designing of Signal Conditioning Devices for sensors (5)
- b) Explain design of 2 & 4 wire Transmitters with 4-20 mA output. (5)
- Q8 Write basic principle of operation of the following. (Any TWO) (5 x 2)
- a) Electrochemical sensor
- b) Holography
- c) Altimeter