

Register Number:

B.E DEGREE EXAMINATIONS: DEC 2014

(Regulation 2009)

Third Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

EIE101: Transducer Engineering

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Self generating type of transducer are _____ transducer
 - a) Active
 - b) Passive
 - c) Secondary
 - d) Inverse
2. An inverse transducer is a device which converts _____
 - a) An electrical quantity into a non electrical quantity
 - b) Electrical quantity into mechanical quantity
 - c) Electrical energy into thermal energy
 - d) Electrical energy into light energy
3. Resolution of a transducer depends on _____
 - a) Material of wire
 - b) Length of wire
 - c) Diameter of wire
 - d) Excitation voltage
4. What term describes the maximum expected error associated with a measurement or a sensor?
 - a) Resolution
 - b) Precision
 - c) Range
 - d) Accuracy
5. The sensitivity factor of strain gauge is normally of the order of _____.
 - a) 1 to 1.5
 - b) 1.5 to 2
 - c) 0.5 to 1
 - d) 5 to 10
6. The principle of operation of variable resistance transducer is _____.
 - a) Deformation leads to change in resistance
 - b) Displacement of a contact slider on a resistance
 - c) Coupling of two coils changes with displacement
 - d) Movement of magnetic field produces variation in resistance of material
7. Capacitive transducers are normally employed for _____ measurements
 - a) Static
 - b) Dynamic
 - c) Transient
 - d) Both static and dynamic
8. The size of air cored transducers in comparison to the iron core parts is _____.

(ii) Obtain the impulse response of a first order system. (7)

(OR)

b) (i) Derive the operational transfer function of a second order instrument. (7)

(ii) Obtain the step response of a second order instrument. (7)

23. a) (i) Describe various types of Strain gauge with their advantages and disadvantages (9)

(ii) Explain the operation of piezo resistive sensor. (5)

(OR)

b) (i) Outline the working of resistance thermometer. mention its temperature range. (10)

(ii) Write short note on humidity sensor. (4)

24. a) With neat diagram explain the construction and working of LVDT transducer.

(OR)

b) Discuss the construction and working of variable reluctance accelerometer.

25. a) (i) Write short note on Digital encoder. (7)

(ii) Explain the construction and principle of operation of IC sensor. (7)

(OR)

b) (i) Explain how a fiber optic sensor work and list out its advantages. (7)

(ii) Describe in detail about the magnetostrictive transducer. (7)
