

CBCS SCHEME

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15MA663

Sixth Semester B.E. Degree Examination, June/July 2018

Sensors

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

- 1 Classify the sensors based on the following :
i) Application basis ii) Property basis. (16 Marks)

OR

- 2 a. Illustrate a 10 turn linear potentiometer and its voltage diagram. (08 Marks)
b. Explain the construction of a flat grid resistance strain gage with a neat schematic diagram. (06 Marks)
c. List the materials (any 4) most commonly used in wire and foil strain gauge. (02 Marks)

Module-2

- 3 Discuss the following capacitive sensors :
a. Parallel plate – variable distance type b. Capacitive serrated electrode type
c. Capacitive with varying dielectric type d. Cylindrical type. (16 Marks)

OR

- 4 a. Illustrate the quartz crystal model. (04 Marks)
b. Discuss the charge generation in the quartz crystal when
i) Force is applied in the direction of the electrodes
ii) Force applied perpendicular to the position of electrodes. (12 Marks)

Module-3

- 5 a. Illustrate the resistance/temperature curves for the different RTD materials. (05 Marks)
b. Discuss the constructional details of a rugged well type RTD with a schematic diagram. (06 Marks)
c. Illustrate the Siemens 3-lead bridge circuit used in resistance thermometers. (05 Marks)

OR

- 6 a. Write a brief note on thermistor. Also mention its advantages. (08 Marks)
b. Illustrate a total radiation pyrometer. (08 Marks)

Module-4

- 7 a. Discuss the construction of a cross transducer type yoke coil sensor with a neat schematic diagram. (08 Marks)
b. For the above sensor, illustrate the following :
i) Surface magnetic flux pattern without torsions
ii) Surface magnetic flux pattern with torsions. (08 Marks)

OR

- 8 Illustrate the basic scheme of a Hall device. (16 Marks)

Module-5

- 9 a. Illustrate a typical photo emissive cell. (10 Marks)
b. Write a note on photodiode. (06 Marks)

OR

- 10 a. What is a Geiger counter? How it works. (08 Marks)
b. With a neat block diagram, explain scintillation Detector. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.