

GBCS Scheme

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15MA561

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018 Mechatronics

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain the multidisciplinary scenario with reference to the Mechatronics system. (06 Marks)
- b. Explain briefly with neat sketch the elements of a measuring system. (08 Marks)
- c. Define Mechatronics. (02 Marks)

OR

- 2 a. List out the advantages and disadvantages of open loop and closed loop control system. (08 Marks)
- b. Explain the working of automatic washing machine with help of block diagram. (08 Marks)

Module-2

- 3 a. Differentiate between sensors and transducers. (04 Marks)
- b. With a schematic sketch explain photoemissive transducer. (06 Marks)
- c. Classify broadly the different types of transducers. (06 Marks)

OR

- 4 a. With neat sketch explain the principle of working and applications of hall –effect sensor. (10 Marks)
- b. Explain with neat sketch eddy current proximity sensor. (06 Marks)

Module-3

- 5 a. Classify sliding contact bearings. (08 Marks)
- b. Sketch and explain recirculating ball screw. (08 Marks)

OR

- 6 a. Explain stick-slip phenomenon. Also explain how to reduce the phenomenon. (08 Marks)
- b. Write a note on :
 - i) Anti friction bearings
 - ii) Pre loading of bearings. (08 Marks)

Module-4

- 7 a. What is meant by bouncing of switches? Explain how bouncing of switches can be prevented. (08 Marks)
- b. Write a short note on :
 - i) Pressure relief valve
 - ii) Flow control valves. (08 Marks)

OR

8 Write short notes on any Four :

- a. Darlington pair
- b. Speed control of AC motor
- c. Stepper motors
- d. Hydraulic motors
- e. Brushless DC motor.

(16 Marks)

Module-5

9 a. With a neat sketch explain open-loop OP-Amp model.

(08 Marks)

b. Write a note on :

- i) Filtering
- ii) Protection.

(08 Marks)

OR

10 a. Define the following terms :

- i) Signal conditioning
- ii) Multiplexer.

(08 Marks)

b. Write a note on data acquisition with a block diagram.

(08 Marks)

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