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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Seventh Semester, B.E. – Industrial and Production Engineering

Semester End Examination; Dec - 2016/Jan - 2017

Mechatronics

Time: 3 hrs *Max. Marks: 100*

***Note**: Answer **FIVE** full questions, selecting **ONE** full question from each unit.*

UNIT - I

1 a.	With neat sketch, explain elements of closed loop system.	6
b.	List out the advantages and limitations of mechatronics.	6
c.	Explain with neat diagram, Engine Management System.	8
2 a.	With neat sketch, explain eddy current proximity sensors.	7
b.	Explain with diagram, working principle of automatic camera.	8
c.	Discuss the evolution of mechatronics.	5

UNIT - II

3 a.	Explain the following with sketches; i) Diodes ii) Thyristors.	10
b.	Discuss MOSFET with sketches.	10
4 a.	Explain the working principle of following D.C. motors; i) Series wound motor ii) Shunt wound motor.	10
b.	Discuss the specification of stepper motor.	10

UNIT - III

5 a.	Differentiate between microprocessor and micro controller.	6
b.	With a neat diagram, explain the general microprocessor architecture.	10
c.	Discuss on Data bus.	4
6 a.	Explain ROM, RAM and EPROM.	10
b.	With neat diagram, explain micro controller.	10

UNIT - IV

7 a.	Explain: i) AND gate ii) NOT gate and NAND gate with neat sketches.	12
b.	Define number system with an example.	8
8 a.	Define signal condition and briefly explain signal conditioning process.	10

Contd.....2

b. Discuss the following : 10

i) Low pass ii) High pass iii) Band pass filters.

UNIT - V

9 a. With neat diagram, explain flat and dove tail and friction guideways. 8

b. With neat sketch, explain recirculating ball screw and nut. 8

c. Explain the concept of stick-slip phenomenon. 4

10 a. Define bearing. With neat sketch, briefly explain different types of bearing used in design of spindle bearing. 10

b. Explain the concept of preloading of ball nut. 6

c. Summarize on planetary roller screw. 4

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