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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. - 2014

Mechatronics

Time: 3 hrs *Max. Marks: 100*

***Note**: Answer **FIVE** full questions selecting at least **TWO** full questions from each part.*

PART - A

1. a. Write the advantages and disadvantages of open-loop system. 3

   b. Define closed-loop control system. Explain with a neat diagram example of a closed –loop control system. 10

   c. Explain with a block diagram the working of a microprocessor controlled washing machine. 7

2 a. Define the following :

   (i) Range and span (ii) Sensitivity

   (iii) Dead Band time (iv) Stability 6

   b. Define Hall-effect. Explain in brief the principles of Hall effect. 6

   c. Write a brief note on:

   (i) Light sensors (ii) Eddy current type proximity sensor. 8

3 a. Define number system. Explain in brief with examples. 8

   b. Briefly discuss the following:

   (i) Logic Functions (ii) Accumulator

   (iii) General Purpose Registers (iv) Arithmetic logic unit. 12

4 a. With neat block diagram explain the Intel 8085 architecture. 12

   b. Define Microcontrollers. Explain with neat block diagram and its classification. 8

PART - B

5 a. Explain the Assemble precautions. Linear Motion guide ways. (LM guideways). 6

   b. What are the designed characteristics of spindle bearings? 2

   c. What are the feedback elements? Explain mounting of any two types of feed-back elements an CNC machine tools. 12

6. a Explain Thyristers and its characteristics, with neat circuit diagram. 8

   b. Explain with a neat diagram the working of a permanent magnet stepper motor to achieve step rotation. 12

7 a. Define an hydraulic actuators with neat block diagrams explain the concept of an hydraulic system. 6

Contd….2

b. What is a pressure control valve? How are they classified and explain with neat block diagram? PLV (Pressure limiting valve). 12

c. What is check valve? Write its graphical symbol. 2

8 a. What is signal conditioning? What are the general reasons for signal conditioning? Explain the process of signal conditioning. 10

b. Write short notes on :

(i) Amplifier and its concept. 10

(ii) Filters and high pass & low pass filters.

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