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10AU82

Eighth Semester B.E. Degree Examination, June/July 2016

Autotronics

Time: 3 hrs.

Max. Marks: 100

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

PART - A

- 1 a. Explain the meaning of the term mechatronics. With respect to multi disciplinary scenario. Briefly discuss the origin and evolution of mechatronics. (10 Marks)
- b. Explain with the block diagram how a microprocessor control system is used to control the focusing and exposure in an automatic camera. (10 Marks)
- 2 a. Explain how sensing is achieved by an incremental optical encoder. (08 Marks)
- b. Briefly explain the working principle of the following:
 - i) Light sensor
 - ii) Hall effect sensor
 (12 Marks)
- 3 a. Explain the principles of brushless D.C. permanent magnet motor with a neat sketch. (10 Marks)
- b. Differentiate between a diode, thyristor and transistor. (06 Marks)
- c. With a neat sketch, explain the solenoid. (04 Marks)
- 4 a. With a block diagram, explain the working principle of data acquisition system. (10 Marks)
- b. Explain the principle of ADC of signals. (10 Marks)

PART - B

- 5 a. Explain the evolution of microprocessors. (06 Marks)
- b. What are logic gates? Discuss AND and OR gates with their truth tables for two inputs. (08 Marks)
- c. Convert the following:
 - i) $(10.7)_{10} = (\quad)_2$
 - ii) $(1A5D)_{16} = (\quad)_{10}$
 - iii) $(436)_8 = (\quad)_2$
 (06 Marks)
- 6 a. Explain with a neat sketch, pin configuration of Intel 8085 microprocessor. (10 Marks)
- b. What are microcontrollers? Explain the general form of a microcontroller. (10 Marks)
- 7 a. With a neat flow chart, discuss the programming process. (10 Marks)
- b. Write a program to find the largest of a byte in the array of numbers. (10 Marks)
- 8 a. Distinguish between instruction cycle, machine cycle and T-state. (10 Marks)
- b. Draw and explain the timing diagram memory operation. (10 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.