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10ME65

Sixth Semester B.E. Degree Examination, Dec.2016/Jan.2017
Mechatronics and Microprocessor

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1 a. Define Mechatronics. With a block diagram, briefly explain the generalized measurement system. (07 Marks)
b. State and explain functions of basic elements of a closed loop control system, with a block diagram. (06 Marks)
c. Explain with a diagram, the working of an Engine Management system. (07 Marks)
- 2 a. Define Sensors and Transducers. Name any three types of sensors and transducers each. (08 Marks)
b. State and explain the working principle of Hall Effect sensor. (06 Marks)
c. What are proximity sensors? Explain capacitive proximity sensor, with a neat diagram. (06 Marks)
- 3 a. With sketch, explain solenoid and state its uses. (06 Marks)
b. Explain the working principle of a permanent magnet DC motor. How it is used for positive control drive. (08 Marks)
c. Sketch and explain the working of a stepper motor. (06 Marks)
- 4 a. Define signal conditioning. What are the necessity of signal conditioning? (05 Marks)
b. Define the following filters with frequency versus gain curve :
i) Low pass ii) High pass iii) Band pass iv) Band stop. (10 Marks)
c. What are the characteristics of an ideal operational amplifier? (05 Marks)

PART – B

- 5 a. Discuss briefly with a block diagram, organization of a typical microcomputer system. (08 Marks)
b. State Demorgan's theorems. Also draw logic circuits for the same. (06 Marks)
c. With the help of symbols and truth table, explain NOR and NAND gates. (06 Marks)
- 6 a. Explain with neat sketch, the architecture of INTEL 8085 microprocessor. (12 Marks)
b. What is a Microcontroller? How are microcontrollers classified? Briefly explain each. (08 Marks)
- 7 a. Explain the following terminology related to microprocessor : (08 Marks)
i) Program counter ii) Flag register iii) Stack pointer iv) Accumulator.
b. Explain the flow of instruction sets of a 8085 microprocessor. (08 Marks)
c. List out the functions of ALU. (04 Marks)
- 8 a. Define CPU and state its functions. (06 Marks)
b. How instructions and data flow occurs in microprocessors? (08 Marks)
c. Define the following : i) System clock ii) System clock frequency
iii) Clock period iv) Memory access time. (06 Marks)

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.