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10AU82

**Eighth Semester B.E. Degree Examination, June/July 2018**  
**Autotronics**

Time: 3 hrs.

Max. Marks:100

**Note: 1. Answer FIVE full questions, selecting at least TWO questions from each part.**  
**2. Draw neat diagrams where applicable.**

**PART – A**

- 1 a. Explain the various components of a 'measurement system' using a block diagram. (08 Marks)  
b. Describe the working principle of an automatic camera system. (08 Marks)  
c. List any four merits and demerits of a mechatronic system. (04 Marks)
- 2 a. Explain the working of a 'Hall – effect sensor'. Mention the applications of the same. (08 Marks)  
b. Sketch and explain the concept of 'capacitance type' proximity sensor. List the uses of proximity sensors. (08 Marks)  
c. Write the classification of sensors. (04 Marks)
- 3 a. What is bouncing in mechanical switches? How bouncing can be prevented. (08 Marks)  
b. Explain the speed control of a DC motor using solid state switch, using suitable block diagram. (08 Marks)  
c. Write a note on stepper motors. (04 Marks)
- 4 a. What is mean by 'signal conditioning'? Explain the working principle of an operational amplifier. (08 Marks)  
b. Write short notes on : i) Multiplexer ii) Data acquisition iii) Pulse modulation. (12 Marks)

**PART – B**

- 5 a. Explain the basic laws of Boolean algebra. (08 Marks)  
b. Write the symbols and truth tables for two inputs :  
i) AND gate ii) OR gate iii) NAND gate. (09 Marks)  
c. How negative integers are represented in binary system? Narrate with suitable example. (03 Marks)
- 6 a. With a neat block diagram explain the architecture of INTEL 8085 microprocessor. (10 Marks)  
b. Classify in detail, the instructions used in programming INTEL 8085 microprocessor. (06 Marks)  
c. What is mean by assembly language? Write the algorithm for adding two integers. (04 Marks)
- 7 a. What are the functions of timing and control unit in a microprocessor? (04 Marks)  
b. Write the timing diagram for a 'FETCH' cycle. Explain the salient states. (08 Marks)  
c. Brief about : i) Address space partitioning and ii) Memory interfacing. (08 Marks)
- 8 a. Explain digital engine management system ( $\mu$ p based). (10 Marks)  
b. Brief about  $\mu$ p based automotive systems live : i) ABS ii) Cruise control system. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.