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10ME65

Sixth Semester B.E. Degree Examination, June/July 2017
Mechatronics & Microprocessor

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1** Discuss any four of the following with neat sketch and an example:
 (i) Mechatronics (ii) Open loop control system.
 (iii) Closed loop control system (iv) Measurement system.
 (v) Transducers. **(20 Marks)**
- 2** a. Define the following transducers with examples:
 (i) Analog transducer. (ii) Digital transducer.
 (iii) Active transducer. (iv) Passive transducer.
 (v) Mechanical transducer. **(10 Marks)**
 b. Explain with a neat diagram, (i) Capacitive proximity sensor.
 (ii) Principle of Hall effect. **(10 Marks)**
- 3** a. What are solid state switches? Discuss any four solid state switches. **(10 Marks)**
 b. Explain the working principle of,
 (i) Permanent magnet DC motor. (ii) Permanent magnet stepper motor. **(10 Marks)**
- 4** a. Illustrate how OPAMPS can be realized for,
 (i) Integrating amplifier circuit. (ii) Differential amplifier circuit. **(10 Marks)**
 b. Define signal processing. Explain with neat diagram Analog Signal processing and Digital signal processing. **(10 Marks)**

PART – B

- 5** a. State De Morgan's theorem. Draw logic circuits and truth tables. **(06 Marks)**
 b. Convert the following:
 (i) Decimal number 35 to binary equivalent.
 (ii) Binary 1100101 to decimal No.
 (iii) Binary real number 1101.11 to decimal real number **(06 Marks)**
 c. With help of symbols and truth table, explain,
 (i) AND gate (ii) OR gate. (iii) NOT gate. (iv) NAND gate. **(08 Marks)**
- 6** a. Explain with a neat sketch of architecture 8085A microprocessor. **(12 Marks)**
 b. With circuit diagram explain, (i) RAM (ii) ROM **(08 Marks)**
- 7** a. Write the functional block diagram of INTEL 8085 microprocessor and explain 3 important sections of microprocessors. **(08 Marks)**
 b. Briefly explain with sketch:
 (i) Instruction register (IR) (ii) Data register (iii) I/O buffers **(12 Marks)**
- 8** a. Explain with a neat diagram of,
 (i) Instruction word. (ii) Data word. **(10 Marks)**
 b. Explain with block diagram, the register organization of an INTEL 4004 μ P. **(10 Marks)**

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