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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 μP. **(10 Marks)**

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