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06ME64

# Sixth Semester B.E. Degree Examination, June/July 2014

## Mechatronics and Microprocessor

Time: 3 hrs. Max. Marks:100

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



### PART – A

1 a. Draw a neat block diagram of a generalized measurement system showing its elements and explain their functions. **(08 Marks)**

b. Compare the conventional design approach with that of mechatronic design approach. **(04 Marks)**

c. Explain with a neat diagram any one application of microprocessor based controllers. **(08 Marks)**

2 a. How are transducers classified? Explain with examples. **(08 Marks)**

b. With a neat sketch, explain how resolution is determined in case of an incremental encoder. **(06 Marks)**

c. Write a note on light sensors. **(06 Marks)**

3 a. Explain with a neat diagram the principle of working of a mechanical relay. **(06 Marks)**

b. Classify the solid state switches. With neat sketches, show their construction, symbol, characteristics and mention the application of each switches. **(08 Marks)**

c. Explain with a neat sketch the principle of variable reluctance stepper motor. **(06 Marks)**

4 a. What is OP-Amp? How is it used as a differential amplifier? **(06 Marks)**

b. What are filters? Explain in detail. **(06 Marks)**

c. Explain the process of converting an analog signal into a digital signal. **(08 Marks)**

### PART – B

5 a. Explain the evolution of microprocessor. Mention the organization of microprocessor and list the applications of microprocessor. **(08 Marks)**

b. With the help of symbol and truth table, explain logic gates. **(08 Marks)**

c. Convert the following:
i) Hexadecimal to decimal A 492, D 2763.
ii) Octal to binary 7425, 3364. **(04 Marks)**

6 a. Explain with schematic diagram microprocessor system. **(08 Marks)**

b. Explain the function and features of three forms of buses used in microprocessor system. **(06 Marks)**

c. State the difference between the microprocessor and microcontrollers. **(06 Marks)**

7 a. Explain with neat layout, the internal architecture of 8085 microprocessor. **(10 Marks)**

b. Explain briefly the addressing modes of 8085 microprocessor with suitable examples. **(10 Marks)**

8 a. Classify "instruction set", for Intel 8085 and explain each of them. **(08 Marks)**

b. Explain the following machine cycles:
i) OP code fetch cycle ii) Memory read cycle **(06 Marks)**

c. Write an assembly program to add the contents of register B to the contents of register C and transfer the result to register D. **(06 Marks)**

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