ME/ Sem I/ CBCS/ MECH CAD CAM/ Mechatronics/ 11-12-2017

Q. P. Code : 24753

(3 Hours) **[Total Marks : 80**

N. B. : (1) **Question No.1** is **compulsory**.
(2) Attempt **any three** questions out of **remaining**.
(3) Assume suitable **data** where **required**.
(4) **Figures** to the **right** indicate **full marks**.

Q.1 a) Define Mechatronics and discuss the elements of Mechatronics system. 20

b) Write Short note on: Fuzzy logics in Mechatronics.

c) Discuss the features of 8051 micro controller.

d) Explain digital encoder and its importance.

Q.2 a) Explain Anti lock Braking system as a case study of Mechatronics. 10

b) Draw and explain the architecture of PLC 10

Q.3 a) Draw the ladder logic for following 10

AND, OR, NOT, EX-OR and NAND

b) Discuss the interfacing of hex keyboard with 8051. 10

Q.4 a) A metal punching press should operate when the four combinations defined in the following equation. Design a logic circuit to get the required result. 10

$Out = \overline{A}\,\overline{B}CD + \overline{A}B\overline{C}D + ABCD + A\overline{B}CD + AB\overline{C}\,\overline{D} + AB\overline{C}D + ABC\overline{D}$

b) Explain design methodology of Mechatronics systems with proper diagram. 10

Q.5 a) Draw the pneumatic circuit sequence of operation in cascading as below 10

A+, B+ delay A- B-

b) Give applications of electro hydraulic 05

c) Compare microprocessor and microcontroller 05

Q.6 Write short notes on: (any two) 20

a) Pick and Place Robot

b) 8051 Pin Diagram and its addressing modes

c) Pneumatic cascade method for sequence of operation with example

---