



M.Tech II Semester Supplementary Examinations January/February 2019

MECHATRONICS APPLICATIONS IN MANUFACTURING

(CAD/CAM)

(For students admitted in 2017 only)

Time: 3 hours

Max. Marks: 60

Answer all the questions

- 1 (a) Explain the term mechatronics with suitable examples.
(b) Discuss the traditional and mechatronics design approaches with an example.

OR

- 2 (a) What is a measurement system? Explain the principle and operation of optical encoders.
(b) Distinguish between open loop and closed loop control system.

- 3 (a) Explain the dynamic characteristics of transducers.
(b) Describe neatly potentiometer sensor.

OR

- 4 Explain the working and construction of Hall Effect sensor and thermocouples.

- 5 What is a step motor? Explain the working principle of stepper motor in half step mode.

OR

- 6 Describe with a neat diagram the traffic light control using microprocessor 8085.

- 7 (a) Create a ladder diagram for the following applications:
A pneumatic system with double solenoid valve controls two double acting cylinders A and B. The sequence of cylinder operations are as follows:
Cylinder A extends followed by cylinder B extending, then the cylinder B retracts and finally, the cycle is completed by the cylinder A retracting. Explain the logic of the PLC circuit used.
(b) Draw delay ON and delay OFF time – ladder diagrams.

OR

- 8 (a) Explain in about jump control used in PLC using a ladder diagram.
(b) What are the factors to be considered for selecting PLC?
(c) Explain the basis of ladder programming used in PLC's.

- 9 What are the various stages in designing a mechatronics system? Explain.

OR

- 10 Explain the design and implementation of mechatronics case study for a pick and place robot.
