

Code: 9A03707

B.Tech IV Year I Semester (R09) Supplementary Examinations June 2017

MECHATRONICS

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

- 1 (a) Define mechatronics, what are the objectives of mechatronics. Explain with a block diagram, the key components in a typical mechatronics system.
(b) Briefly explain: (i) FMS. (ii) CIM. (iii) Robot.
- 2 Explain the following:
(a) Signal conditioning methods.
(b) Analog to digital conversion.
(a) Non inverting amplifier.
(b) Filters.
- 3 (a) With a neat sketch, explain the component of a hydraulic system.
(b) What are the advantages of ball screw and nut system over the conventional system?
- 4 (a) Sketch and explain the following:
(i) Transistor. (ii) MOSFETs.
(b) What is the principle of a solenoid? Explain the working of any one type of solenoid.
- 5 (a) With a neat sketch, explain the pulse amplitude and pulse width modulation.
(b) How stepper motors are specified? Explain permanent magnet stepper motor, with a neat sketch.
- 6 (a) Explain microcontrollers with a block diagram.
(b) Discuss the architecture of Intel's 8085 microprocessor.
- 7 Explain the following related programming:
(a) Ladder diagram.
(b) Internal relays.
(a) Jumps.
(b) PLC selection.
- 8 (a) Explain the construction and working of a velocity sensor.
(b) Explain digital control system with block diagram.
