(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2501   Roll No.

B. Tech.

(SEM. VI) THEORY EXAMINATION 2011-12
MECHATRONICS

Time : 2 Hours   *Total Marks : 50*

Note : Attempt *all* questions.

1. Answer any *two* parts of the following :   (5×2=10)

   (a) What do you mean by "FORCE" and "PRESSURE" in mechatronics ? What are the transducers used for measurement of force and pressure in mechatronics ?

   (b) What do you understand by "DISPLACEMENT" and "POSITION" in mechatronics ? Also explain the various types of transducers or sensors that are used for measurement of displacement and position.

   (c) Explain the following :

   (i) Data Acquisition

   (ii) Signal Conditioning Amplification.

2. Answer any *two* parts of the following :   (5×2=10)

   (a) What do you mean by "SERVOMECHANISM" and "CLOSED LOOP CONTROLLERS" ? Also mention its utilities in industrial fields.

   (b) Write short notes on the following :

   (i) AC STEPPER MOTOR

   (ii) DC STEPPER MOTOR

   (iii) FLUID SYSTEMS.

(c) What do you mean by "HYDRAULIC SYSTEMS" ? Also mention its advantages and limitations.

3. Answer any *two* parts of the following : (5×2=10)

(a) Discuss the concepts of pressure control valves and cylinders. Also explain the process control valves and its applications.

(b) What are the applications of microprocessors and micro-controllers in mechatronics engineering ? Explain the pin configuration of programmable logic controllers.

(c) Write short notes on the following :

(i) MASS & DAMPER

(ii) ELECTRICAL DRIVES

(iii) ELECTRICAL ACTUATION SYSTEM.

4. Answer any *two* parts of the following : (5×2=10)

(a) Discuss the Automobile Engine Control System with the help of block diagrams. Also mention its salient features.

(b) What do you mean by "INDUSTRIAL ROBOT" ? Also discuss their control features. Explain the advantages and disadvantages of industrial ROBOT.

(c) Discuss the electro-mechanical disc-control system with the help of block diagrams. Also mention its advantages and limitations.

5. Answer any *two* parts of the following : (5×2=10)

(a) What are the importances of "COMPUTER PRINTER" ? Also mention its limitations and advantages.

(b) Explain the "MICRO-MECHANICAL SYSTEMS" with the help of neat diagrams. Also explain its limitations and significances.

(c) Write short notes on the following :

(i) VCR

(ii) NC Machine

(iii) Fax Machine.