C 60572-A **(Pages : 2)** Name.....................................

Reg. No.....................................

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, APRIL 2014

(2009 Scheme)

EE 09 804 L 24—MECHATRONICS

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

Short answer questions (one/two sentences)

1. What are the components of a mechatronics system?
2. What is the need of interpolation in CNC ?
3. What are the necessary data for producing a part programme ?
4. Compare the terms precision and accuracy ?
5. What are the advantages of closed loop system over open loop system ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

Analytical / Problem solving questions.

1. Obtain the Transfer function of a closed loop negative feedback system.
2. A 5-bit DAC has a current output of 10mA for a digital input of 10100. If an output current of 10mA is produced, what will be the output current for a digital input of 11101 ?
3. Explain word address format with the help of a sample program.
4. What will be the change in resistance of an electrical resistance strain gauge with a gauge factor of 2.1 and resistance 50 Ω, if it is subjected to a strain of 0.001 ?
5. What is the non-linearity error, as a percentage of full range, produced when a 1k Ω potentiometer has a load of 10k Ω and is at one-third of its maximum displacement ?
6. Draw a closed loop system for controlling the speed of d.c. motor, and obtain the transfer function.

(4 × 5 = 20 marks)

Turn over

Part C

Descriptive / Analytical / Problem solving questions.

1. Explain Open Loop and closed loop system with practical examples.

Or

2. Give an account on the scope of Mechatronics.

3. Explain the various interpolation techniques in NC.

Or

4. Give an account on various feedback devices.

5. Explain the steps in NC part programming with an example.

Or

6. Discuss the need of computer aided programming in the field of Mechatronics.

7. What are the Basic concepts of Robotics ? Explain the various specifications.

Or

8. (a) Explain the working principle of force sensor.

   (b) Explain the velocity sensors with suitable diagram.

(4 × 10 = 40 marks)