B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

Eighth Semester

Branch : Electronics and communication Engineering

EC 010 805 G03—MECHATRONICS—Elective IV (EC)

(New Scheme—2010 Admissions—Supplementary)

Time : Three Hours   Maximum : 100 Marks

Part A

Answer **all** *questions.*

Each question carries 3 marks.

1. Mention the stages in designing a mechatronic system ?

2. With neat sketch explain the working of a tachogenerator.

3. What is pilot operated valves ?

4. What are the various tasks performed by I/O interfaces ?

5. What is two step mode of control ?

$(5 \times 3 = 15$ marks)

Part B

Answer **all** *questions.*

Each question carries 5 marks.

6. What are the advantages of mechatronic system over conventional system ?

7. What are the static and dynamic characteristics of a transducer ?

8. What are the specifications of a stepper motor ?

9. Draw the general ladder rungs to represent a latch circuit.

10. Briefly explain neural network.

$(5 \times 5 = 25$ marks)

Part C

Answer **all** *questions.*

Each full question carries 12 marks.

11. (a) What are the basic elements of a closed loop system?   (8 marks)

    (b) Briefly explain analog and digital control system.   (4 marks)

Or

Turn over

12. Explain hydraulic and pneumatic system building blocks.

13. Briefly explain the working principle of LVDT.

Or

14. With neat sketch explain the working of following sensors :

              (a) Pyroelctric sensor.

              (b) Strain gauge load cell.

              (c) Bimetallic strip.

15. Briefly explain the components of pneumatic power supply.

Or

16. With the help of a block diagram, explain the main components of a programmable logic controller and write program to energies when two switches are closed.

17. What are the basic elements used for building up a Bode plot ?

Or

18. Discuss the method of finding transient response of a control system from their root locus.

19. Design a vehicle management system for a four stroke four cylinder engine on the basis of mechatronics approach.

Or

20. Design a mechatronics system for a digital camera and explain the various mechatronics elements.

                                                     (5 × 12 = 60 marks)