Scheme – I
Sample Question Paper

Program Name : Electronics & Telecommunication, Digital Electronics, Industrial Electronics

Program Code : EJ, DE, IE

Semester : SIXTH

Course Title : Mechatronics

Marks : 70   Time: 3Hrs.

22643

Instructions:

   (1) All questions are compulsory.

   (2) Illustrate your answers with neat sketches wherever necessary.

   (3) Figures to the right indicate full marks.

   (4) Assume suitable data if necessary.

   (5) Preferably, write the answers in sequential order.

Q.1 Attempt any FIVE of the following.   **(10 Marks)**
   a. Define sensor. Enlist any two sensor.
   b. Sketch block diagram of real time mechatronics system.
   c. State any two applications of pneumatic system.
   d. Draw LVDT accelerometer.
   e. State any two applications of Hydraulic System.
   f. State any two applications of Robot.
   g. Define end effector. List any two end effector.

Q.2 Attempt any Three of the following.   **(12 Marks)**
   a. Sketch the diagram of signal conditioner. Explain it.
   b. State the advantages of CNC machine. Explain G code and M code.
   c. Draw a neat diagram of poppet valve.
   d. State belt. Enlist its type.

Q.3) Attempt any Three of the following.   **(12 Marks)**
   a. Describe working of load cell with neat sketch.
   b. Illustrate construction features of pneumatic linear actuator.
   c. Explain Hydraulic system with neat sketch.
   d. Describe the working of ABS.

Q.4) Attempt any Three of the following.   **(12 Marks)**
   a. Describe working of stroboscope with neat diagram.
   b. Describe the working of electromechanical system with neat diagram.
   c. Explain rack pinon with neat sketch.
   d. Describe degree of freedom w.r.t. robot.
   e. Draw a neat diagram of spool valve.

Q.5) Attempt any Two of the following. (12 Marks)
- a. State Hall Effect. Enlist its application. Explain any one.
- b. Draw the block diagram of CNC based drilling machine. Explain each block.
- c. Explain basic Pneumatic circuit with neat schematic. Enlist its advantages.

Q.6) Attempt any Two of the following. (12 Marks)
- a. Explain working of tachogenerator with neat sketch. Enlist its advantages.
- b. Describe the working of hydraulic rotary actuator with neat sketch. Compare it with linear actuator.
- c. Describe basic concept of automated guided vehicle with neat block diagram.

Scheme – I
Sample Test Paper - I

Program Name	: Electronics & Telecommunication, Digital Electronics, Industrial Electronics
Program Code	: EJ, DE, IE
Semester	: SIXTH
Course Title	: Mechatronics
Marks	: 20

22643

Time:1 Hour

Instructions:

(1) All questions are compulsory.

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data if necessary.

(5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR.   (8 Marks)

a. List any four sensors.

b. Give any two advantages of mechatronics system.

c. Draw LVDT accelerometer.

d. Draw electromechanical system block diagram.

e. Describe G code & M code.

f. Enlist different components of pneumatic system.

Q.2 Attempt any THREE.   (12 Marks)

a. Describe mechatronics system with neat sketch.

b. Describe the working of Hall Effect sensor with neat sketch.

c. Draw the diagram of mechanical system building block. Explain it in brief.

d. Describe the working of stroboscope with neat sketch.

e. Describe the blocks of signal conditioning circuit.

Scheme – I
Sample Test Paper - II

Program Name : Electronics & Telecommunication, Digital Electronics, Industrial
Electronics

Program Code : EJ, DE, IE

Semester : SIXTH

Course Title : Mechatronics

Marks : 20

22643

Time:1 Hour

Instructions:

    (1)   All questions are compulsory.

    (2)   Illustrate your answers with neat sketches wherever necessary.

    (3)   Figures to the right indicate full marks.

    (4)   Assume suitable data if necessary.

    (5)   Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR.   **(8 Marks)**

    a.   Draw poppet valve.

    b.   Draw spool valve.

    c.   Define degree of freedom.

    d.   Give application of robot.

    e.   Differentiate pneumatic and hydraulic system.

    f.   Enlist different types of gear and draw anyone.

Q.2 Attempt any THREE.   **(12 Marks)**

    a.   Describe with neat sketch the working Spherical robot.

    b.   Describe the working of double acting cylinder.

    c.   Draw and explain block diagram of pneumatic control system.

    d.   Draw and explain block diagram of hydraulic control system

    e.   Draw and explain working of pick and place robot.

    f.   Draw and explain working of Microcontroller based car park barrier system.