

22643

23124

3 Hours / 70 Marks

Seat No.

--	--	--	--	--	--	--	--	--

Instruction : All Questions are *compulsory*.

Marks

1. Attempt any FIVE :

10

- (a) State the need of actuators in mechatronics systems.
- (b) Compare between pneumatic and hydraulic actuators.
- (c) State the need of air filters and regulators in pneumatic system.
- (d) Give the application areas of FMS.
- (e) State any two applications of hydraulic system.
- (f) Give full form of AVG and state where it is used.
- (g) State any four application areas of Robots.

2. Attempt any THREE :

12

- (a) Explain the construction and working principle of LVDT.
- (b) Describe with sketches the building blocks of electrical system.
- (c) Explain the working of single acting cylinder.
- (d) Describe the operation of hydraulic pump.

3. Attempt any THREE :

12

- (a) State the applications of following sensor :
 - (i) Photo Electric Sensor
 - (ii) Stroboscope
 - (iii) LVDT
 - (iv) Load Cell
- (b) State the applications, advantages and limitations of pneumatic system.
- (c) Describe the procedure to maintain hydraulic motors.
- (d) Draw block diagram of basic robotic systems and explain the function of each component.



- 4. Attempt any THREE :** **12**
- (a) Explain the construction and working principle of optical encoder.
 - (b) Explain the system model of electromechanical system.
 - (c) Describe the principle of operation of rotary actuators.
 - (d) Describe the working of microcontroller based antilock brake system.
 - (e) State the different types of direction control valve and explain operating principle of any one.
- 5. Attempt any TWO :** **12**
- (a) Draw and explain the block diagram of CIM (Computer Integrated Manufacturing). State its applications.
 - (b) Draw block diagram of CNC based drilling machine and explain the function of each block.
 - (c) Draw block schematic diagram of basic pneumatic system and explain each block.
- 6. Attempt any TWO :** **12**
- (a) Describe the working principle of pyro electric sensor . State its advantages and applications.
 - (b) State the applications of the following mechanical motion elements :
 - (i) CAMS (ii) Gears (iii) Belts
 - (c) Explain the working of microcontroller based pick and place robot with suitable sketch.
-