22592

12425

3 Hours / 70 Marks Seat No. | | | | | | | | |

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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following : **10**

(a) List various applications of Robot in manufacturing industry.

(b) State any four sensor commands.

(c) List various methods of robot programming.

(d) State function of proximing sensor.

(e) State types of robot maintenance.

(f) State function of force sensor.

(g) State desirable features of sensors.

2. Attempt any THREE of the following : **12**

(a) Describe working of piezoelectric sensor with neat sketch.

(b) Explain edge detection and its procedure.

(c) State capabilities and limitations of lead through programming methods.

(d) Explain application of robot in spot welding with neat sketch.

3. Attempt any THREE of the following : **12**

(a) State functions of sensors used in Robotics.

(b) Explain thresholding with its types.

(c) Explain procedure of robot maintenance.

(d) Explain concept of robot intelligence.

4. Attempt any THREE of the following : **12**

(a) Explain proximity sensor with neat sketch.

(b) Explain object recognition technique.

(c) Write short note on interlocking of robots.

(d) Explain concept of universal hand in robots.

(e) State the need of telepresence and related technologies in robotics.

5. Attempt any TWO of the following : **12**

(a) Explain with block diagram components of digital image processing.

(b) Explain system integration and networking approach may use in robot.

(c) Write VAL robot program for palletization of parts in pallet having 4 row that are 50 mm apart and 6 column 40 mm apart. The robot must pick parts from an incoming chute and are 25 mm tall.

6. Attempt any TWO of the following : **12**

(a) Explain Analog to Digital conversion process used in robot vision system.

(b) Using VAL language, discuss the basic commands and explain the structure of the program for a typical pick and place operation.

(c) Explain application of robot in automated assembly operation.
