

22587

24225

3 Hours / 70 Marks

Seat No.

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- 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) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) 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) Enlist desirable features of the sensor.
 - b) List various methods of robot programming.
 - c) Classify end effectors.
 - d) State the types of robot maintenance
 - e) State any four motion commands.
 - f) List various future technologies of robot.
 - g) State functions of force sensor.

P.T.O.

- 2. Attempt any THREE of the following :** **12**
- a) State different law of robots.
 - b) Explain edge detection and its procedure.
 - c) Write short note on teach pendant.
 - d) Explain application of Robot in spot welding with sketch.
- 3. Attempt any THREE of the following :** **12**
- a) Draw block diagram of robot language structure.
 - b) State and draw standard notation symbols used for various robot joints.
 - c) Write short note on interlocking of robot.
 - d) Explain need of robotic systems in industry.
 - e) Explain the concept universal hand.
- 4. Attempt any THREE of the following :** **12**
- a) State the need of telepresence and related technologies.
 - b) Explain applications of Robot in automated inspections. (any four)
 - c) Explain why robot program is called as path in a space?
 - d) Explain Analog to digital conversion process used in robot vision system.
 - e) State different considerations in gripper selection.
- 5. Attempt any TWO of the following :** **12**
- a) Explain common faults and remedies in robot. Also state safety precautions during robot operation.
 - b) 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.
 - c) Explain system integration and networking approach in with reference to robot.

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

- a) Explain with block diagram components of digital image processing.
 - b) Using VAL language, discuss the basic commands and explain the structure of the program for a typical pick and place operation.
 - c) Explain anatomy of a robot with neat sketch.
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