24225

3 Hours / 70 Marks   Seat No.

Instructions :   (1)   All Questions are *compulsory.*

(2)   Figures to the right indicate full marks.

(3)   Assume suitable data, if necessary.

Marks

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

(a)   List various future technologies of robot.

(b)   List various methods of robot programming.

(c)   State functions of proximity sensor.

(d)   State functions of sensors.

(e)   State various image devices used in robot lighting techniques.

(f)   What do you mean by universal hand ?

(g)   Define thresholding & state its types.

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

(a)   Sketch block diagram of robot vision system.

(b)   Enlist desirable features of sensor.

(c)   List different safety rules in robot handling.

(d)   List requirements of good programming language.

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

   (a) State the need of telepresence and related technologies.

   (b) Explain applications of robot in spot welding.

   (c) State any eight motion commands.

   (d) Explain concept of robot intelligence.

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

   (a) State the needs of robot maintenance.

   (b) Explain applications of robot in automated assemblies.

   (c) Explain proximity sensor with neat sketch.

   (d) Write short note on teach pendant.

   (e) List the steps involved in image processing and analysis of robot vision system.

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

   (a) Explain range sensor with neat sketch.

   (b) Explain mobility, locomotion and navigation technology may use in robots.

   (c) Explain robotic vision systems with the help of block diagram.

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

   (a) Write a program for PNP (Pick and Place) activity.

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

   (c) Explain procedure to test and troubleshoot robots.

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