22232

3 Hours / 70 Marks   Seat No.

Instructions :   (1)   All Questions are *compulsory.*
(2)   Answer each next main Question on a new page.
(3)   Illustrate your answers with neat sketches wherever necessary.
(4)   Figures to the right indicate full marks.
(5)   Assume suitable data, if necessary.
(6)   Use of Non-programmable Electronic Pocket Calculator is permissible.
(7)   Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1.   **Attempt any FIVE of the following :**   **5 × 2 = 10**

(a)   Define Robot Vision.

(b)   State functions of proximity sensor.

(c)   State any two motion commands.

(d)   Explain the concept of universal hand.

(e)   State any two End effector commands.

(f)   State functions of range sensor.

(g)   List various applications of Robots in manufacturing industries.

2.   **Attempt any THREE of the following :**   **3 × 4 = 12**

(a)   Explain tactile sensor with neat sketch.

(b)   Explain object recognition techniques.

(c)   Compare online and offline programming. (Any Four points)

(d)   Explain repeatability and resolution.

3. Attempt any THREE of the following : **3 × 4 = 12**

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

(b) Explain applications of robot in automated assemblies.

(c) Explain Thresholding in image processing.

(d) Explain Charge Coupled Device (CCD) for image capturing.

4. Attempt any THREE of the following : **3 × 4 = 12**

(a) Explain various robot specifications.

(b) State the use of Teach pendant in robots.

(c) Explain lead through programming methods.

(d) Explain Edge detection in image processing.

(e) State the limitations of Lead through programming methods.

5. Attempt any TWO of the following : **2 × 6 = 12**

(a) Write a VAL program to palletize an object. (Assume all necessary dimensions)

(b) Explain Vidicon camera with diagram.

(c) Explain applications of Robot in automated inspections.

6. Attempt any TWO of the following : **2 × 6 = 12**

(a) Explain any 6 VAL commands.

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

(c) Explain procedure to test and troubleshoot robots.

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