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SEAT No. :

P8629

[Total No. of Pages : 2

**Oct-22/TE/Insem-653**  
**T.E. (E & TC) (Robotics) (Honors)**  
**PRINCIPLES OF ROBOTICS**  
**(2019 Pattern) (Semester - I) (304181HR)**

*Time : 1 Hour]*

*[Max. Marks : 30*

*Instructions to the candidates :*

- 1) *Solve Q.1 or Q.2, Q.3 or Q.4.*
- 2) *Figures to the right indicate full marks.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Assume suitable data, if necessary.*

**Q1)** a) Sketch and explain 6 DOF's associated with arm body and Robot wrist. **[4]**

b) State 5 structural configurations of Robots. Explain any 1. **[2 + 4 = 6]**

c) Define Industrial Robots. State applications of Industrial Robots. **[1 + 4 = 5]**

OR

**Q2)** a) State and explain various components of Robot with neat sketch. **[1 + 4 + 1 = 6]**

b) Sketch and explain SCARA Robot. **[2 + 4 = 6]**

c) State 3 laws of Robotics. **[3]**

**Q3)** a) State and explain selection parameters for drives. **[5]**

b) Classify Hydraulic Actuator. Explain any 1 of them. **[5]**

c) State salient features of Stepper Motor. Draw and explain the Stepper Motor. **[5]**

OR

*P.T.O.*

- Q4)** a) Compare Hydraulic, Pneumatic & Electrical actuators with reference to their merits & demerits. [5]
- b) Classify Hydraulic Motors. Explain any 1 of them with neat sketch. [2 + 4 = 6]
- c) Sketch and explain Brushless DC Motor. Also state its advantages & disadvantages. [3 + 1 = 4]

