

Total No. of Questions : 8]

SEAT No. :

PD4885

[Total No. of Pages : 2

[6404]-441

**B.E. (Electronics and Telecommunication)
HONORS IN ROBOTICS
Industrial Robotics and Automation
(2019 Pattern) (Semester - VII) (404181HR)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

- Q1)** a) Define pneumatic actuators, how they are classified? Explain Rotary actuators with neat diagram. [9]
- b) Explain air treatment stages and pressure regulation method with neat diagram. [8]

OR

- Q2)** a) How pneumatic compressors are classified? Explain positive displacement compressors with neat diagram. [9]
- b) Explain basic components of pneumatic system with neat diagram. [8]
- Q3)** a) How to perform the analysis of an assembly? Explain with a suitable example. [8]
- b) Write steps to design of parts for high speed feeding and orienting. State different feeding difficulties. [9]

OR

- Q4)** a) State design features of CNC systems. Explain drive system for CNC machine tools. [8]
- b) Explain in detail how high speed automation insertion is possible in robotic assembly. State general rules for product design and automation. [9]

P.T.O.

- Q5) a)** What are the stages in mechatronics design? Explain different phases of mechatronics design process. [9]
- b)** Write a case study on Engine management system. Compare traditional and mechatronics design. [9]

OR

- Q6) a)** Prepare a detailed case studies on a pick and place robot. Write algorithm for a pick and place robot. [9]
- b)** Define mechatronics. Explain basic elements of mechatronics system with neat sketches. [9]

- Q7) a)** Compare Electrical, Mechanical and Hydraulic transmission systems. [6]
- b)** What is back pressure? When it arise and how to avoid it? [6]
- c)** Draw neat diagram to achieve forward and reverse stroke using cylinder and piston mechanism. [6]

OR

- Q8) a)** Give classification of hydraulic pumps. Explain positive displacement pumps and its characteristics. [6]
- b)** Give comparison between hydraulic and pneumatic system. What are the applications of hydraulic systems? [6]
- c)** Draw and explain basic components of hydraulic system. [6]

