Total No. of Questions : 8] **SEAT No. :**

P4561 **[Total No. of Pages : 2**

[5870]-1227
T.E. (E & TC) (2019 Pattern)
HONORS - ROBOTICS
Robot Programming & Simulation
(Semester - II) (304183HR)

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 indicates full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) Classify different languages/methods used for robotic programming. Explain the structure of VAL language command along with example. **[6]**

b) Explain any three basic commands in VAL-II with example. **[6]**

c) Explain motion control, hand control, program control commands used in robotic programming with example. **[6]**

OR

Q2) a) Explain anyone of the following robotic application using VAL program. **[6]**

i) pick and place applications

ii) palletizing applications using VAL

b) Explain WAIT, SIGNAL and DELAY commands used in robotics for communications using simple application. **[6]**

c) W. r. t. VAL-II programming language explain simple pick and place application. **[6]**

Q3) a) Explain pick and place operation of industrial robot using rapid robot language. **[6]**

b) List and explain Program control statements in AML. **[6]**

c) Explain manual and automatic mode of operation of industrial robot. **[6]**

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OR

Q4) a) Which syntax move master command language uses? List and explain different types of commands. **[6]**

b) Describe the elements and functions used in AML robotic language. **[6]**

c) List and explain Motion and Sensor commands in AML. **[6]**

Q5) a) Compare AR and VR in robotics. **[5]**

b) Discuss how Collision detection works in robotics? **[6]**

c) Discuss in detail about Robot studio online software. **[6]**

OR

Q6) a) What is soft robotics? Discuss robotic process automation in detail. **[6]**

b) Describe following terms : **[5]**

i) Repeatability measurement

ii) Robot economics

c) Explain how multiple robot systems are handled? **[6]**

Q7) a) Discuss different steps involved in the simulation. **[5]**

b) Describe Analog and Hybrid simulation. **[6]**

c) Describe Monte Carlo simulation method. **[6]**

OR

Q8) a) Classify simulation software and Describe a general purpose simulation package. **[6]**

b) Compare simulation packages with programming languages. **[5]**

c) Discuss advantages and disadvantages of simulation. **[6]**