

Total No. of Questions : 8]

SEAT No. :

P-478

[Total No. Of Pages : 2

**[6003]-586**  
**T.E. (E & TC)**  
**HONORS IN ROBOTICS**  
**Robot Programming & Simulation**  
**(2019 Pattern) (Semester-II) (304183)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates :*

- 1) *Attempt 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) *Assume suitable data, if necessary.*
- 4) *Figures to the right indicates full marks.*

- Q1)** a) Explain in detail robot language structure. Using VAL language, explain the structure of the program for a typical pick and place operation. [6]
- b) Explain any four VAL programming commands with example. [6]
- c) With schematic diagram, explain the robotic applications in welding industry. [6]

OR

- Q2)** a) Explain the four statements of VAL robot programming language. List the commands used in VAL programming and describe its functions. [6]
- b) Explain Wait, DELAY, SIGNAL commands with suitable examples. [6]
- c) List the commands used in VAL II programming and describe its functions. [6]

- Q3)** a) List and explain program control statement in AML [6]
- b) Explain manual and automatic mode of operation of industrial robot. [6]
- c) Explain the various Move master commands with example. [5]

OR

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- Q4)** a) List and explain the sensor commands used in AML language with example. [6]  
b) Describe the elements and function used in AML robotic language. [5]  
c) Which syntax move master command language uses? List and explain different types of commands. [6]

- Q5)** a) What is robotic process automation? Explain with an example. [6]  
b) Describe use of Computer vision, Augmented Reality & Virtual Reality in robotics. [6]  
c) Discuss how collision detection works in robotics. [6]

OR

- Q6)** a) Write in brief about robot work planning. [6]  
b) Why is repeatability of robot is important explain in detail? [6]  
c) Describe in brief about robot studio online software. [6]
- Q7)** a) Explain basic steps in simulation with example. [6]  
b) Write in brief about Monte Carlo method of simulation. [6]  
c) Distinguish between hybrid and Analog model. [5]

OR

- Q8)** a) Write classification of simulation software [6]  
b) Write in brief about cobweb models continuous models. [6]  
c) Write in brief about distributed lag models. [5]

