00551

No. of Printed Pages : 3 **BIMEE-016**

B.Tech.-VIEP-MECHANICAL ENGINEERING (BTMEVI)

Term-End Examination, 2019

BIMEE-016 : ROBOTICS

Time : Three Hours] **[Maximum Marks : 70**

Note : Attempt **any five** questions. All questions carry equal marks. Standard notations have their usual meaning.

1. (a) What is a Robot ? How can it be classified ? Give its specifications. [7]

   (b) Describe the different types of joints of a robot with appropriate figures. [7]

2. (a) Explain the performance and characteristics of industrial robots with suitable examples. [7]

   (b) Explain the working of hydraulic control systems in a robot with a neat sketch. [7]

3. (a) Describe the working of a recirculating lead screw with neat sketch.

(b) Differentiate between vacuum and electromagnetic gripper. [7]

4. (a) Explain the machine vision system of a robot with a neat sketch. Write the advantages. [7]

(b) What are the control techniques applied in robots ? Explain. [7]

5. (a) Explain how robotic programming is done using high level language. [7]

(b) Explain the principle and working of an AC servomotor. [7]

6. (a) Describe the various Artificial Intelligence (AI) Systems used in robotics. [7]

(b) Explain how robots can be used in hazardous and hostile working conditions. [7]

7. Write short notes on any four of the following : [4×3.5=14]

(a) End-effectors

(b) Work Envelope

(c) Robotic reference frame

(d) Pneumatic of Drives

(e) Laws Robotics

(f) SCARA-type Robot

----- x -----