

**B.Tech. – VIEP – MECHANICAL ENGINEERING
(BTMEVI)**

Term-End Examination

June, 2018

00463

BIMEE-016 : ROBOTICS

Time : 3 hours

Maximum Marks : 70

Note : Attempt any five questions. All questions carry equal marks.

1. (a) What is a robot ? Explain the performance and characteristics of a robot. 7
- (b) With the help of a neat sketch, explain the basic components of an industrial robot. 7
2. (a) What are the features and applications of hydraulic actuators used in robotic motion controls ? 7
- (b) Explain the various drive methods used for robot gripper system. 7

3. (a) Give the utility of continuous path robots in industry, with examples. 7
- (b) Classify robots on the basis of co-ordinate system. 7
4. (a) What is meant by 'work envelope' ? Explain with the help of a neat sketch. 7
- (b) Briefly explain the workplace design consideration for safety of robots. 7
5. (a) Describe the recent trends and developments in safety measurement of an automobile industry deploying robots. 7
- (b) Describe the various Artificial Intelligence (AI) systems used in robotics. 7
6. (a) Explain the working of hydraulic control systems in robots with the help of a neat sketch. 7
- (b) Give a comparison between robot-oriented programming languages and task-level programming languages. 7

7. Write short notes on any **four** of the following : $4 \times 3 \frac{1}{2} = 14$

- (a) Safety Measurement
 - (b) Robotic Reference Frame
 - (c) Robot Language Features
 - (d) Machine Vision
 - (e) Feedback Control
 - (f) Control Techniques
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