Eighth Semester B. Tech Degree Examination April/May 2017

13.806.10 ROBOTICS (Elective – V) (MPU)

Time: 3 Hours   Maximum Marks: 100

PART A

(*Answer ALL QUESTIONS. Each question carries 2 marks*)

1. Define 'work envelop' in robotics? Give one example.
2. Write the features of a servomotor?
3. Distiguish between point-to-point and continuous path control.
4. Sketch a Yaw-Pitch-Roll wrist
5. Write the use of Pulse Width Modulation.
6. Describe the functioning of resolver.
7. Write one example for structured lighting.
8. Explain the triangulation method of range finding.
9. Explain inverse kinematics in robot.
10. List out four industrial applications of robots.   (2 Marks x 10 = 20 Marks)

PART B

(*Answer ONE QUESTION from each Module. Each full question carries 20 marks*)

Module -1

11 (a) Classify robots based on coordinate system. Describe each category.   (12)
   (b) Prepare a short note on permanent magnet stepper motor.   (8)

12 (a) Explain any four specifications of industrial robot.   (8)
   (b) Classify the types of joints based on degrees of freedom. Include sketches.   (12)

Module – 2

13 (a) What are the general requirements of robotic sensors?   (10)
   (b) Explain absolute and incremental types of linier optical encoders.   (10)

14 (a) Illustrate the working of magnetic and vacuum gripers.   (12)
   (b) Explain the image processing sequence in robotic vision system.   (8)

Module – 3

15 (a) Illustrate the working of any three types of proximity sensors.   (12)
   (b) Write a note on any two slip sensing technique in robotics.   (8)

16 Discuss forward kinematics based on a robotic configuration having 2 degrees
   of freedom.   (20)

Module – 4

17 Describe different groups of commands in VAL programming.   (20)

18 Describe the features of various programming methods in robotics.   (20)

(20 Marks x 4 = 80 Marks)

------End of Question Paper------