Reg. No. :

Question Paper Code: 39724

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Elective

Mechanical Engineering

01UME924 - ROBOTICS

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Define work volume.

2. List the six basic robot motions.

3. Tell about full-step and half-step in stepper motors.

4. Give examples of the tools used as end effectors by robots.

5. Identify the parameters of a link and joints for kinematic modeling.

6. What is segmentation?

7. Name the robot programming methods.

8. Define degrees of freedom.

9. Define EUAC method.

10. Write some applications of AGV.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Illustrate with neat sketches the types of joints in Industrial robots.   (10)

    (ii) Demonstrate joint notation system for the robot manipulator.   (6)

(b) Describe the anatomy of a robot. (16)

12. (a) Classify robot based on drive technology and list its advantages and disadvantages. (16)

Or

(b) Explain the various drive system used with an industrial robot and compare their features, merits and demerits. (16)

13. (a) Give situation where robot will require noncontact sensors. Identify suitable noncontact sensors for these applications and explain their working. (16)

Or

(b) Explain the architecture of a robotic vision system. (16)

14. (a) Explain the teach pendant for Robot system. (16)

Or

(b) With an example differentiate forward and inverse kinematics. (16)

15. (a) Briefly explain the economic analysis of Robots in detail. (16)

Or

(b) (i) Explain the levels of safety sensor systems and safety monitoring strategies that might be followed while using robots. (10)

(ii) List the steps to be followed to implement a robotics program in industries. (6)

39724