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Question Paper Code:99375

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

Open elective

Civil Engineering

19UEE975 -PRINCIPLES OF ROBOTICS

(Common to CSE,ECE, MECH, EIE ,IT and Chemical, Agri, BME, CSBS & biotech Engineering)

(Regulation 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Which one of the following generation robots are autonomous? CO1- U
(a) First (b) Second (c)Third (d)None of the above
2. _____ is an example for middle level robots? CO1- U
(a) Washing machine (b) Fully automatic washing machine
(c) Laptop (d) None of the above
3. Hierarchical level control involves CO1- U
(a) Actuator control controls individual robot actuators
(b) Path control coordinates robot path movement
(c) Main control high level instruction interpreter
(d) All of the mentioned
4. Non servo robots are also called as CO1- U
(a)Pick and place (b)Fixed stop robot
(c)Both of the mentioned (d)None of the mentioned
5. Identify the name for information sent from robot sensors to robot controllers? CO1- U
(a) temperature (b) pressure (c) feedback (d) signal

6. Sensors are applied in Robots to get CO1- U
 (a) Information regarding velocity and position (b) Information from environment
 (c) Both A and B (d) None of the above
7. To Learn robotics which one is the correct sequence to be followed CO1- U
 (a) Dynamics, Kinematics, Trajectory Planning
 (b) Dynamics, Trajectory Planning, Kinematics
 (c) Kinematics, Trajectory Planning, Dynamics
 (d) Trajectory Planning , Dynamics, Kinematics
8. Total number of kinematic parameters needed to specify the kinematic configuration of a 5 axis Robot CO1- U
 (a) 12 (b) 20 (c) 16 (d) 24
9. Which one of the following is susceptible to radiation and infection? CO1- U
 (a) Human (b) Robots (c) Both a and b (d) None
10. Choose the benefits of Cartesian robots CO1- U
 (a) Large work envelope (b) Large foot print
 (c) Lower speed (d) Both a and b

PART – B (5 x 2= 10 Marks)

11. Define Robotics. CO1- U
12. List any two limitations of magnetic grippers. CO1- U
13. What is the common imaging device used for robot vision systems? CO1- U
14. Distinguish Kinematics and Dynamics. CO1- U
15. State two benefits of robots in manufacturing. CO1- U

PART – C (5 x 16= 80 Marks)

16. (a) Explain in detail about various parts of a robot with neat sketch CO1- U (16)
 Or
 (b) Write in detail about technical specification in robotics. CO1- U (16)
17. (a) Analyze the various types of gripper mechanisms. CO1-U (16)
 Or
 (b) Examine the Rotary to Linear Conversion method in robotics. CO1-U (16)

18. (a) List out the characteristics of sensors. CO1-U (16)
Or
(b) Explain the various techniques in Image Processing and Analysis. CO1-U (16)
19. (a) Discuss in detail about the homogeneous transformation for the manipulator CO1- U (16)
Or
(b) Differentiate forward and inverse kinematics. CO1- U (16)
20. (a) Explain Robot control system with a block diagram. CO5- U (16)
Or
(b) Explain in detail about the different types of material handling operations. CO5- U (16)

