A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 99312

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Elective

Electrical and Electronics Engineering

19UEE912 - Robotics And Automation

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The following drive is used for lighter class of Robot CO1- U

   (a) Pneumatic drive (b) Hydraulic drive (c) Electric drive (d) All of the above

2. The Brain of Robot is _____. CO1- U

   (a) Controller (b) Sensor (c) Power Source (d) Actuators

3. Which drive system provide gives a robot great speed and strength_____. CO2- U

   (a) Hydraulic drive (b) Electric drive (c) Pneumatic drive (d) None of these

4. Which gear is used to reduce speed? CO2- U

   (a) Bevel gears (b) Rack and Pinion (c) Spur gears (d) Worm gears

5. Pixel means _____ CO3- U

   (a) Particular image (b)Picture element (c)Particular element (d) Picture enlarges

6. The digital image captured by a H/W device called _____ CO3- U

   (a) Controller (b) computer (c) Frame grabber (d) Robot

7. Inverse solution is also called as CO4- U

   (a) Back solution (b) forward solution (c) direct solution (d) None of the above

8. The technical name of the Robot hand is called _____ CO4- U

(a) Wrist (b) End effector (c) Gripper (d) none

9. A sensor used in path determination robot CO5- U

(a) ultrasonic sensor (b) IR sensor (c) proximity sensor (d) echo sensor

10. Automation with little human touch is known as CO5- U

(a) Automation (b) Software (c)Semi worker (d) Manual work

PART – B (5 x 2= 10 Marks)

11 Define Asimov`s laws of robotics CO1- U

12 Which type of drive system is more suitable for heavy load robot application? CO2- U

13 Differentiate between the sensor & transducer. CO3- U

14 Define composite rotation matrix CO4- U

15 Mention task of robots in industries CO5- U

PART – C (5 x 16= 80Marks)

16. (a) Explain in details about the Robotic arm configuration and its type CO1-U (16)

Or

(b) With a neat sketch explain the various components in Robot Anatomy CO1- U (16)

17 (a) Explain in details about DC PMMC motor and Brushless DC motor with a neat sketch CO2- App (16)

Or

(b) Analyze the different Mechanical Transmission method in robotics and compare the merits with each other. CO2- App (16)

18. (a) Explain the different stages of machine vision system and its types of illumination system. CO3- App (16)

Or

(b) Explain in details about Proximity Sensors and Touch sensors with a neat sketch CO3- App (16)

19. (a) Analyze the various techniques used in Homogeneous Transformations for the manipulator. CO4- Ana (16)

Or

	(b)	Analyze the various techniques for obtaining inversing solution in kinematics.	CO4- Ana	(16)
20.	(a)	Explain the various programming methods used in robotics with examples and features of each.	CO5- U	(16)
		Or		
	(b)	Criticize Why robots are useful in industries .	CO5- U	(16)