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Question Paper Code: 99312

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2023

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- R
(a) Pneumatic drive (b) Hydraulic drive (c) Electric drive (d) All of the above
2. The Brain of Robot is _____. CO1- R
(a) Controller (b) Sensor (c) Power Source (d) Actuators
3. Which drive system provide gives a robot great speed and strength _____. CO2- R
(a) Hydraulic drive (b) Electric drive (c) Pneumatic drive (d) None of these
4. Which gear is used to reduce speed? CO2- R
(a) Bevel gears (b) Rack and Pinion (c) Spur gears (d) Worm gears
5. Pixel means _____. CO3- R
(a) Particular image (b) Picture element (c) Particular element (d) Picture enlarges
6. The digital image captured by a H/W device called _____. CO3- R
(a) Controller (b) computer (c) Frame grabber (d) Robot
7. Inverse solution is also called as CO4- R
(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- R
 (a) Wrist (b) End effector (c) Gripper (d) none
9. A sensor used in path determination robot CO5- R
 (a) ultrasonic sensor (b) IR sensor (c) proximity sensor (d) echo sensor
10. Automation with little human touch is known as CO5- R
 (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-R
12. Which type of drive system is more suitable for heavy load robot application? CO2-R
13. Differentiate between the sensor & transducer. CO3-R
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)
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 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)
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 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)
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 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)
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 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- E (16)
- Or
- (b) Criticize Why robots are useful in industries . CO5- E (16)

