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3rd Sem / Branch : Automation & Robotics

Subject : Robotics

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Which author formulated the three laws of robotics ? (CO1)

a) Isaac asimov b) Issac newton
c) John Calvin d) Danial olivaw

Q.2 How many degrees of freedom (f) are present in a spherical joint? (CO2)

a) 1 b) 2
c) 3 d) 4

Q.3 I in RIA stand for: (CO1)

a) International b) Indian
c) Internal d) Institute

Q.4 Industrial robots are typically designed to operate in which coordinate system(s)? (CO2)

a) Cartesian b) Cylindrical
c) Polar d) All of the above

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Sensor are probably the most important parts of any robotic system. Explain with suitable examples? (CO4)

Q.24 Design an arduino-based obstacle avoiding robot using Ultrasonic sensors? (CO5)

Q.25 Define what an actuator is and list commonly used actuators in robots. Explain two of them in detail? (CO3)

Q.5 Which sensor is most suitable for measuring distance? (CO4)

a) Ultrasonic b) Infrared

c) MQ-3 d) Radio frequency

Q.6 In the context of robots what category do motors fall into? (CO3)

a) Sensor b) Actuator

c) Joint d) coordinate

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 Define the term "Robot"? (CO1)

Q.8 What is the function of a limit switch ? (CO4)

Q.9 Name two types of motors commonly used in robots. (CO3)

Q.10 Explain the concept of a kinematic chain? (CO2)

Q.11 What ddo you mean by interfacing? (CO4)

Q.12 Define an electric actuator? (CO3)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 List six applications of robots? (CO1)

Q.14 Explain the concept of cartesian configuration with an illustrative example ? (CO2)

Q.15 List four most important factor to be considered while selecting any robot for a job ? (CO1)

Q.16 Write a note on mechanical grippers? (CO2)

Q.17 With the help of neat sketch explain how direction of rotation of a dc motor is reversed ? (CO3)

Q.18 List various robot links and joints ? Explain any one in details? (CO2)

Q.19 Differentiate between pneumatic and hydraulic actuators? (CO3)

Q.20 Describe the methods used for speed control of a DC motor? (CO3)

Q.21 Provide a brief historical overview of robotics? (CO1)

Q.22 Write a program to make an LED connected to pin 5 of an arduino board blink ? (CO5)