

SECTION-D

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

Q.23 Define sensor and give its types? Compare internal and external sensors? (CO4)

Q.24 Explain in detail the operation of a Cartesian robot with suitable diagrams? (CO2)

Q.25 Design an obstacle avoiding robot using ultrasonic sensors and Arduino? (CO5)

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3rd Sem / Automation & Robotics

Subject : Robotics

Time : 3 Hrs.

M.M. : 60

SECTION-A

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

Q.1 What is the degree of freedom in a cylindrical joint: (CO2)

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

Q.2 Laws of robotics given by Isaac Asimov contains _____ law(s). (CO1)

- a) 1
- b) 3
- c) 5
- d) 7

Q.3 I in ISO stands for: (CO1)

- a) International
- b) Inter-dependant
- c) Internal
- d) Independent

Q.4 Industrial Robots are not intended for _____ coordinate system(s): (CO2)

- a) Cartesian
- b) Cylindrical
- c) Polar
- d) Pi-Lambda

Q.5 Which of the following sensor is best suited for obstacle avoidance: (CO4)

- a) Humidity
- b) Infrared
- c) MQ-3
- d) Radio Frequency

Q.6 Which types of motors are commonly used in robots? (CO3)

- a) DC motor
- b) Stepper Motor
- c) Servo Motor
- d) All of the above

SECTION-B

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

Q.7 What is a solenoid? (CO3)

Q.8 Define degree of freedom? (CO1)

Q.9 What is an Arduino? (CO5)

Q.10 Describe a scoop gripper? (CO2)

Q.11 Robot is derived from Czech word _____. (CO1)

Q.12 Expand the acronym RIA. (CO1)

SECTION-C

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

Q.13 Write a note on laws of robotics? (CO1)

Q.14 Define an actuator and list four commonly used actuators in robots? (CO3)

Q.15 What is articulated configuration? Explain with example? (CO2)

Q.16 Compare magnetic and vacuum grippers? (CO2)

Q.17 Explain PWM method of speed control of a motor? (CO5)

Q.18 Enumerate four advantages and disadvantages of electric actuators? (CO3)

Q.19 List various factors to be considered while selecting an actuator? (CO1)

Q.20 Present a detailed overview of fluid power actuators? (CO3)

Q.21 Differentiate between AC motors and DC motors? (CO1)

Q.22 Write a program/flow chart for Arduino to reverse speed of a dc motor? (CO5)