Q.18 What are the different types of grippers as end effectors.

Q.19 Discuss the active and passive grippers.

Q.20 Explain the different types of digital sensor.

Q.21 What is the selection criteria of sensor any one application.

Q.22 Explain the electrical driver system in robot.

SECTION-D

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

Q.23 What is the significance of the number of degrees of freedom (DOF) in a robot, and how it is related to the number of joints and axes.

Q.24 Explain The classification end effectors and also discuss the driver system for grippers.

Q.25 Discuss the different types of analog sensor and also explain the one signal conditioning circuit.

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4th Semester/Instrumentation & Control
Subject : Robotics & Automation

Time : 3 Hrs. M.M. : 60

SECTION-A

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

Q.1 What is the primary purpose of the sensor in a robot?

a) To control the robot's movements

b) To detect and respond to environmental changes

c) To provide power to the robot

d) To store data for the robot's memory

Q.2 In robotic systems, the term degrees of freedom (DOF) refers to :

a) The number of joints in the robot's arm

b) The number of sensors the robot has

c) The robot's ability to perform tasks autonomously

d) The number of directions in which a robot can move or rotate

Q.3 Robots used in military applications are primarily designed for which of the following?

a) Entertainment

b) Combat and surveillance

c) Cooking meals

d) Teaching

Q.4 What is the primary function of a robot driver system?

a) To handle the robot's grip

b) To provide the robot with movement control

c) To process the robot's sensory inputs

d) To store the robot's program

Q.5 Which components is essential for controlling the speed and direction of a robot using electric motor?"

a) Gripper b) Micro controller

c) Motor drive circuit d) Encoder

Q.6 Which sensor is used for detecting lights in a robot's environment?

a) Infrared sensor

b) Lidar sensor

c) Light dependent resistor (LDR)

d) Camera sensor

SECTION-B

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

Q.7 Write the name of the sensors measures the orientation of a robot.

Q.8 Robots in manufacturing are primarily used to.

Q.9 DOF stands for _____.

Q.10 Write name of one analog and digital sensor used in robot.

Q.11 Write two commercial application of robot.

Q.12 What types of power source in pneumatic systems.

SECTION-C

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

Q.13 What are the application of robot in industrial and commercial sector.

Q.14 Explain the resolution and accuracy of robot.

Q.15 What are the main components of a robotic arm?

Q.16 What are the limitations of a robot with 3 degrees of freedom in terms of workspace and motion?

Q.17 Explain the different types of driver and actuator system.