

- Q.29 Write short note on resolved motion control.  
 Q.30 Explain the working principle of thermo-couple sensors.  
 Q.31 Write short note on robot welding.  
 Q.32 Write short note on articulated robot.  
 Q.33 Explain adaptive control with constraints.  
 Q.34 Write short note on VAN.  
 Q.35 Explain new minimum time control systems.

### SECTION-D

- Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)  
 Q.36 Classify robots based on physical configurations. Draw their line diagrams.  
 Q.37 Write short note on:  
     a) LVDT                      b) RTD  
 Q.38 Explain the Lead through programming.

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202463/122463

**6th Sem / Branch : Mechatronics/ Mech.  
 (CAD & CAM Design and Robotics)**

**Subject:- Robotics**

Time : 3Hrs.

M.M. : 100

### SECTION-A

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 Rotation around the side-to-side axis in robot is called \_\_\_\_\_  
     a) Yaw                              b) Roll  
     c) Pitch                            d) None of the above
- Q.2 \_\_\_\_\_ is the weight the robot can lift  
     a) Robo-load                      b) Payload  
     c) Self weight                    d) All of the above
- Q.3 Which part of the robot provides motion to the manipulator and end effector?  
     a) Controller                      b) Sensor  
     c) Actuator                        d) Processor
- Q.4 Physical structure of the robot which moves around is called \_\_\_\_\_  
     a) Manipulator                    b) Links  
     c) Joints                            d) End effector

- Q.5 Which of the following terms refers to the use of compressed gases to drive (power) the robot device?  
 a) Pneumatic                      b) Piezo-electric  
 c) Hydraulic                      d) Photosensitive
- Q.6 Industrial Robots are generally designed to carry which of the following coordinate system(s)?  
 a) Cartesian coordinate systems  
 b) Polar coordinate systems  
 c) Cylindrical coordinate systems  
 d) All of the given
- Q.7 In a robot the "rotory joint" is known as  
 a) Revolute                      b) Prismatic  
 c) Cylindrical                      d) Spherical
- Q.8 The number of moveable joints in the base, the arm, and the end effector of the robot determines \_\_\_\_\_.  
 a) Degree of freedom    b) Payload capacity  
 c) Flexibility                      d) Cost
- Q.9 Devices that transforms electrical signals into physical movements  
 a) Sensors                      b) Actuators  
 c) Switches                      d) None of these
- Q.10 Work volume of the Cartesian coordinate robot is \_\_\_\_\_.  
 a) Box shaped area  
 b) Cylindrical shaped area  
 c) Spherical shaped area  
 d) Triangular area

## SECTION-B

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 Expand ACO.  
 Q.12 Rotation around the vertical axis is called \_\_\_\_\_.  
 Q.13 Write the type of gripper used for lifting thin glass sheet.  
 Q.14 The number of independent ways in which a part of robot can move is called \_\_\_\_\_.  
 Q.15 Expand EAOT.  
 Q.16 Full form of SCARA robot is \_\_\_\_\_.  
 Q.17 \_\_\_\_\_ is the brain of robot.  
 Q.18 Expand RTD.  
 Q.19 Spot welding robot works on \_\_\_\_\_ path system.  
 Q.20 AGV robots can be placed in \_\_\_\_\_ category of robots.

## SECTION-C

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 Explain various robot motions.  
 Q.22 Explain briefly degree of freedom.  
 Q.23 Write short note on drives and their types.  
 Q.24 Explain the working principle of strain gauges.  
 Q.25 Write short note on device controllers.  
 Q.26 Explain the non servo controls with line diagram.  
 Q.27 Compare the different types of robot control loops.  
 Q.28 Explain the working of proximity sensors.