

Robotics (EOY) Final Exam

- 1** How many different axes are utilized to determine degrees of freedom?
- A** 1
 - B** 2
 - C** 3
 - D** 4
 - E** 5
 - F** 6
- 2** Which of the following is NOT an axis for the degrees of freedom classification system?
- A** Up/Down
 - B** Front/Back
 - C** Diagonal
 - D** Pitch
 - E** Yaw
 - F** Roll
- 3** When a robotic system has movement on all 6 axes, with redundant movement on at least one axis, it is known as what type of system?
- A** Redundant
 - B** Repetitive
 - C** Recursive
 - D** Responsive
- 4** When a robotic system has movement on all 6 axes, with no redundant movement on any of the axes, it is known as what type of system?
- A** Sufficient
 - B** General Purpose
 - C** Deficient
 - D** Single Use

- 5** When a robotic system has movement on less than all 6 axes, it is known as what type of system?
- A** Deficient
 - B** Sufficient
 - C** Basic
 - D** General Purpose
- 6** Which drive technology uses direct current or alternating current to move servomotors?
- A** Electric
 - B** Hydraulic
 - C** Pneumatic
 - D** Pulsetic
- 7** Which drive technology uses compressed fluid to move?
- A** Electric
 - B** Hydraulic
 - C** Pneumatic
 - D** Pusletic
- 8** Which of the following is a disadvantage of pneumatic drive technology systems?
- A** High Speed
 - B** Flexible
 - C** Possible Leaking Fluids
 - D** Difficult to Control

- 9** Which drive technology uses compressed air to move?
- A** Electric
 - B** Hydraulic
 - C** Pneumatic
 - D** Pulsetic
- 10** Which of the following is a disadvantage of hydraulic drive technology systems?
- A** High Speed
 - B** Flexible
 - C** Possible Leaking Fluids
 - D** Difficult to Control
- 11** What fluid are most hydraulic systems pressurized with?
- A** Water
 - B** Liquid Nitrogen
 - C** Oil
 - D** Diet Pepsi
- 12** Which type of kinematic structure is built as a robotic manipulator that is anchored at one end?
- A** Serial or Open Loop
 - B** Parallel
 - C** Hybrid
 - D** Trapezoid

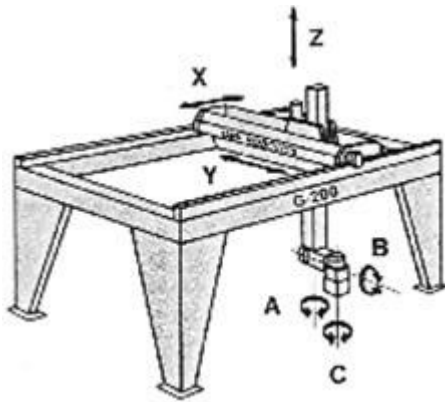
- 13** Which type of kinematic structure is built as a robotic manipulator that is anchored at both ends?
- A** Serial or Open Loop
 - B** Parallel
 - C** Hybrid
 - D** Trapezoid
- 14** Which type of kinematic structure is built as a combination of both open-loop and parallel structures?
- A** Serial or Open Loop
 - B** Parallel
 - C** Hybrid
 - D** Trapezoid
- 15** Which of the following is an example of a serial or open loop kinematic structure?
- A** Your Arm
 - B** Stewart Platform
 - C** Car
 - D** Telephone
- 16** Which of the following is an example of a parallel kinematic structure?
- A** Your Arm
 - B** Stewart Platform
 - C** Car
 - D** Telephone

- 17** Which of the following is an example of a Stewart Platform?
- A** Car
 - B** Your Arm
 - C** Aircraft Flight Simulator
 - D** Open Loop Manipulator Arm
- 18** The Motion Characteristics classification system is based upon what?
- A** 6 Axes of Degrees of Freedom
 - B** Kinematic Structure
 - C** Drive Technology
 - D** Power Systems
- 19** Which 3 of the axes of freedom are utilized by a planar motion characteristic system?
- A** Up/Down
 - B** Pitch
 - C** Front/Back
 - D** Yaw
 - E** Left/Right
 - F** Roll
- 20** Which 3 of the axes of freedom are utilized by a spherical motion characteristic system?
- A** Up/Down
 - B** Pitch
 - C** Front/Back
 - D** Yaw
 - E** Left/Right
 - F** Roll

21 If a system can't be classified as solely planar or spherical in the motion characteristics classification system, what type of system is it?

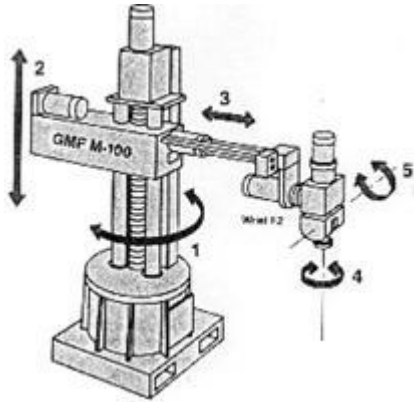
- A** Spatial
- B** Spheroid
- C** Solidic
- D** Can't be Classified in Motion Characteristics Classification System

22 What is the name of a Cartesian workspace robot that is mounted on rails above its workspace?



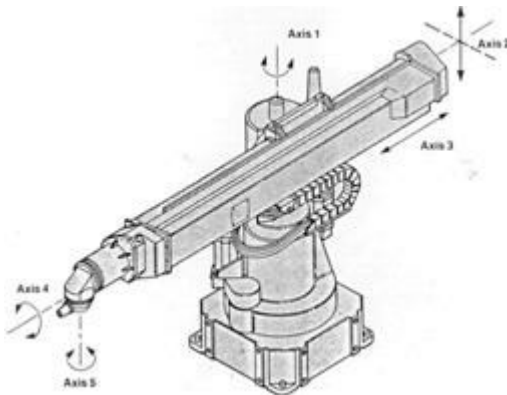
- A** Rail Mounted Cartesian
- B** Gantry
- C** Crane
- D** Polar

- 23** A cylindrical workspace robotic system can use a revolute or revolving joint as which of these joints?



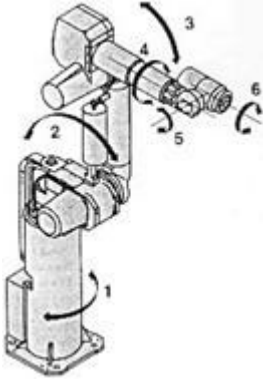
- A** First Joint
- B** Second Joint
- C** Third Joint
- D** Fourth Joint

- 24** A polar workspace robotic system can use a revolute or revolving joint as which of the following?

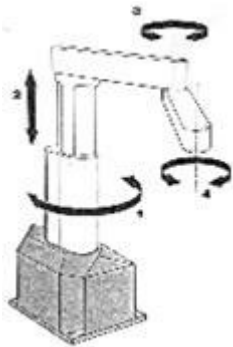


- A** 1st and 2nd Joints
- B** 1st and 3rd Joints
- C** 2nd and 3rd Joints
- D** 1st Joint Only

- 25** An articulating workspace robotic system can use a revoluted or revolving joint as which of the following?

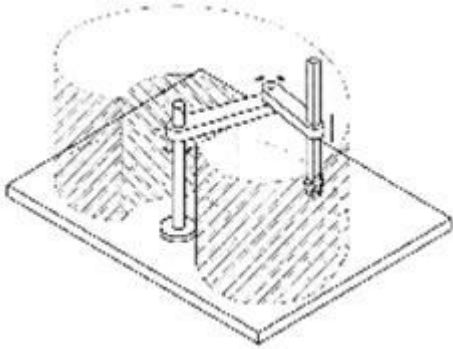


- A** 1st and 2nd Joints
B 1st and 3rd Joints
C 2nd and 3rd Joints
D 1st, 2nd, and 3rd Joints
- 26** Which robotic systems workspace consists of 2 revoluted or revolving joints (similar to a polar workspace) followed by a prismatic joint similar to that of a Cartesian workspace?



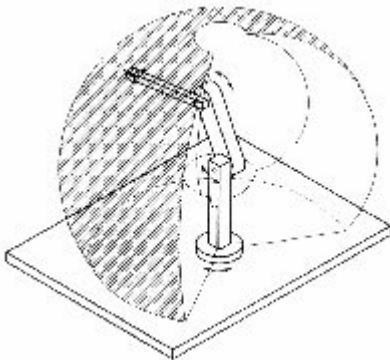
- A** SCARA
B Articulating
C Polar-Cartesian
D Cylindrical

- 27** Which workspace system is indicated in the image below? The robot is typically confined inside of a general "heart" shape and has 4 degrees of freedom.



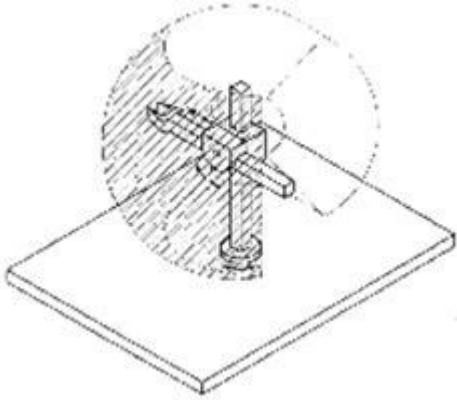
- A** Cartesian
- B** Cylindrical
- C** Spherical/Polar
- D** Articulating
- E** SCARA

- 28** Which workspace system is indicated in the image below? The robot is typically confined in a very complex shape that typically has a crescent cross-section.



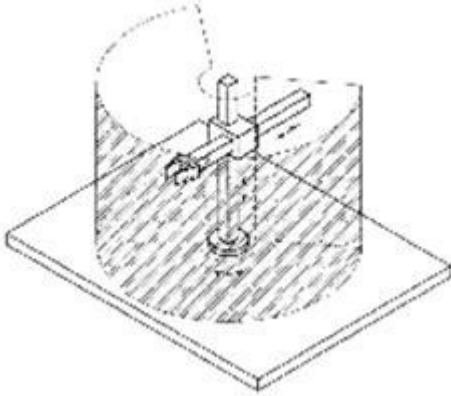
- A** Cartesian
- B** Cylindrical
- C** Spherical/Polar
- D** Articulating
- E** SCARA

- 29** Which workspace system is indicated in the image below? The robot is typically confined by two concentric spheres.



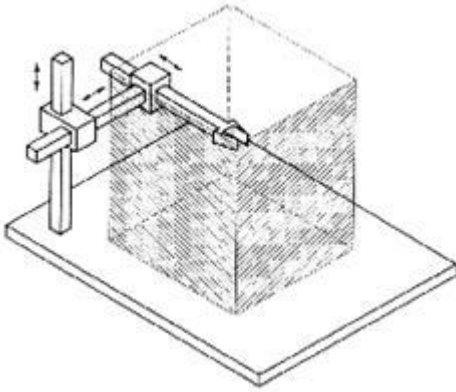
- A** Cartesian
- B** Cylindrical
- C** Spherical/Polar
- D** Articulating
- E** SCARA

- 30** Which workspace system is indicated in the image below? The robot is typically confined by two concentric cylinders of finite length.



- A** Cartesian
- B** Cylindrical
- C** Spherical/Polar
- D** Articulating
- E** SCARA

- 31** Which workspace system is indicated in the image below? The position can be expressed by X, Y, Z coordinates.



- A** Cartesian
 - B** Cylindrical
 - C** Spherical/Polar
 - D** Articulating
 - E** SCARA
- 32** Which of the following statements about servos and motors is true?
- A** Servos typically snap to a programmed position and hold there and motors do not.
 - B** Servos are typically physically larger than motors.
 - C** Servos typically require more power than motors.
 - D** Servos typically last longer than motors.

33 Which robotics program did Ferris High School participate in this year?

A



B



C



D

