

Robotics Classifications Exam

INSTRUCTIONS:

Using your lesson notes on robotic classification systems, answer the following questions to the best of your ability.

- 1** Which of the following is not a degrees of freedom axis?

 - A** Up/Down
 - B** Left/Right
 - C** Yaw
 - D** Side/Back

- 2** A robotic system which possesses all 6 degrees of freedom is known as what?

 - F** Sufficient
 - G** Deficient
 - H** General Purpose
 - J** Redundant

- 3** A robotic system which possesses more than 6 degrees of freedom is known as what?

 - A** Deficient
 - B** Overachieving
 - C** Redundant
 - D** General Purpose

- 4** A robotic system which does not possess all 6 degrees of freedom.

 - F** Deficient
 - G** Redundant
 - H** General Purpose
 - J** Lacking

- 5** A robotic system has freedom along the up/down, left/right, front/back, and pitch axes and has freedom on two yaw axes. What classification is this robot?

 - A** Deficient
 - B** Redundant
 - C** General Purpose
 - D** Functional

- 6** What is the name of the classification system that classifies robotic systems based upon the total number of the 6 different degrees of freedom the system possesses?

 - F** Degrees of Freedom
 - G** Freeform Axes
 - H** Rotational
 - J** Freedom SCARA

- 7** The majority of robotic systems fall under which degrees of freedom classification?

 - A** General Purpose
 - B** Deficient
 - C** Redundant
 - D** Functional

- 8** What is the name of the classification system that groups robotic systems based upon the technology that moves them?
- F** Drive Train
 - G** Drive Technology
 - H** Power System
 - J** Drive Assembly
- 9** Which drive technology uses DC or AC servomotors to move?
- A** AD/DC
 - B** Electric
 - C** Pneumatic
 - D** Hydraulic
- 10** Comparatively, which drive technology is the weakest?
- F** Direct
 - G** Electric
 - H** Pneumatic
 - J** Hydraulic
- 11** Which of the following is a drawback to a pneumatic drive technology?
- A** Possible leaking air
 - B** Combustion capacity of gas under pressure
 - C** Difficult to control
 - D** Light-weight and prone to floating away
- 12** Which of the following is a drawback to a hydraulic drive technology?
- F** Possible leaking fluids
 - G** Weight of fluids
 - H** Transportation of fluids
 - J** Temperature of fluids
- 13** Which drive technology uses compressed air to move?
- A** Oxygenated
 - B** Pneumatic
 - C** Hydraulic
 - D** Electric
- 14** Which drive technology uses compressed fluid (usually oil) to move?
- F** Lubricated
 - G** Pneumatic
 - H** Hydraulic
 - J** Electric
- 15** Which drive technologies have high speed and load capacity? (select 2)
- A** Velocity
 - B** Electric
 - C** Pneumatic
 - D** Hydraulic

- 16** Which kinematic classification is anchored at one end and is similar to your arm?
- F** Serial
 - G** Closed
 - H** Parallel
 - J** Hybrid
- 17** A serial robot is also referred to as what?
- A** Breakfast Robot
 - B** Open Loop Robot
 - C** Closed Loop Robot
 - D** Reciprocating Loop Robot
- 18** Which kinematic classification is anchored at both ends and is similar to a Stewart platform?
- F** Open
 - G** Serial
 - H** Hybrid
 - J** Parallel
- 19** Which of the following is an example of a Stewart platform?
- A** Legs on a flight simulator
 - B** The release on a gate
 - C** A door strike plate
 - D** A manipulator arm

- 20** What is the name of the classification system that groups robotic systems based upon how they move?
- F** Motion Characteristics
 - G** Movement Characteristics
 - H** Motor Characteristics
 - J** Momentum Characteristics
- 21** Which motion characteristic moves objects along a single plane of motion at a time?
- A** Planar
 - B** Flat
 - C** Spherical
 - D** Spatial
- 22** Which motion characteristic moves objects based upon the center of a circle?
- F** Spherical
 - G** Round
 - H** Planar
 - J** Spatial

- 23** Which degrees of freedom does a robotic system classified as planar have? (Select 3)
- A** Up/Down
 - B** Pitch
 - C** Left/Right
 - D** Roll
 - E** Front/Back
 - F** Yaw
- 24** Which degrees of freedom does a robotic system classified as spherical have? (Select 3)
- F** Up/Down
 - G** Pitch
 - H** Left/Right
 - J** Roll
 - K** Font/Back
 - L** Yaw
- 25** A robotic system has 4 different degrees of freedom (up/down, left/right, front/back, and roll). What motion characteristic classification does this robotic system fall into?
- A** Redundant
 - B** Planar
 - C** Spherical
 - D** Spatial

- 26** What workspace is a robotic system classified in that is comprised of 3 mutually perpendicular joints?
- F** Cylindrical
 - G** Cartesian
 - H** Coordinate
 - J** Polar
- 27** What is a cartesian robotic system that is mounted on rails above its workspace called?
- A** Gantry Robot
 - B** Rail Robot
 - C** Track Robot
 - D** Pulley Robot
- 28** Cylindrical robotic systems use only one (1) or what type of joint?
- F** Rotational
 - G** Revolute
 - H** Cyclical
 - J** Circular
- 29** How many revolute joints are used on a spherical robotic system?
- A** 1
 - B** 2
 - C** 3
 - D** 4

- 30** What is another name for the spherical workspace?
- F** Round
 - G** Equatorial
 - H** Closed
 - J** Polar
- 31** Which workspace classification is very complex and utilizes only revolute joints?
- A** Hybrid
 - B** SCARA
 - C** Cartesian
 - D** Articulating
- 32** SCARA is an acronym that stands for what?
- F** Serial Computerized Arm Remotely Activated
 - G** Selective Compliance Assembly Robot Arm
 - H** Small Compartmentalized Assembly Robotic Apparatus
 - J** Selected Compact Articulated Retractable Arm
- 33** How many degrees of freedom does a SCARA robot have?
- A** 1
 - B** 2
 - C** 3
 - D** 4