ROBOTICS 3RD QUARTERLY ASSESSMENT

What is term used for the comparison between the level of task difficulty and benefit gained from successfully completing the task?

- Objective analysis
- Strategic analysis
- Cost benefit analysis ✔
- Risk analysis

Speed, Power, Agility, Low Center of Gravity are examples of what?

- A Robot Qualities ✔
- B Robot Functionalities
- C Robot Behaviors
- D Robot Abilities

An example of a robot functionality would be:

- A Speed
- B Picking up an object ✔
- C Power
- D Large wheels

Which of the following is not a factor when doing a cost benefit analysis?

A	**How long it takes to complete a task**	
B	**How much distance does it take to do the task**	
C	**The precision required for the task**	
D	**How much the crowd will cheer**	✔

Prioritization of tasks requires two separate lists to be made: one list of qualities and one list of____?

A	**Strengths**	
B	**Achievements**	
C	**Functionalities**	✔
D	**Drive Train Designs**	

What is the name of the field dealing with the study of the bodies in motion?

A	**Aeronautics**	
B	**Classical Mechanics**	✔
C	**Statics**	
D	**Physics**	

What is the equation to calculate the speed of an object?

A	**Velocity / Time**	
B	**Distance / Time**	✔
C	**Rotational Cycles / Distance**	
D	**Velocity / Distance**	

Which of the following is not used in calculating Rotational Speed?

A	**Time**	
B	**Distance**	
C	**Rotational Cycles**	✔
D	**Degrees**	

What is the speed of a robot that travels across a 12 ft field in 4 seconds?

A	**8 FPS**	
B	**6 FPS**	
C	**3 FPS**	✔
D	**16 FPS**	

Which of the following parameters are not used to calculate Torque?

A	**Distance**	
B	**Force**	
C	**Diameter**	
D	**Velocity**	✔

_____ is the rate at which work is performed

A	**Velocity**	
B	**Acceleration**	
C	**Kinetic Energy**	✔
D	**Power**	

As the speed of a motor increases, the _____ decreases.

A	**Acceleration**	
B	**Torque**	✔
C	**Force**	
D	**Velocity**	

Which of the following is not a key motor characteristic when designing robots?

A	**Stall Current**	
B	**Free Voltage**	✔
C	**Stall Torque**	
D	**Free Speed**	

If a motor is spinning at 50 RPM at 6 Volts, what would be the speed if the voltage was increased to 9 Volts?

A	**100 RPM**	
B	**50 RPM**	
C	**25 RPM**	
D	**75 RPM**	✔

What style shaft does the VEX Design system use?

A	**Round**	
B	**Square**	✔
C	**Hexagonal**	
D	**Keyed**	

If there are three spur gears meshed together in a row, what is the middle gear called?

A	Input	
B	Output	
C	Idler	✔
D	Driven	

Which of the following are sources of electricity?

A	Light	
B	All of the above	✔
C	Heat	
D	Friction	
E	Pressure	

Why do you use a breadboard?

- ○ The plug board versions are extremely reliable and will last for years, you might never need to do anything else.
- ○ It's an inexpensive way to check the design and function of your circuit. ✔
- ○ Breadboards aren't used any more.
- ○ It can be used to mass produce lots of identical circuits easily and cost effectively.

Match the definition to the correct term

Speed	1
Acceleration	2
Power	3
Rotational Speed	4
Torque	5
Velocity	6
Current	7
Force	8
Mechanics	9
Stall	10
Methodical	11
Work	12
Load	13
DC Motor	14

the unexpected or unwanted stopping of an engine or motor.

the orderly or systematic performance of a task.

the exertion or effort directed to produce or accomplish something.

an electric motor that runs on direct current (DC) electricity.

electromotive force or potential difference expressed in volts.

refers to how fast something is moving in a circle. **a measure of how fast an object is moving.**

a spinning force **the flow of an electric charge through a medium.**

an influence that causes a change of movement, direction or shape. Force is measured in units such as Pounds or Newtons.

the weight supported by a structure or part.

the branch of physics that deals with the action of forces on bodies and with motion, comprised of kinetics, statics, and kinematics.

A change in speed over a period of time is described as an acceleration; the higher the acceleration the faster the change in speed.

the rate at which work is performed and energy is converted.

Correct answers:

1 **a measure of how fast an object is moving.**

2 **A change in speed over a period of time is described as an acceleration; the higher the acceleration the faster the change in speed.**

3 **the rate at which work is performed and energy is converted.**

4 **refers to how fast something is moving in a circle.** 5 **a spinning force**

6 **electromotive force or potential difference expressed in volts.**

7 **the flow of an electric charge through a medium.**

8 **an influence that causes a change of movement, direction or shape. Force is measured in units such as Pounds or Newtons.**

9 **the branch of physics that deals with the action of forces on bodies and with motion, comprised of kinetics, statics, and kinematics.**

10 **the unexpected or unwanted stopping of an engine or motor.**

11 **the orderly or systematic performance of a task.**

12 **the exertion or effort directed to produce or accomplish something.**

13 **the weight supported by a structure or part.**

14 **an electric motor that runs on direct current (DC) electricity.**

END OF ASSESSMENT