P 28 Task 5

Robots:

- Automated machine

- Specific tasks

- Little or no human intervention

- Speed and precision

- Industrial robots

- Robotic exoskeleton

- Traditional humanoid robots

- Replicate human behavior

- Motors or actuators

- Hydraulic systems

- Pneumatic or electric motors

- Sensory system

- Light, sound, temperature, contact, distance, pressure, and positioning sensors

- Movable parts (end-effectors)

- Metal or plastic

- Specialized tools

- Power source (electricity, battery, solar)

- Programming

- Reprogrammable

- Central processing unit (CPU)

- Brain

Robotics:

- Interdisciplinary branch

- Conception, design, construction, and use of robots

- Intelligent machines

- Help and assist humans

- Machine learning

- Artificial intelligence

- Manufacturing processes

- Applications

- Robotics engineers

- Advancements

- Practical purposes

- Domestically, commercially, militarily

Robots' components:

- Motor or actuator

- Sensory system

- Movable physical structure

- Power supply

- Program

- Central processing unit (CPU)

P 29 Task 6

1. Robots are machines that replicate human \*\*behavior\*\*.

2. A robot is a computer-controlled \*\*machine\*\* that is programmed to move, manipulate objects, and perform work while interacting with its environment.

3. Robots can be used in the automotive \*\*industry\*\* for the assembly of engines, transmissions, as well as car body painting and welding.

4. Industrial \*\*robots\*\* relieve human operators of dangerous, difficult, highly repetitive tasks.

5. The main component of a robot is the central processing \*\*unit\*\* which acts as the "brain" of the robot.

6. A sensory \*\*system\*\* gives the robot information about its surroundings.

7. Robots need motors or actuators that provide the physical \*\*power\*\* to move the structure.

8. Robots use either hydraulic systems, or pneumatic or electric \*\*motors\*\* to facilitate movement.

9. Humans write computer \*\*programs\*\* that tell the robot how to do certain physical tasks.

Task 7 p 30

Here is the correct matching of letters to numbers:

a) They are small motors attached directly to the structure of the machine that facilitate movement. - \*\*2. Actuator\*\*

b) It acts as the "brain" of the robot. In other words, it is the robot component that provides feedback to outside stimuli. - \*\*1. Processing Unit\*\*

c) It can take different forms. Stationary robots, like those in factories, receive it directly just like any other appliances. Mobile robots typically sport high-capacity batteries while robotic probes and satellites are generally equipped with solar panels for harvesting energy from the sun. - \*\*3. Power Supply\*\*

d) They function like muscles. - \*\*2. Actuator\*\*

e) They act as eyes and ears to help a robot take in information about its surroundings. - \*\*5. Sensor\*\*

f) The term refers to the tools aboard the robot - the parts that perform the actual work and interact with the environment or a workpiece. They allow robots to carry out their specific tasks with precision. - \*\*4. End-Effector\*\*

g) Robots need energy to function. Almost all robots receive it from electricity. - \*\*3. Power Supply\*\*

h) It contains "logic trees" that gather and analyze task and environmental data, and then choose an appropriate response. - \*\*6. Program\*\*

i) Robots typically incorporate a wide range of them. Important types include light, sound, temperature, contact, distance, pressure, positioning ones. - \*\*5. Sensor\*\*

j) Some robots use hydraulic systems which use oil to facilitate movement, others pneumatic motors which use air or electric motors which use electric current and magnets to facilitate movement. - \*\*2. Actuator\*\*

k) It isn't a physical component, but within a robot it provides the logic that drives its behaviors. - \*\*1. Processing Unit\*\*

l) It functions similarly to the human brain. Data comes in through sensors just as information comes to the neurons in your brain through your body's senses, then this component interprets it and acts accordingly. - \*\*1. Processing Unit\*\*

m) The examples of such tools might include screwdrivers, rivet guns, paint sprayers, grippers, shovels, drills, hammers, cameras, lights, scalpels, etc. - \*\*4. End-Effector\*\*

Restored order:

1. Processing Unit

2. Actuator

3. Power Supply

4. End-Effector

5. Sensor

6. Program

Task 1 p 31

a) Robotics is the intersection of science, engineering, and technology.

b) A more common term than robotics is robot.

c) Robots were originally built to handle repetitive tasks.

d) In 2005, 90% of all robots could be found assembling cars in automotive factories.

e) These robots consist mainly of mechanical arms tasked with welding or sanding on certain parts of a car.

f) Today we're seeing an evolved and expanded definition of robotics.

g) While the overall world of robotics is expanding, a robot has some consistent characteristics.

h) The mechanical aspect of a robot helps it carry out tasks in the environment for which it's designed.

i) A battery, for example, is needed to power the machinery.

j) Without a set of codes telling it what to do, a robot would just be another piece of simple machinery.

k) Robots are largely used to perform a variety of tasks and to make human life easy.

Task 2 p 31

1. replicate

2. programable

3. assist

4.intricate

5. harshest

6. facet

7. mechanical

8. electrical

9. level

10. ability

11. exploration

12.consumer