IFTS 14 – ROBOTICA – INGLES TECNICO II

TASK 5

1. READING COMPREHENSION
2. Skim the text below and put the following title and subtitles in their correct places: 1), 2), 3) or 4).

a- Autonomous versus Teleoperated Robots

b- Stationary versus Mobile Robots

c- Tethered versus Self-Contained Robots

d- Anatomy of a Robot

1)

The human body is, all things considered, a nearly perfect machine: it’s (usually) intelligent, it can lift heavy loads, it can move itself around, and it has built- in protective mechanisms to feed itself when hungry and to run away when threatened. Other living creatures possess similar functions, though not always to the same degree of sophistication.

Robots are often modelled after humans, if not in form then at least in function. Nature provides a striking model for robot experimenters to mimic. It’s up to us to take the challenge. Some of the mechanisms found in nature can be duplicated in the robot shop. Robots can be built with eyes to see, ears to hear, a mouth to speak— all with the goal of manipulating the environment and exploring the surroundings.

This is fine theory. What about real life? What basic parts must a machine have before it’s given the title “robot”? Let’s take a close look in this chapter at the anatomy of robots and the kinds of materials hobbyists use to construct them. For the sake of simplicity, not every robot subsystem ever made is covered here, just the ones most often found in amateur robots.

2)

When we think of robots most of us envision a machine that walks around on legs or scoots across the floor on wheels.

In fact, the most common robots stay put and manipulate some object placed in front of them. These are often used in manufacturing, and they are stationary— they’re bolted to the ground. Such stationary robots, like the one in Figure 2-1, assist in making cars, appliances, even other robots!

Conversely, mobile robots (see Figure 2-2) are designed to move from one place to another. Wheels, tracks, or legs allow the robot to traverse a terrain. Mobile robots may also feature an arm like appendage that allows them to manipulate objects around them. Of the two—stationary or mobile—the mobile robot is probably the more popular project for hobbyists to build. There’s something endearing about a robot that scampers across the floor, either chasing or being chased by the cat.

As a serious robot experimenter, don’t overlook the challenge of building both types of robots. Stationary bots typically require greater precision, power, and balance, since they are designed to grasp and lift things—hopefully not destroying whatever it is they’re handling. Likewise, mobile robots present their own difficulties: manoeuvrability, adequate power supply, and avoiding collisions among them.

3)

*The notion of telerobotics is certainly not new—it goes back to at least the 1940s and the short story “Waldo” by noted science fiction author Robert Heinlein. It was a fantastic idea at the time, but today modern science makes* it *eminently possible, even for garage- shop tinkerers*.

The first robots ever demonstrated for a live audience were fake; they were actually machines remotely controlled by a person offstage. No matter. People thrilled at the concept of the robot, which many anticipated would be an integral part of their near futures. You know, like flying to work in your own helicopter and colonies on Mars by 1975 . . . yeah, right!

These days, the classic view of the robot is a fully autonomous machine, like Robby from Forbidden Planet, Robot B-9 from Lost in Space, or that R2- D2 thingie from Star Wars. With these robots (or at least the make-believe, fictional versions), there’s no human operator, no remote control, no “man behind the curtain.”

While many actual robots are indeed fully autonomous, many of the most important robots of the past few decades have been teleoperated. A teleoperated robot is one that is commanded by a human and operated by remote control. These are often used in police and combat situations, like the one in Figure 2-3. The typical telerobot uses a video camera that serves as the eyes for the human operator. From some distance— perhaps as near as a few feet to as distant as several million miles— the operator views the scene before the robot and commands it accordingly.

The teleoperated robot of today is a far cry from the radio-controlled robots of the world’s fairs of the 1930s and ’40s. Many telerobots, like the world-famous Mars rover Sojourner, the first interplanetary dune buggy, are actually half remote controlled and half autonomous. The low-level functions of the robot are handled by a microprocessor on the machine. The human intervenes to give general-purpose commands, such as “go forward 10 feet” or “hide, here comes a Martian!” The robot carries out basic instructions on its own, freeing the human operator from the need to control every small aspect of the machine’s behaviour.

Stereo video cameras give a human operator 3D depth perception. Sensors on motors and robotic arms provide feedback to the human operator, who can actually feel the motion of the machine or the strain caused by some obstacle. Virtual-reality helmets, gloves, and motion platforms literally put the operator “in the driver’s seat.”

4)

People like to debate what makes a machine a “real” robot. One side says that a robot is a completely self-contained, autonomous (self-governed) machine that needs only occasional instructions from its master to set it about its various tasks. A self-contained robot has its own power system, brain, wheels (or legs or tracks), and manipulating devices such as claws or hands. This robot does not depend on any other mechanism or system to perform its tasks. It’s complete in and of itself.

The other side says that a robot is anything that moves under its own motor power for the purpose of performing tasks that appear to involve intelligence or intent. The mechanism that does the actual task is the robot itself; the support electronics or components may be separate. The link between the robot and its control components might be a wire, a beam of infrared light, or a radio signal.

In the experimental robot from 1969 shown in Figure 2-4, for example, a man sat inside the mechanism and operated it, almost as if driving a car. The purpose of the four-legged “lorry” was not to create a self-contained robot but to further the development of cybernetic anthropomorphous machines. These were otherwise known as cyborgs, a concept further popularized by writer Martin Caidin in his 1972 novel Cyborg (which served as the inspiration for the 70s television series The Six Million Dollar Man).

Taken from ROBOT BUILDER’S BONANZA by GORDON McCOMB. Fourth Edition. 2011. McGraw-Hill.

<https://app.box.com/s/i3yt3g6vsft1e8rz8pgmhoieoxg5lbjx>

2) Read the text again to answer these questions:

a- Why are robots often modelled after humans?

b- Which type of robot is more common, mobile or stationary? Explain the difficulties of building each type?

c- When and how did the notion of telerobotics start?

d- How were the first robots controlled?

e- Are most robots fully autonomous nowadays?

f- What is a teleoperated robot?

g- Compare the present teleoperated robots to the ones of the past.

h- Explain the difference between tethered and self-contained robots.

i- What was the purpose of building the 1969 four-legged lorry?

1. LANGUAGE FOCUS

REVISION:

1. What do the underlined words in the text refer to?

Section 2)

1. 0ne: ……………………………………………..
2. Them: ……………………………………………

Section 3)

1. It…………………………………………………….
2. Which………………………………………………
3. These……………………………………………...

Section 4)

1. It……………………………………………………..
2. Scan the text to find two connectors that show contrast, two that show exemplification, and one that shows similarity:

Contrast: 1- …………………………………………………………

2- …………………………………………………………………..

Exemplification: 1- ………………………………………………..

2- ………………………………………………………………..

Similarity: ………………………………………………………………….

THE INFINITIVE

The infinitive is the verb in its base form (work / install / load / generate). In English it can be preceded by ***to*** (to work / to install / to load / to generate).

Scan the text to find the infinitives in it. Copy the sentences that contain infinitives below. Where in the sentences are the infinitives (initial or middle position)? Then translate the sentences.

Refer to Guia de la Traduccion section 26 page 112.

ING FORMS

Words ending in ING can be translated as a noun, an adjective or a verb in the infinitive form or ending in *ando, endo, iendo.*

Refer to section 25 in Guia de la Traduccion.

Scan the text in this unit for ING forms and list them down under the headings below:

NOUN ADJECTIVE VERB

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