**JAF02 Unit 9 Technology in Use II**

**Task 1 Speaking - Mission to Mars**

In pairs, discuss the history and future of missions to Mars, their purpose, political context, expectations, etc.

**Task 2 Discussing technical requirements**

1. Needs analysis (also called requirement analysis / gap analysis) is finding out what the requirements are for a new project by looking at all the factors that are involved and how they will interact**.**

**In pairs, discuss why the following factors are important in the needs analysis, giving examples of products and installations.**

*budget capacity dimensions layout looks performance regulations timescale*

1. **Claudia, an engineer, is asking Kevin and Dave, the managers of a fun park, about their requirements for a proposed space module simulator called *Mars lander*. Listen to the conversation and note the three main areas Claudia asks about.** (6.1)

1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **How do Claudia and Kevin focus on specific subjects? Complete the following phrases from the conversation using the words below. Listen again and check your answers.**

***concerned regard regarding regards terms***

1. … with \_\_\_\_\_\_\_\_\_\_ to the capacity …
2. … in \_\_\_\_\_\_\_\_\_\_\_\_ of the number of people…
3. … as far as size is \_\_\_\_\_\_\_\_\_\_\_\_ .
4. … And as \_\_\_\_\_\_\_\_\_\_\_ the graphics…
5. … \_\_\_\_\_\_\_\_\_\_\_\_ the schedule …
6. **Write questions using the following prompts and the phrases in ex. c.**
7. dimensions: what / overall size / module?
8. materials: what / bodywork / made of?
9. schedule: when / work / start?
10. power: what / maximum output / need / be?
11. heat resistance: what / temperature / paint / need / withstand?
12. tolerance: what level / precision / you want us / work to?
13. **Claudia goes on to ask about the physical effects the simulator needs to produce. Listen to the conversation and make notes on the following points.** (6.2)
14. Possible variation in simulator movement \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
15. Extent of physical effects required \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
16. Best way to assess physical effects \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
17. **Listen again and explain what is meant by the words and phrases in bold.**

*...****to what extent*** *do you want the experience to be physical?*

***The degree to which*** *it moves can be varied …*

*It´s obviously difficult to* ***quantify*** *something like this…*

*The only way to* ***determine*** *what´s right is to actually sit in a simulator…*

*… you can* ***assess*** *the possibilities.*

1. **Following the meeting, Claudia writes an email to update Rod, an engineering colleague. Read the extract and choose a word or phrase from the exercise above that means the same as the words in bold. Sometimes more than one answer is possible.**

*In order to (1)* ***find out about*** *the simulator´s dynamic capabilities, we looked at the types of effect the simulator should produce, and (2)* ***the amount*** *these physical effects should be felt by passengers. Specifically, the following issues were discussed:*

* *(3)* ***How severely*** *should the module generate vibration, to simulate engine thrust?*
* *(4)* ***How severely*** *should the module generate jolting due to supposed atmospheric turbulence?*
* *(5)* ***How much*** *will passengers be exposed to constant linear G-force, to simulate deceleration?*
* *In order to (6)* ***work out*** *the magnitude of the above parameters, it was decided that the prototype will be equipped with variable controls. This will enable the client to (7)* ***evaluate*** *different levels of severity through trials inside the simulator.*

**Write an introduction and a conclusion to the email above.**

(For more on writing emails, go to: <http://www.wikihow.com/Write-a-Formal-Email>, or <http://www.english-for-techies.net/Q%20&%20A/Writing-emails.pdf> and <http://www2.elc.polyu.edu.hk/cill/eiw/e-mail.htm>)

1. **You are consulting engineers preparing to work with a space agency to design an unmanned landing module. The module, which will carry scientific equipment, is intended to detach from a space ship orbiting Mars and land on the planet. At this stage, this is all you know about the project. In pairs, prepare a list of the main questions you will need to ask at the needs analysis meeting using the following ideas.**

* type of scientific equipment
* size/ weight of equipment
* solidity/ fragility of equipment
* surface conditions at landing site

(adapted from Ibbotson, M. *Cambridge English for Engineering.* CUP, 2008)