**Integrated writing TPO 50**

The article states that, the project of sending humans to Mars would lead to several problems and provides three reasons for support its claim, however the professor believes that, these problems would be solved in different ways, and refutes each of author's reasons.

First, the reading claims that, all of the astronauts require food, water and oxygen but space crafts do not have essential cargo capacity for them, while the professor mentions that, nowadays, the astronauts use the method of hydroponic to solve this problem. According to the professor, hydroponic is a procedure in which astronauts grow plants in the space crafts, and it uses a little space. The professor highlights the points that, by hydroponic, the astronauts would be able to crop food in the spacecrafts, moreover the problem of lacking of water would be solved by waste water recycling. Recycling of waste water releases clean water which is used for drinking. by hydroponic method, oxygen would be released from plants and carbon dioxide in the space craft would be absorbed, and according to the professor people owe hydroponic method because of its benefits.

Second, the essay holds the idea that, Mars mission take several months, and zero- gravity environments of space has several disadvantages for astronauts, such as decreased muscle mass and lower bone density, in contrast, the lecture underlines the fact that, there are numerous astronauts who have spent several months in this situation by using several technics. According to the lecture, one of these technics are regular exercising which decreases muscle mass reduction and taking some vitamins and minerals such as calcium to protect bone density.

Third, the reading says that, space radiation would be so dangerous for astronauts, on the other hand, constructing protecting shields for spaceships add too much weight to the ship, but the professor suggests that, solar radiations are not at the level of danger all the time, and they are active just during several periods. Besides, astronauts can equip space craft to some instruments which monitor solar radiations or they can use small shelter to protect space craft from dangerous radiation. According to the lecture, small shields are so light to add weight to spaceship, and they can be used just when radiation exist until the danger has passed.

**Time: 25 min**