**Integrated Task – TPO 50 Writing**

**Question: Summarize the points made in the lecture, being sure to explain how they cast doubt on specific points made in the reading passage.**

The reading asserts that the project of sending humans to Mars would require solving an array of problems the Moon missions didn’t have to face. The lecturer, however, finds the idea dubious and casts doubt on the reasons proposed by the reading passage.

The author argues that a round-trip to Mars and back is likely to take at least two years, and the cargo capacity of space vehicles is too limited to put on board the needed food, water, and oxygen for two years. Conversely, the lecturer brings up the idea that astronauts use hydroponics that is a practical way to grow plants with the roots in water rather than in soil. This method requires little space, and the astronauts cultivate food crops in the spacecraft. Besides, the hydroponics can recycle wastewater and release it as clean water vapor that would be collected for preparing drinking water. Furthermore, all plants absorb carbon dioxide and release oxygen that can be used for breathing.

Furthermore, the reading passage holds the view that spending a long time in the zero-gravity environment of space has negative effects on the astronauts’ bodies, such as decreased muscle mass and lower bone density. On the contrary, the professor underlines the fact that many astronauts have valuable experiences in spending a long time in the zero-gravity environment due to their previous activities in the space stations. They have understood several techniques to manage the negative effects of the zero-gravity safely by doing regular exercises that prevent muscle mass from decreasing or using several vitamins and calcium to restrict the lowering of bones’ density.

Finally, the reading asserts that astronauts would be exposed to dangerous levels of space radiation in the form of charged particles emitted by the sun on their mission to Mars. In contrast, the speaker dismisses the issue due to the fact that these radiations are not always in dangerous levels. Furthermore, the spacecraft can be equipped with a special instrument that decreases solar radiation’s effect. Another way is to use a small shelter that is a shield against radiation, and it doesn’t add much weight to the ships. When the instruments detect the increase in radiation, astronauts can stay in a small shielded area to pass from danger.

**Words: 373**

**Time: 25’**