Earth Science Assignment (EI): Planetary Mission

Assessment item 2

NAME:

TASK:

NASA administration are planning to send humans to the surface of a solar system planet or moon (excluding Mars and its moons). Your job is to put forward a plan for a scientific mission in the form of a report to NASA.

Word Length: 1200 – 1500 words.

Due date: Monday 26th February, 2018

THE REPORT:

The final report will cover the following areas:

1. Introduction and justification for the mission
2. Overview of the mission plan
3. Environmental conditions of the planet/ moon
4. Method of reaching planet/ moon
5. Procedures/ tests/ sampling to be carried out on mission
6. Technology required (including transport, experimental and vehicular)
7. Evaluation: Problems that may affect the space craft and solutions
8. Evaluation: Problems affecting astronauts and suggested solutions
9. Conclusions
10. Reference list (with 5 annotated sources)

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<thead>
<tr>
<th>Criteria</th>
<th>KCUA</th>
<th>WS</th>
<th>UIS</th>
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<tbody>
<tr>
<td>Grade</td>
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RESEARCH:

You will need to use a varied range of good quality sources of information (books, websites, databases). Make sure you provide a full reference list at the end of your assignment.

Your report must include figures (graphs and diagrams) and tables (data). These should be numbered, have titles and should include in-text referencing e.g.,

Surface temperatures on Mars can reach up to 25°C (Jones, 2015).

Introductory Resource:

http://nssdc.gsfc.nasa.gov/planetary/mars/mars_crew.html

In your report you will need to consider the following points:

Location:

- What planetary body will be your destination?
- What kind of environmental conditions will you be expecting?

Preparation

- What technology will need to be developed? (vehicles, space suits, transportation)
- What kind of training will the astronauts need?
- How will make sure the astronauts will survive the journey?
- What hazards will need to be overcome?

Mission Launch

- You will need to demonstrate and understanding of launch windows and planetary assist methods.
- What will be the design of your transportation? (Material? Shape?)
- What equipment/ resources will the space craft be carrying?

Landing

- How will you reach the surface?
- What will you do when you reach the orbit of the surface of the planetary body?

Surface

- How will you survive in the environment?
- What tests will you be conducting and why?
- What equipment will you need for the tests?
- What will your energy source be on the surface?
- What hazards will you most likely encounter on the surface?

Return Journey

- How will you leave the planet/ moon?
- How will you get back to earth?
- How will you reach the Earth's surface?
### EARTH SCIENCE: SPACE ASSIGNMENT STANDARDS SCHEMA

**NAME: ........................................**

#### KCUA (LETTER GRADE: .................)

<table>
<thead>
<tr>
<th>A</th>
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<tbody>
<tr>
<td>Demonstrates a clear understanding of concepts in depth in most aspects</td>
<td>Demonstrates a clear understanding of concepts in most aspects but not in depth</td>
<td>Demonstrates a broad understanding of concepts in most aspects with few misconceptions</td>
<td>Demonstrates some understanding of concepts in several aspects but with many misconceptions</td>
<td>Demonstrates some understanding of a few concepts</td>
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<tr>
<td>Recognises and explains both straightforward and complex, obvious and less obvious relationships between environmental factors, processes, mission strategies and equipment</td>
<td>Recognises and explains most of the straightforward, obvious and less obvious relationships between environmental factors, processes, mission strategies and equipment</td>
<td>Recognises and explains most of the straightforward, obvious relationships between environmental factors, processes, mission strategies and equipment</td>
<td>Recognises some relationships amongst straightforward concepts of environmental factors, processes, mission strategies and equipment</td>
<td>Demonstrates an understanding that some concepts are interrelated</td>
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<td>Evaluates the relevance and merit of reference material</td>
<td>Evaluates the relevance of information from reference material</td>
<td>Selects some relevant information from reference material</td>
<td>Uses information from reference sources but does not reflect on its relevance and / or merit</td>
<td>Uses some information from one more reference sources</td>
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#### WORKING SCIENTIFICALLY (LETTER GRADE: .................)

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<td>Excellent recognition of problems which require solutions including those which are novel &amp; complex</td>
<td>Good recognition of problems which require solutions, including some with elements of novelty &amp;/or complexity</td>
<td>Recognition of straightforward problems which require solutions</td>
<td>Limited recognition of problems which require solutions</td>
<td>Very limited recognition of problems which require solutions</td>
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<td>Very comprehensive / very thorough recording of mostly up-to-date subject matter</td>
<td>Good record of mostly current subject matter</td>
<td>Adequate and reasonably current record of subject matter</td>
<td>Incomplete and / or obsolete record of subject matter</td>
<td>Very sparse and/or obsolete record of subject matter</td>
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<td>Plans the investigation (mission) procedure, very effectively with solutions to obvious and less obvious problems supported by strong evidence, reasoning and creativity</td>
<td>Good solutions to problems for investigation (mission) procedure supported by good evidence, reasoning and adequate creativity</td>
<td>Offers some solutions to problems for investigation (mission) procedure supported by adequate evidence, reasoning but limited creativity</td>
<td>Offers flawed solutions to problems of investigation (mission) procedure supported by inadequate evidence, reasoning and no creativity</td>
<td>Offers few poor solutions to problems mission procedure without evidence and reasoning</td>
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<td>Very effective choice of mission hardware and materials in response to environmental problems and mission tasks supported by strong evidence, reasoning and creativity</td>
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**Excellent:**

In text referencing, report format, neat and tidy layout, scientific vocabulary, titles, sequenced, no errors in punctuation and spelling, range of resources.

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**Partly correct:**

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## USING INFORMATION SCIENTIFICALLY

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