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**RESEARCH JOURNAL QUESTIONS (17 POINTS POSSIBLE)**

**Directions: Answering the following questions will help you identify the qualities to look for in a planet that may harbor life. All answers can be found in the reading assignments you have been given. Answer every question.**

**Research Questions**

1 What gases does life (as it is currently understood) require? What gases does life produce?

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 2 What is the difference between a terrestrial planet and a Jovian planet?

3 What does it mean for a planet to be in the “habitable zone”?

4 Which planets in our solar system are in (or near) the habitable zone?

5 How does the chemical composition of the terrestrial planet atmospheres differ from the composition of the Jovian planet atmospheres?

6 Why is it important to look at Archean Earth?

**CONTINUED ON BACK**

**Data Analysis Questions Answering the following questions will help you analyze the spectra.**

1 Which gases, if any, are common to all four planet spectra?

2 What does your answer to question 1.) mean in terms of the search for life on other planets?

3 If ozone (O3) is found, is normal oxygen (O2) also present? Does the presence of oxygen automatically mean life?

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4 How does the spectrum of Archean Earth compare to that of present-day Earth? Why is it important to consider the atmosphere of Archean Earth when considering how to look for life on other worlds?

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5 What gases are likely to be present in the atmosphere of a planet harboring life? Is the answer different depending on whether it is primitive life or complex life?

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6 Can the infrared portion of a planetary spectrum be used to look for biomarkers (signs of life)? What spectral features are of interest for this?

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