COMMONLY USED TEST QUESTION WORDS ON APES EXAM

This sheet gives you a background to the testing words used frequently in APES free-response questions.

**Group 1 Words**

Words: IDENTIFY, LIST, INDICATE, STATE

**Goal For Answer:** You will need to simply state in a sentence or short phrase the most direct answer to the question asked. No other explanation of the answer is needed.

**Example Question:** Identify TWO specific steps that a town’s residents and/or businesses could take to reduce the use of electricity in the town.

**Example Answer:**
1) Replace existing refrigerators with more energy efficient models
2) Increase insulation in town buildings within walls of buildings

**Group 2 Words**

Words: DESCRIBE, EXPLAIN, DISCUSS, DEFEND, JUSTIFY, ARGUE, SUPPORT

**Goal For Answer:** First, you will need to state what your answer is, like when you answer questions using Group 1 Words. Then, you must write out your reasoning for that answer. The answer will be a short paragraph or many sentences. The answer needs to document your whole thought process from stating the answer to why you believe it is correct. Back up your answer with your knowledge and data.

**Example Question:** Describe TWO specific steps that a town’s residents and/or businesses could take to reduce the use of electricity in the town.

**Example Answer:**
1) Replace existing refrigerators with more energy efficient models. If you have a refrigerator, you can remove and replace it with one that is more energy efficient. This means that the newer refrigerator will run in the same way, but use less electricity doing the same job. This leads to reduced electricity use overall.
2) Increase insulation in town buildings within walls of buildings. If you increase insulation in the walls, this means the house will retain heat better when heated in winter. It will also keep cooler longer when air conditioned. If heating and cooling effects last longer, you will need to run the heater and air conditioner less. Since those appliances run on electricity, you will also use less of that.

**Group 3 Words**

Words: CALCULATE, ESTIMATE, PROJECT, DETERMINE, COMPUTE, SOLVE

**Goal For Answer:** The question is math-based, so give an exact numerical answer. SHOW ALL WORK!!

**Example Question:** Calculate the cost of fertilizer application for a 60 ha farm if fertilizer is priced $7/ha.

**Example Answer:**

$$60 \text{ ha} \times \frac{7}{\text{ha}} = \$420$$
CATEGORIES OF QUESTIONS ON APES ASSESSMENTS

1) “Environmental” OR “Ecological”
   - If you see a question that asks for something “Environmental” or “Ecological”, then your answer MUST include something about the following:
     - Air
     - Water
     - Land/Soil
     - Living Organisms Other Than Humans
   - Your answer CANNOT mention anything about humans or human impacts

2) “Economic”
   - If you see a question that asks for something “Economic”, then your answer should specifically mention money and how money is specifically gained or lost.
   - You can mention humans in this answer, since economy is a human derived system.

3) “Societal”
   - If you see a question that asks for something “Societal”, then your answer should discuss impacts on human societies and culture. This can include discussion of economy. However, it is not limited to just discussion of money.

Example Questions:
   - Describe 1 environmental benefit of using wind turbines to produce electricity
     - Answer: Wind turbines do not create air pollution. When you create electricity with a wind turbine, no fuel is needed. Therefore there is no fossil fuel burning. So there is no emission of air pollution. So air pollution is not made and the air remains cleaner.

   - Describe 1 economic benefit of using wind turbines to produce electricity
     - Answer: Investment in wind turbines can create jobs. If a community invests in wind turbines, there will be a boom in jobs to community members to help manufacture the wind turbines, install them, and operate them. This will bring money into the local community via these jobs and help boost the local economy.

   - Describe 1 societal benefit of using wind turbines to produce electricity
     - Answer: The land under wind turbines can be used for other purposes. The land under the wind turbines is still useful. So a land owner could use his/her land for multiple purposes. For instance, a rancher can still graze livestock under turbines. This is good in that land is still useful for other purposes while it is also being used to help harness more energy.
EXPERIMENTAL SCIENCE VOCABULARY

These words are often used on the APES exam. They all relate to setting up and performing experiments. You are expected to know these. Here are the words with short definitions:

- **Observation** – the noting of something via your senses; taking in of a phenomenon through your senses
  - Quantitative (Observation) – observation made using a numerical value
  - Qualitative (Observation) – observation made about something that is not numerical
- **Measurement** – the process of obtaining a quantity or quantifying something
- **Hypothesis** – an educated prediction of the outcome of an experiment or situation
  - Null Hypothesis – a hypothesis that predicts there will be no change or no differences in the results between the groups monitored in an experiment
  - Alternate Hypothesis – a hypothesis that predicts some change or differences in the results between the groups monitored in an experiment
- **Infer/Inference** – The process of drawing a conclusion to a set of clues or information; the conclusion of an interpolation of patterns from given data
- **Procedure** – step-by-step outline of how an experiment will be or was performed
- **Control (Group)** – group in an experiment that results of experiment are compared to; control group behaves the same as other groups in an experiment, except that it does not have any treatment of what is being tested for
- **Treatment (Group)** – group in an experiment that performs the task that the experiment is wishing to learn more about or testing on
- **Independent Variable** – the element of the experiment that the experimenter is purposefully changing from group to group or trial to trial
- **Dependent Variable** – the element of the experiment that the experimenter measures, monitors, watches, or quantifies after making changes in each experimental group
- **Field Investigation** – scientific research that is performed in the outdoors and not in a highly controlled lab setting by researchers
- **Controlled Lab Experiment** – scientific research that attempts to control the setting of an experiment to make sure no external conditions will influence results of experiment (unlike the variability of conditions in field investigations)
- **Theory** – a working hypothesis that attempts to explain a phenomenon; it is backed up by experimental data from many sources over time; as more information develops from further experiment, the theory can change (Example: Theory of Natural Selection, Theory of Plate Tectonics)