**APES Quarterly 1 Study Guide-**

*In addition to these questions and key terms be sure to review all chapter study guides*

**Chapter 1**

**Environmental Problems, Their Causes, and Sustainability**

1. Describe what is meant by the phrase “*an environmentally sustainable society*” as

related to the human population.

2. Distinguish between (a) natural capital (b) natural resources (c) natural services

(d) solar capital (e) natural capital degradation.

3. What is the difference between *economic growth* and *economic development*?

Describe **two** basic ways that economic growth can be accomplished.

4. Distinguish between *developed countries* and *developing countries*. Give **three**

key characteristics of each one.

5. Define and give **three** examples of environmental degradation.

6. What is an “*ecological footprint*”? Using specific countries as examples, explain

the difference between the footprint of a developing and developed country.

7. What is “*culture”*? Describe **three** major cultural changes that have occurred

since humans arrived on earth. Why has each change led to more environmental

degradation? What is the *environmental* or *sustainability revolution*?

8. Identify **five** basic causes of the environmental problems we face today.

9. What is “*poverty”*? In what way do (a) poverty or (b) affluence affect the

environment. Explain the problems w efface by not including the harmful

environmental costs in the prices of goods and services.

10. Distinguish between *planetary management*, *stewardship*, and an *environmental*

*world view*.

**Vocabulary Words**

Exponential growth Sustainable yield

Environment Non-renewable resource

Environmental Science Point sources

Environmentalism Non- point sources

Sustainability Conservation

Gross Domestic Product (GDP) Renewable resource

Per capita GDP

Per capita GDP PPP

Resource

**Chapter 2**

**Science, Matter, Energy, and Systems**

1. Distinguish between *inductive reasoning* and *deductive reasoning*. Give an

example of each. Explain why scientific theories and laws are the most

important results of science.

2. What is *energy?* W hat is *energy quality*? Distinguish between *high quality*

*energy* and *low quality energy*. Give an example of each.

3. What is the *2nd Law of Conservation of Energy (1st Law)* and why is it

important in relation to environmental science?

4. What is the *Law of Thermodynamics*? Explain why this law means that we can

never reduce or recycle high quality energy.

5. What is a *feedback loop*? Distinguish between a *positive feedback loop* and a

*negative feedback loop* and give an example of each.

6. What is the difference between a *time delay* and a *synergistic interaction in a*

*system* and give an example of each.

**Vocabulary Word**

Model

Peer review

Paradigm shift

Frontier Science

Natural Radioactive Decay

Nuclear fusion

Nuclear fission

Radioisotope

Chain reaction

Tipping point

**Chapter 3**

**Ecosystems: What are they and how do they work?**

1. Distinguish between *terrestrial biomes* and *aquatic life zones* and give an

example of each. What **three** interconnected factors sustain life on earth?

2. Describe with a diagram, what happens to solar energy as it flows to and fro

from earth. What is the *natural greenhouse effect* and why is it important for

life on earth?

3. Distinguish between *abiotic* and *biotic* components in ecosystems and give

**two** examples of each. What is the *range of tolerance* for a specific abioic

factor- name and describe? Define and give an example of a *limiting factor*.

What is the *limiting factor principle*?

4. What **two** processes sustain ecosystems and the biosphere. How are they

linked? Explain the importance of microbes.

5. What happens to energy as it flows through the food chain and food webs of

an ecosystem.

6. Discuss the difference between *gross primary productivity (GPP)* and *net*

*primary productivity (NPP*) and explain their importance.

7. What is a *biogeochemical cycle* (nutrient cycle)? Describe the unique

properties of the *hydrologic cycle*.

8. Describe the (a) carbon (b)nitrogen (c) phosphorous and (d) sulfur cycles and

describe how human activities are affecting each cycle.

**Vocabulary Words**

Genetic diversity Pyramid of energy flow

Habitat Ecological efficiency

Ecosystem

Biosphere

Troposphere

Stratosphere

Hydrosphere

Geosphere

Trophic level

Autrotrophs

Heterotrophs

Decomposers

Detritivores

Biomass

Biogeochemical cycles

**Chapter 4**

**Biodiversity and Evolution**

1. What are the **four** major components of *biological diversity*? What is the

importance of biodiversity?

2. What is an *endemic species*? Why is it vulnerable to extinction? Distinguish

between *mass extinction* and *background extinction*.

3. What is *species diversity*? Distinguish between *species richness* and species

diversity and give an example of each.

4. Describe the “Theory of Island Biogeography”.

5. What is an “ecological niche”? Distinguish between *generalist species* and

*specialist species* and give an example of each.

6. What are the reasons that the amphibians are vanishing? List some reasons

why we should protect them.

7. Describe the role of a beaver as a foundation species.

8. Give **three** reasons why we should protect sharks from being driven to

extinction.

**Vocabulary Words**

Biological evolution

Natural selection

Adaptive trait

Differential reproduction

Speciation

Geographic isolation

Reproductive isolation

Genetic engineering

Native species

Non-native species

Indicator species

Keystone species

Foundation species