APES -VS- EVERYBODY

APES Unit 9 Study Guide

Ultimate Review Packet (9.1 - 9.3)

9.1 & 9.2 - Stratospheric Ozone Depletion & Reduction of Depletion

a. **Identify** a specific human health consequence of exposure to UV-B and UV-C radiation and **Describe** how stratospheric ozone protects humans from these forms of radiation

b. Draw out the process of UV-B and UV-C radiation driving the formation of ozone and then the breakdown of ozone.

c. Add CFCs to your drawing and illustrate how free chlorine atoms break apart ozone molecules

d. Describe the purpose of the Montreal Protocol

e. Identify the two environmental benefits of transitioning from CFCs to HFOs

9.3 - The Greenhouse Effect

a. **Describe** how greenhouse gasses warm earth's atmosphere

b. Draw a picture of the greenhouse effect, demonstrating how CO_2, CH_f and H_2O warm earth's atmosphere

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APES Unit 9 Ultimate Review Packet (9.3 - 9.5)

9.3 - The Greenhouse Effect (cont.)

c. **Explain** why water is considered a greenhouse gas, but not considered a major contributor to climate change

d. **Define** the term Greenhouse Warming Potential (GWP) and **identify** the two factors that are used to determine the GWP of a given molecule

e. **Explain** how the GWP of methane would be determined.

9.4 - Increase in Greenhouse Gasses

a. **Identify** and **explain** TWO reasons that sea levels rise as global atmospheric temperature increases

b. **Describe** one ecological consequence of sea level rise for coastal ecosystems

c. Describe one economic consequence of sea level rise for coastal communities

d. Describe how global warming may result in an increase in the impacts of infectious disease

9.5 - Global Climate Change

a. **Explain** why Earth has experienced a fairly consistent pattern of global climate change over the past 800,000 years

b. **Identify** TWO pieces of evidence scientists have used to measure historic temperature and CO_2 concentrations of Earth's atmosphere over the past 800,000 years and **describe** how one of these pieces of evidence is used to determine either historic atmospheric temperature or CO_2 level

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APES Unit 9 Ultimate Review Packet (9.5 - 9.6)

9.5 - Global Climate Change (cont.)

c. **Identify** TWO reasons that Earth's poles have warmed more than other regions on Earth and **Explain** one of these factors

d. **Explain** how melting tundra permafrost generates a positive feedback loop that contributes to global warming

e. **Explain** how melting polar ice generates a positive feedback loop that causes more warming

f. **Identify** TWO ecological consequences of rising sea level in coastal regions

g. **Explain** how melting of polar ice sheets can disrupt thermohaline circulation

h. **Explain** how atmospheric circulation in the Hadley Cell has been altered by climate change

i. **Describe** how climate change has destabilized the polar jet stream

9.6 - Ocean Warming

a. **Describe** one way that ocean warming has caused migration of marine organisms

b. Describe how ocean warming has disrupted reproduction of marine organisms

c. Describe the mutualistic relationship between coral and algae

d. **Explain** the process of coral bleaching

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APES Unit 9 Ultimate Review Packet (9.7 - 9.8)

9.7 - Ocean Acidification

a. **Identify** the main cause for ocean acidification

b. Write out the chemical equation that demonstrates the formation of carbonic acid in the ocean

c. Write out the chemical expression that demonstrates how the formation of carbonic acid in the ocean increases the concentration of H^+ ions in ocean water

d. **Explain** how ocean acidification impacts shell-building or exoskeleton-building marine organisms

e. **Identify** the relationship between oceanic CO_2 concentration and ocean pH

f. **Describe** what a lower pH value indicates about the acidity and ion concentration of a solution

9.8 - Invasive Species

a. **Describe** how an invasive species is defined

b. **Identify** TWO characteristics that make a species more likely to become invasive

c. **Identify** the means of introduction and **explain** one ecological impact of a specific invasive species

d. Describe TWO methods humans can use to control the spread of invasive species

e. **Describe** an economic consequence of invasive species

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APES Unit 9 Ultimate Review Packet (9.9 - 9.10)

9.9 - Endangered Species

a. **Identify** TWO characteristics that make a species more likely to become extinct

b. **Describe** TWO environmental or ecological factors that can make a species more likely to become extinct

c. Describe a human action that can reduce the likelihood of a species becoming extinct

d. Describe a piece of legislation that can be used to protect invasive species in the United States

e. Describe an international agreement that can be used to protect invasive species

9.10 - Human Impacts on Biodiversity

a. **Identify** the 6 major causes for declining biodiversity using the acronym HIPPCO
   - H -
   - I -
   - P -
   - P -
   - C -
   - O -

b. **Identify** TWO anthropogenic causes of habitat loss

c. **Describe** how habitat fragmentation occurs and **explain** one consequence it can have for a population

d. **Propose a solution** to reduce the effects of habitat fragmentation

e. **Explain** one reason that human population growth can lead to biodiversity loss

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9.10 - Human Impacts on Biodiversity (continued)

f. **Identify** a specific pollutant and **explain** how it leads to a loss of biodiversity

g. **Identify** and **explain** a specific way in which climate change contributes to a loss of biodiversity

h. **Explain** how overharvesting of a species can decrease biodiversity or cause extinction of the species

i. **Describe** how human food production has caused a decrease in biodiversity

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