**Potential APES FRQs 2018**

**Topic 1: Tar Sands/Oil Sands**

a. Surface oil is mixed with soil and rock. Once extracted and “cooked” with natural gas the resulting product is called \_\_\_\_\_\_\_\_\_\_\_\_.

b. \_\_\_\_\_\_\_\_\_\_\_\_\_ is the country that is the largest producer of oil sands.

c. The Keystone XL Pipeline and Dakota Pipeline serve as a way to transport unrefined oil from oil sands. This is dangerous because putting it through pipes requires high \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_. This has caused a lot of controversy around the pipelines because they are more prone to \_\_\_\_\_\_\_\_\_\_\_.

d. Possible effects of a pipeline disaster include water contamination (it runs above the \_\_\_\_\_\_\_\_\_\_\_\_ Aquifer) and habitat degradation issues (it runs through the sensitive sandhill ecosystem in Nebraska).

**Topic 2: Mercury Deposition**

a. Most mercury emitted in the environment comes from the combustion of \_\_\_\_\_\_\_\_\_, where most of it end up being deposited into the \_\_\_\_\_\_\_\_\_ and has been proven to \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_ through the food chain.

b. Mercury is a known \_\_\_\_\_\_\_\_\_\_\_\_ which affects the nervous system. Mercury also has an effect on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ success of birds.

**Topic 3: Algae Blooms**

a. Primary sources of nutrient loading is from human \_\_\_\_\_\_\_\_\_\_\_\_\_ and animal \_\_\_\_\_\_\_\_\_\_.

b. Eutrophication has a major impact on the balance within the \_\_\_\_\_\_\_\_\_\_\_\_\_ Cycle.

c. The effects of eutrophication can be seen on the \_\_\_\_\_\_\_\_\_\_ Sag Curve and can cause \_\_\_\_\_\_\_\_\_\_, which means that there is little DO left in the water.

**Topic 4: Declining Ice Shields**

a. As the Arctic, Antarctic, and Greenland Ice Sheets have begun thawing, less \_\_\_\_\_\_\_\_\_ radiation is being \_\_\_\_\_\_\_\_\_\_\_\_ back into space.

b. Since the polar regions are becoming darker (from the ice melting away) larger amounts of incoming solar radiation are \_\_\_\_\_\_\_\_\_\_\_, thus heating the earth even more.

**Topic 5: Plastic Pollution in the Ocean**

a. Plastic pollution causes the accumulation of fat-soluble pollutants like \_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_, and PBDEs.

b. Plastic breaks down into smaller fragments that can be \_\_\_\_\_\_\_\_\_\_\_\_ by ocean organisms which can lead to bioaccumulation that will cause \_\_\_\_\_\_\_\_\_\_\_\_\_.

**Topic 6: Plastic Bag Ban and Water Bottle Ban**

a. The problem with plastic bags and water bottles is the \_\_\_\_\_\_\_\_\_\_\_\_\_ of the plastic in the landfill, energy cost, and \_\_\_\_\_\_ dependency.

b. Solutions are \_\_\_\_\_\_\_\_\_\_\_\_\_ alternatives, banning the product, or charging per use.

**Topic 7: Prescription Drugs in Surface Water**

a. Prescription drugs get into water source when humans \_\_\_\_\_\_\_\_.

b. \_\_\_\_\_\_\_\_\_\_\_ treatment plants are not designed to remove prescriptions from waste water.

**Topic 8: Human Population**

a. World population hit \_\_\_\_ billion in 2011.

b. Another big concern with human population growth is an increase in \_\_\_\_\_\_\_\_\_\_, meaning that more people are able to live beyond just basic human need.

c. Remember the formula I= \_\_\_\_\_\_\_\_\_\_\_\_. I=Impact, P=Population Size, A= Affluence, T= Technology

d. Concerns with agriculture in human impact include soil salinization, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, soil degradation, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Solutions include conservation tillage, \_\_\_\_\_\_\_, biocontrols, hydroponics, \_\_\_\_\_\_ crops, and \_\_\_\_\_\_\_ irrigation.

e. Rule of 70!!!

f. #1 strategy to reduce population growth is to empower and educate \_\_\_\_\_\_\_\_\_. Other strategies include reducing \_\_\_\_\_\_\_\_\_ and increasing access to \_\_\_\_\_\_\_\_\_\_\_\_ planning.

g. China has ended the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Topic 10: Biofuels AND Topic 19: Palm Oil**

a. Biofuel is most often \_\_\_\_\_\_\_\_ from corn or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b. \_\_\_\_\_\_\_\_\_\_ Oil is from palm nuts grown in tropical regions. Large areas of land have been \_\_\_\_\_\_\_\_\_\_ for palm plantations.

c. Disadvantages include a large use of water, \_\_\_\_\_\_\_\_\_\_\_\_, and pesticides. The fertilizer use contributes to eutrophication and the “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” in the Gulf of Mexico.

d. Better alternatives include the use of \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_ instead.

e. Massive deforestation has taken place in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for the monocrop plantation farm for palm oil.

f. Often used with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ agriculture that has led to many fires in the area. (Reminder: Surface fires restore \_\_\_\_\_\_\_\_\_ while \_\_\_\_\_\_\_\_\_ fires burn everything and spread quickly.)

g. Soil in Indonesia is poor quality so they’re constantly seeking out more land and excessive \_\_\_\_\_\_\_\_\_\_\_ use.

**Topic 11: Overfishing**

a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is being used to meet the rising demand for protein.

b. One big issue is \_\_\_\_\_\_\_\_\_\_\_ in which unintended organisms are caught during the fishing process.

**Topic 12: Thawing Permafrost**

a. As earth’s temperature rises, the permafrost is beginning to \_\_\_\_\_\_\_\_\_\_\_\_.

b. As permafrost thaws the frozen organic material in it is beginning to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ for the first time in tens of thousands of years.

c. As the organic material decomposes, \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_ are released.

d. Those gases cause even more climate change which makes this situation a \_\_\_\_\_\_\_\_\_\_\_\_\_ feedback loop.

e. Thawing permafrost also affects \_\_\_\_\_\_\_\_\_\_\_\_ routes as roads become impassable.

**Topic 13: Wind Power**

a. Wind spins the \_\_\_\_\_\_\_\_\_\_ which is connected to the generator to produce \_\_\_\_\_\_\_\_\_\_\_\_.

b. A major disadvantage is the risk to \_\_\_\_\_\_\_\_\_\_\_\_\_ as they collide with the blades.

c. Another disadvantage is the risk to \_\_\_\_\_\_ because the decreased \_\_\_\_\_\_\_\_\_\_\_ around the blades causes the capillaries in their lungs to rupture.

**Topic 16: Hurricanes**

a. Major hurricanes have been increasing in severity due to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b. Examples: Hurricane \_\_\_\_\_\_\_\_\_\_\_ in New York and Hurricane \_\_\_\_\_\_\_\_\_\_\_\_ off coast of Mississippi and Louisiana.

c. Hurricane Katrina: \_\_\_\_\_\_\_\_\_\_ failed and major portions of the area \_\_\_\_\_\_\_\_\_\_. This was the poorest hit region and caused massive environmental \_\_\_\_\_\_\_\_\_\_\_\_.

d. Ecological Impacts include \_\_\_\_\_\_\_\_\_\_\_ terrestrial habitats and habitat destruction (loss of biodiversity).

e. \_\_\_\_\_\_\_\_\_\_\_\_ Islands are meant to protect against storm damage but we are degrading these areas for urban development.

**Topic 17: Endocrine Disruptors**

a. Examples include PBDEs and \_\_\_\_\_\_\_\_\_\_\_ retardants (used in furniture), \_\_\_\_\_\_\_\_\_ (used in coolants and old copy paper- now banned), \_\_\_\_\_\_\_\_ (used in plastics).

b. BPA specifically causes human health effects such as \_\_\_\_\_\_\_\_\_\_ disorders, \_\_\_\_\_\_\_\_\_\_, reduced \_\_\_\_\_\_\_\_\_\_\_\_, obesity, and feminization.

c. Pesticides like \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_ have impacted organisms like frogs.

**Topic 18: Climate Change**

a. Caused by increasing greenhouse gas concentration in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b. Major gases include \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

c. Major causes include increased \_\_\_\_\_\_\_\_\_\_\_\_\_\_ use, industrialized agriculture, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

d. Impacts also include a rise in \_\_\_\_\_\_\_\_\_\_\_\_\_ like the West Nile virus that is carried by mosquitoes.

e. Managed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, changing behaviors, \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Capture System, Cap and Trade, \_\_\_\_\_\_\_\_\_\_\_ Climate Talks, and the \_\_\_\_\_\_\_\_\_\_\_\_ Protocol.

f. Related effects include \_\_\_\_\_\_\_\_\_\_\_ rise, \_\_\_\_\_\_\_\_\_\_\_\_\_ expansion, melting land ice, ocean \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and melting of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Topic 20: Drought**

a. Drought is increasing due to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b. \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are most heavily hit by drought.

c. Other examples include Cape Town Water Crisis and Mexico with water shortages.

d. Requires changes in behaviors such as not watering lawns or washing cars. Residents could also be charged extra for \_\_\_\_\_\_\_\_ consumption.

**Topic 21: Flint Water Crisis**

a. \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ found in water supply.

b. Lead is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which affects the nervous system.