

## Unit 7 Exam Preview/ Review Sheet

<p><b>Ag, Pesticides and Energy</b></p> <ul style="list-style-type: none"><li>• <b>Food and Agriculture</b><ul style="list-style-type: none"><li>○ Food and Nutrition</li><li>○ Key Food Sources</li><li>○ Soil as a Renewable Resource</li><li>○ Ways We Use and Abuse Soil</li><li>○ Other Agricultural Resources</li><li>○ New Crops and Genetic Engineering</li><li>○ Sustainable Agriculture</li></ul></li><li>• <b>Pest Control</b><ul style="list-style-type: none"><li>○ Pests and Pesticides</li><li>○ Pesticide Benefits</li><li>○ Pesticide Problems</li><li>○ Alternatives to Current Pesticide Uses</li><li>○ Reducing Pesticide Exposure</li></ul></li></ul> <p><b>Energy Resources and Consumption</b></p> <ul style="list-style-type: none"><li>• <b>Conventional Energy</b><ul style="list-style-type: none"><li>○ What is Energy and Where Do We Get It?</li><li>○ Coal</li><li>○ Oil</li><li>○ Natural Gas</li><li>○ Nuclear Power</li><li>○ Radioactive Waste Management</li><li>○ Changing Fortunes of Nuclear Power</li><li>○ Nuclear Fusion</li><li>○ U.S. Energy Policy</li></ul></li><li>• <b>Sustainable Energy</b><ul style="list-style-type: none"><li>○ Conservation</li><li>○ Tapping Solar Energy</li><li>○ High-Temperature Solar Energy</li><li>○ Fuel Cells</li><li>○ Energy from Biomass</li><li>○ Energy from the Earth's Forces</li><li>○ What is Our Energy Future?</li></ul></li></ul>	<ul style="list-style-type: none"><li>• <b>Read Chapters 15, 16, 22, 23. Complete Questions for Review and Questions for Critical Thinking for each chapter.</b></li><li>• <b>Review STF</b></li></ul>
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### Key Terms:

#### **Ag-Soil**

Layers in soil

- surface litter layer or O horizon
- topsoil layer or A horizon
- subsoil or B horizon
- E horizon (zone of leaching)
- parent rock or parent material or bedrock

Porosity  
Permeability  
Nutrient holding capacity  
(cation exchange capacity)  
humus  
Soil texture- sand, silt,  
clay, loam  
infiltration  
aeration  
leaching  
microbes  
erosion  
weathering (physical and  
chemical)  
run-off  
  
Water logging  
Desertification  
Nomadic grazing  
Shifting agriculture  
Agricultural revolution  
Green revolution

Undernutrition  
Overnutrition  
Malnutrition  
Food security  
Food insecurity  
Famine  
Anemia  
  
Annual plant  
Perennial plant  
Monoculture/  
Monocropping  
polyculture- or polyvarietal  
No-till agriculture  
alley cropping or  
agroforestry  
Economies of scale  
traditional subsistence  
farming  
Industrial farming/  
industrial agriculture  
Sustainable agriculture

Intercropping  
Contour farming/ contour  
plowing  
terracing  
Crop rotation- fallow field  
cover crop  
windbreak  
Inorganic/ industrial  
fertilizer  
Organic fertilizer  
green manure  
animal manure  
compost- vermiculture  
bioaccumulation  
Salinization  
Irrigation  
Organic farming  
permaculture  
buffer zone  
arable land

GMO (Genetically  
modified organism) or GE  
(genetically engineered)  
food

Fisheries  
Fishery collapse  
Bycatch  
Fish farming  
Fish ranching  
Hatcheries  
Aquaculture

ITQ Individual  
Transferable Quota  
  
Purse-seine, long-line, gill  
net, trawling  
  
Marine sanctuaries  
  
Wetlands (ecological  
services)  
  
Mangroves (ecological  
services)

Grazing verse overgrazing  
Soil compaction  
CAFO (Concentrated  
Animal Feeding Operation)

### **Pesticide**

Insecticide  
Herbicide  
Broad-spectrum pesticide  
Selective pesticide  
Persistent pesticide  
Nonpersistent pesticide

Pesticide treadmill  
DDT  
Biomagnification  
FIFRA (Federal Insecticide,  
Fungicide, and Rodenticide Act)  
IPM (Integrated pest management)

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APES students should be able to:

- Explain the different characteristics of soil (texture & chemistry)
- Compare various methods to maintain soil fertility
- Understand how weathering and erosion occur and how they contribute to element cycling and soil formation
- Discuss agricultural practices that cause erosion and those that prevent top soil loss.
- Describe human nutritional requirements
- Explain why nutritional requirements are not met in various parts of the world
- Describe modern, large-scale (industrial) agricultural methods
- Discuss the pros and cons of GMO foods
- Compare and contrast the various methods of raising animals for meat and milk production.
- Discuss the various methods of fertilization
- Compare and contrast the methods of fishing and aquaculture
- Discuss alternative and organic methods of agriculture

**Energy Unit**

- |                             |                                    |                          |
|-----------------------------|------------------------------------|--------------------------|
| ○ geology                   | ○ igneous rock                     | ○ mountaintop removal    |
| ○ lithosphere               | ○ metamorphic rock                 | ○ strip mining           |
| ○ magma                     | ○ volcanic                         | ○ subsurface mining      |
| ○ mantle                    | ○ weathering (chemical & physical) | ○ surface mining         |
| ○ core                      | ○ erosion                          | ○ placer mining/dredging |
| ○ crust                     | ○ mineral resource                 | ○ nanotechnology         |
| ○ plate tectonics           | ○ ore (high grade and low)         | ○ open-pit mining        |
| ○ subduction zone           | ○ depletion time                   | ○ overburden             |
| ○ convergent plate boundary | ○ economic depletion               | ○ smelting               |
| ○ divergent plate boundary  | ○ area strip mining                | ○ spoils/tailings        |
| ○ transform fault           | ○ contour strip mining             | ○ watt                   |
| ○ tsunami                   |                                    | ○ kilowatt (kW)          |
| ○ earthquake                |                                    | ○ natural gas            |
| ○ Richter scale             |                                    | ○ net energy             |
| ○ rock cycle                |                                    | ○ cogeneration           |
| ○ sedimentary rock          |                                    |                          |

- energy conservation
- energy efficiency
- life-cycle cost
- micropower systems
- superinsulated house
- green roof
- turbine
- steam
- generator
- electricity
- coal
- coal gasification
- coal liquefaction
- acid mine drainage
- mercury
- *Peat*
- *Lignite*
- *Bituminous*
- *Anthracite*
- oil/ crude oil
- oil sand/ tar sand (bitumen)
- oil shale/ shale oil
- kerogen
- petrochemicals
- petroleum
- liquefied natural gas (LNG)
- liquefied petroleum gas (LPG)
- breeder nuclear fission reactor
- fissionable isotope
- meltdown
- nuclear energy
- nuclear fission
- nuclear fusion
- radioactive waste
- (high level and low level)
- control rods
- biomass
- incineration
- biofuel (ethanol)
- biodiesel
- synfuels
- synthetic natural gas (SNG)
- geothermal energy
- geothermal heat pump
- dry/wet steam powered
- hydroelectric power plant
- active solar heating system
- passive solar heating system
- photovoltaic cell (solar cell)
- solar collector (power tower)
- wind farm/ wind turbine
- Hydrogen fuel cell
- Hybrid cars
- Electric cars
- Flex fuel cars (ethanol)

### Rock, Minerals and Mining

1. What are tectonic plates?
2. What are the stages of the rock cycle? How do you move from one to the other?
3. What are the different ways of mining?
4. What types of products require mining? What does mining have to do with recycling?
5. What is ore? What is smelting? What are its environmental impacts?
6. What is overburden, tailings and spoil?
7. What are the most concerning environmental impacts of mining?
8. *What is the mining law of 1872? What was the SMRCA?*

### Energy

9. What is net energy?
10. What is the difference between renewable and nonrenewable energy?- examples
11. What are the main uses of energy?
12. *What is a turbine, generator?*
13. Oil: source, use, pros and cons {*crude oil, tar sand, shale oil, pipelines*}
14. Natural Gas: source, use, pros and cons {*butane, methane, propane, fracking*}
15. Coal: source, use, pros and cons {*anthracite, bituminous, lignite, mercury, SO<sub>x</sub>, acid mine drainage, mountaintop removal, black lung, subsurface shaft mining*}
16. Nuclear: source, use, pros and cons {*fission, uranium-235, control rods, Chernobyl, radioactive waste*}
17. Geothermal: source, use, pros and cons {*direct use: geothermal exchange, electricity generation: wet/dry steam system, relationship to plate tectonics?*}
18. Biomass and Biogas: source, use, pros and cons {*ethanol, methanol CH<sub>4</sub>, biodiesel, carbon neutral*}
19. Hydroelectric: source, use, pros and cons {*large scale, small scale, tidal, microhydro*}
20. Wind: source, use, pros and cons {*wind farm*}
21. Solar: source, use, pros and cons {*passive versus active solar; photovoltaic cells, solar water heater, thermal power plants or high temperature heat →electricity ie. power towers, heliostats*}
22. Hydrogen: source, use, pros and cons
23. What are things we can do to be more energy efficient?- in home? Industry?
24. How can the architecture/design of a home/building help its energy efficiency?Transportation?