

**SHORELINE SITE - ENERGY**

**Assume you are part of a Renewable Energy Design Engineer team that has been hired to design a wind farm on this site.**

**E1 (4)** List four environmental and/or social issues you must consider when deciding on the feasibility of installing a wind farm.  
(One point for each correct answer; Four points possible)

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

**E2 (4)** Provide a typical anemometer reading you might take at this site, such as those we took at the review session this week.

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***Any answer between 0.1 and 20.0 is acceptable. Okay if “MPS” or “meters per second” is written next to number.***

**E3 (6)** Wind profiles are created when measurements have been taken over a long period of time. What is the minimum wind speed that Michigan energy companies typically require before investing in a wind site?

- A. Class five winds
- B. Fifteen miles per hour**
- C. Seven miles per hour
- D. A&B above
- E. B & C above

**E4 (4)** During your analysis, factors may be discovered that lead you to reconsider developing this location into a wind energy site. Name two environmental and/or economic reasons you might have for this decision. (Two points for each correct answer)

1. \_\_\_\_\_

2. \_\_\_\_\_

**RIFLE RANGE - ENERGY**

**E5 (6)** What are the top three sources used to generate electricity in Michigan?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

***Desired answers are:***

***Coal***

***Uranium (nuclear is acceptable)***

***Natural gas (gas is acceptable)***

***Also, "fossil fuel" is acceptable if one of the above answers is not given***

**E6 (3)** Industry accounts for what percentage of energy used in the United States?

- A. 15 percent
- B. 21 percent
- C. 33 percent**
- D. 67 percent

**E7 (3)** What is meant by the term Base load power?

- A. The amount of electricity produced at night.
- B. The amount of electricity that must be generated all of the time.**
- C. The amount of electricity that is generated when the temperature is very hot or cold.
- D. The amount of electricity that is stored for later use.

**E8 (3)** Approximately how many kilowatt-hours (kWh) of electricity per month, on average, does a typical Michigan household use?

- A. 150
- B. 400
- C. 700**
- D. 1,000
- E. 1,200

**FARM SITE - ENERGY**

**E9 (3)** Which source of Biomass uses the least amount of energy to produce Biofuel?

- A. Corn & Wheat
- B. Crop residues
- C. Sawdust

**D. Trees & Grasses**

- E. Sea Kelp

**E10 (3)** Some nitrogen oxides . a green-house gas called NOx for short . are produced by nature while others are manmade. The major source of NOx comes from fuels that contain nitrogen. Which is not a source of NOx? (Seven points)

- A. Burning coal
- B. Lightning
- C. Motor vehicles

**D. Plants**

**E11 (3)** Name the form of solar power, created by the uneven heating of the Earth's surface.

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*Desired answer is **Wind***

**E12 (3)** Which is the top Hydropower producing State?

- A. California
- B. New York
- C. Oregon
- D. Tennessee
- E. Washington**

**FARM SITE - ENERGY (Continued)**

**E13 (3)** Which of the following is not a type of Geothermal power plant?

- A. Binary Power Plant
- B. District Steam Plant**
- C. Dry Steam Plant
- D. Flash Steam Plant
- E. Hybrid Power Plant

**E14 (3)** What is the term for, the use of technology that uses less energy for the same function?

- A. Energy conservation
- B. Energy Efficiency**
- C. Energy transport
- D. Energy Dispersal
- E. Energy Modification

**E15 (4)** The ocean can produce which two types of energy?

- A. Hydrogen energy
- B. Mechanical energy**
- C. Solar energy
- D. Thermal energy**

**URBAN SITE - ENERGY**

**E16 (3)** In an average home, what percentage of electricity used to power home electronics, such as small appliances, computers, stereos, TVs, etc.) is consumed while they are turned OFF?

- A. 20 percent
- B. 50 percent
- C. 75 percent**
- D. 95 percent

**E17 (3)** Manufacturing solar cells produces 90% less pollutants than which of the following conventional technologies?

- A. fossil fuel**
- B. hydro generation
- C. nuclear fission
- D. wind energy

**E18 (3)** MPSC refers to the state agency that oversees and regulates public utilities, such as energy, telephone and cable companies and transportation. MPSC stands for:

- A. Michigan Power & Safety Commission
- B. Michigan Public Service Commission**
- C. Midwest Protection & Services Coalition
- D. More People Stay Connected

**E19 (3)** Which of the following is the only method currently used by nuclear plants to generate electricity?

- A. Diffusion plant
- B. Nuclear fusion plant
- C. Nuclear fission plant**
- D. Conversion plant

**URBAN SITE - ENERGY (Continued)**

**E20 (3)** At the current rates of use, we have oil & natural gas reserves to last

- A. 10-20 years
- B. 30-50 years
- C. 60-90 years**
- D. 100-150 years

**E21 (3)** Oil and natural gas are naturally occurring chemicals made of which two Elements?

- A. Carbon & Oxygen
- B. Oxygen & Nitrogen
- C. Carbon & Hydrogen**
- D. Hydrogen & Sulfur

**E22 (2)** Generating electricity from nuclear power produces no air pollution.

- A. True
- B. False**

## AQUATIC SITE - ENERGY

**E23 (3)** Industry accounts for what percentage of energy used in the United States?

- A. 15 percent
- B. 21 percent
- C. 33 percent**
- D. 67 percent

**E24 (3)** Solar radiation and related energy resources including wind and wave power, hydro and biomass make up what percentage of the available renewable energy on Earth?

- A. 25 percent
- B. 38 percent
- C. 52 percent
- D. 99 percent**

**E25 (2)** In the next 20 years, the amount of energy needed is expected to grow faster in southeast Michigan than in the rest of the Lower Peninsula.

- A. True
- B. False**

**E26 (3)** Which of the methods below produce the most electricity after coal?

- A. Geothermal energy
- B. Hydro energy
- C. Natural Gas**
- D. Solar Power
- E. Wind Power

**E27 (3)** Earth receives more energy from the sun in an hour than is used in the entire world in one year.

- A. True**
- B. False

**AQUATIC SITE – ENERGY (Continued)**

**E28 (3)** There are many forms of energy, but they all fall into two categories- Potential or Kinetic. Which of the following is a form of potential energy?

**A. Chemical energy**

B. Radiant energy

C. Solar energy

D. Thermal energy

E. Wind energy

**E29 (3)** Propane and Natural gas are both colorless and odorless. What is the name of the odorant that is added to serve as a warning agent for escaping gas?

A Hydrocarbons

**B. Mercaptan**

C. Petroleum

D. Semicaptans