Team Name _____

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.

_____

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._____

Team Name _____

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

Team Name _____

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 ï a green-house gas called NOx for short ï 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 Earthôs surface.

_____

*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

Team Name _____

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) ñMPSCò 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

Team Name _____

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