Name: _____ Date: _____

Teacher/Class: _____

Energy Sources
Unit Assessment

1. Fossil fuels, such as coal and petroleum, are considered nonrenewable because they take long periods of time to be remade. Where do fossil fuels originally get their energy from?

   A. Earth's gravity
   B. The sun
   C. The tides
   D. Under Earth's surface

2. Alaska has rivers that are the homes to many salmon. These salmon travel upstream each spring to spawn.

   Government officials are planning to construct several large dams on these rivers. Although the dams will create some noise, they will produce much needed electricity for homes and businesses.

   Think of how the dams will affect the salmon's ability to live in the river. Describe several effects that the proposed dams would have on the salmon's ability to live in the river. Explain your answer. (2 Points)

3. What would be a good way to conserve a nonrenewable resource?

   A. Making sure to rotate crops
   B. Recycling the daily paper
   C. Riding a bicycle instead of driving
   D. Using a reservoir to store water

4. What is the difference between a renewable and nonrenewable energy resource? Identify a renewable energy resource and explain why it is renewable. Identify a nonrenewable energy resource and explain why it is nonrenewable. (4 Points)

5. Corn can be used to create Ethanol, a fuel that may power a car. What energy source below does corn belong to if it is used in this way?

A. Hydropower
B. Biomass
C. Geothermal
D. Wind

6. Both coal-burning energy plants and nuclear energy power plants produce unwanted waste products. Which one of the following could be a nuclear waste problem, but not a coal-burning waste problem?

A. Pollution from radioactive wastes
B. Damage caused by strip mining
C. Contamination of water by disease-creating organisms
D. Pollution from acid rain-causing gases

7. Electricity is produced in a hydroelectric plant when moving water turns a turbine.

Which describes this energy transformation from the turning turbine to electricity?

A. kinetic energy into electric energy
B. nuclear energy into electrical energy
C. thermal energy into electric energy
D. chemical energy into electric energy

8. Wind energy is produced from which of the following sources?

A. Evaporation, condensation, precipitation and runoff
B. The force of moving water
C. Uneven heating of Earth's surface by the sun
D. The energy from deep inside the Earth

9. The use of nuclear energy as an energy source has been very controversial over the years. Describe a positive impact that using nuclear energy may have on the environment. Describe a negative impact that using nuclear energy may have on the environment. (2 Points)

10. Which energy source provides most of the transportation needs in the United States?

A. Electricity
B. Biomass
C. Petroleum
D. Propane

11. Human activity can harm the environment, or help it. Which of these activities is the most beneficial to our environment?

A. Burning garbage for fuel
B. Coal burning for fuel
C. Deforestation
D. Strip mining

12. Which of the following is a list of nonrenewable resources?

A. Oil, coal, natural gas
B. Lumber, air, wildlife
C. Water, soil, crops
D. Rocks, trash, carbon

13. The fossil fuels (i.e., oil, coal and natural gas) originally came from which source?

A. Carbon from the air
B. Earth's core
C. Prehistoric plants and animals
D. Prehistoric oceans

14. Which of the following sources of energy did not originally come from buried plants or animals?

A. Coal
B. Petroleum
C. Geothermal
D. Natural Gas

15. Betsy lives in a desert. Heather lives by a river. Chris lives on a windy mountain. Choose two of the people mentioned and explain how each person could harness the renewable energy from where they live. (4 Points)

16. Nuclear power plants are often used today to provide us with energy. All types of power plants affect our environment positively and negatively. Which of the following is an effect of using nuclear energy versus other energy sources?

A. Produces less air pollution
B. Creates holes in the ozone
C. Produces acid rain
D. Creates the greenhouse effect

17. Why is coal considered to be a nonrenewable energy source?

A. Sunlight is the original source of energy for coal.
B. The burning of coal could cause environmental pollution.
C. Once coal is mined, it can take millions of years to be replaced.
D. Coal is abundant, but it is very expensive to mine from underground.

18. Which describes a chemical change that take place during the production of electricity in the coal-fired power plant (Figure 1)?

A. The coal moving along the conveyor belt is a chemical change.
B. The coal burning to give off heat and carbon dioxide gas is a chemical change.
C. The boiling water turning to steam is a chemical change.
D. The steam turning the turbine is a chemical change.

19. Which statement describes why this resource is considered renewable?

A. Heated water turns the turbine. The used water flows upstream back directly into the lake and may be used again right away.
B. Falling water turns the turbine. The used water flows upstream back directly into the lake and may be used again right away.
C. Heated water turns the turbine. The water is returned to the river downstream, so it may continue in the water cycle.
D. Falling water turns the turbine. The water is returned to the river downstream, so it may continue in the water cycle.

20. Which is a major advantage of using energy sources such as sunlight, wind and running water instead of fossil fuels, such as coal and natural gas?

A. Sunlight, wind and running water are much more efficient than fossil fuels.

B. Sunlight, wind and running water are renewable and available indefinitely.
C. Sunlight, wind and running water are much less expensive to use than fossil fuels.
D. Sunlight, wind and running water can be used at any geographical location.

21. The energy of blowing wind can be harnessed to create electricity.

Why is wind considered a renewable energy source?

A. Wind does not cause destruction of the environment.
B. Wind turns the blades of a windmill that creates electricity.
C. Wind provides only a very small amount of electricity to the United States.
D. Wind comes from atmospheric conditions that are available indefinitely.

22. The following steps describe the process of generating electricity by burning coal in a power plant:

1. The coal fire converts liquid water to steam.
2. The steam rotates fanlike blades of a mechanical turbine.
3. The shaft of the turbine spins an electric generator.
4. The electric power is delivered to the consumer over long-distance power lines.

Which energy transformation occurs during this process?

A. Nuclear energy of the steam is converted to thermal energy of the turbine.
B. Mechanical energy from the turbine is converted to electric energy in the generator.
C. Electric energy from the generator is converted to chemical energy in the power lines.
D. Chemical energy from the generator is converted to electric energy in the power lines.

23. Why are fossil fuels called nonrenewable resources?

A. They make waste products.

B. They are buried far underground.
C. They take a very long time to produce.
D. They are more expensive than nuclear fuels.

24. A class is studying electricity and how it is produced in Ohio. The students make the table below to share information about energy sources.

Electricity Production in Ohio, 2002		
Energy Source	Where the Energy Source Comes From	Percentage of Total Electricity Produced From This Source
Biomass	Waste From Paper, Chemical and Food Processing	<0.3%
Coal	Plant Material Compressed Over Millions of Years	90.4%
Hydroelectricity	Falling Water	0.3%
Natural Gas	Gas Wells Associated With Petroleum Deposits	1.2%
Nuclear	Uranium	7.4%
Petroleum	Organic Material Compressed Over Millions of Years	0.3%
Solar	Sunlight	<0.3%
Wind	Movement of Air Resulting From Difference in Pressure	<0.3%

U.S. DOE 2002 data

Which statement identifies a nonrenewable energy source from the table and correctly explains why this source is considered nonrenewable?

A. Biomass is nonrenewable because once the waste material is used up, there is no way to produce additional waste material.
B. Petroleum is nonrenewable because there is a fixed amount of oil underground and new petroleum takes millions of years to form.
C. Solar energy is nonrenewable because there is only one sun in the solar system and there is no replacement when the sun is used up.
D. Wind energy is nonrenewable because the air pressure difference required to produce wind is not available at all times at all locations.

25. Most electric power is generated by burning fossil fuels. A family living in central Ohio uses electric appliances for cooking and air conditioning. They use fuel oil for heating.

What change could this family make to conserve fossil fuels?

A. convert to natural gas as a fuel for cooking
B. switch to the use of less expensive coal for heat
C. lower the temperature setting on the air conditioner
D. install solar roof panels to generate additional electricity