

Student: _____

1. The original source of energy contained in fossil fuels is
 - A. Solar energy.
 - B. Nuclear energy.
 - C. Geothermal energy.
 - D. Seismic energy.
2. At present, most of the energy used in the United States is supplied by
 - A. Hydroelectric plants.
 - B. Fossil fuels.
 - C. Geothermal plants.
 - D. Nuclear power plants.
3. Petroleum consists of a variety of liquid compounds which are accurately referred to as
 - A. Fossil fuels.
 - B. Crude oils.
 - C. Natural gases.
 - D. Hydrocarbons.
4. In a petroleum trap,
 - A. Either oil or gas will be found, but not both.
 - B. The oil is found dissolved in pore water under pressure.
 - C. The oil and gas are found in impermeable rocks.
 - D. Gas and oil may both be found, contained by impermeable rocks above.
5. The United States presently
 - A. Is self sufficient in its oil production and use.
 - B. Imports more than half of the oil it uses.
 - C. Exports more oil than it uses.
 - D. Generates enough oil in refineries to make up for the amount it cannot supply through drilling.
6. The United States imports most of its oil from these countries
 - A. Canada, Mexico, Nigeria and Venezuela.
 - B. Iraq, Iran and Saudi Arabia.
 - C. United Kingdom and Norway.
 - D. Nigeria and Russia.
7. Most oil and natural gas is found in
 - A. Igneous rocks.
 - B. Metamorphic rocks.
 - C. Sedimentary rocks.
 - D. All of the above.
8. Primary oil recovery
 - A. Refers to extraction of oil principally under its own pressure.
 - B. Typically leads to extraction of about 90 percent of the oil in the reservoir.
 - C. Is no longer practiced because it is inefficient.
 - D. All of the choices are correct.
9. Enhanced oil recovery methods include all of the following except
 - A. Deliberate fracturing to increase reservoir porosity.
 - B. Use of gas under pressure to force out more oil.
 - C. Heating the oil to decrease its viscosity.
 - D. Underground mining of oil bearing rock.

10. Enhanced oil recovery methods are necessary because
 - A. Drilling directly into an oil field is often not possible.
 - B. The presence of natural gas makes it impossible to pump liquid petroleum.
 - C. Only about one third of the liquid petroleum within a field can be recovered by initial pumping.
 - D. Increasingly, drilling directly into an oil field is being banned by law.
11. Formation of coal also results in the production of quantities of gases that are rich in
 - A. Ethane.
 - B. Propane.
 - C. Butane.
 - D. Methane.
12. The arguments for drilling in the Alaska National Wildlife Refuge (ANWR) include all of the following except
 - A. ANWR oil will increase U.S. dependence on imported oil.
 - B. Alaskans will stand to benefit economically from oil production.
 - C. There are many acres of land in Alaska already set aside for wilderness protection.
 - D. Technological advances have reduced the ecological impact that oil exploration and production have on an area.
13. Geopressurized natural gas is gas
 - A. Found in pockets in coal mines.
 - B. Dissolved in deep pore waters.
 - C. Under pressure from associated oil.
 - D. Formed at low pressures before a fossil fuel deposit has matured sufficiently to form oil.
14. The two principal sources of artificial oil spills are tanker accidents and
 - A. Refinery accidents.
 - B. Spills from onshore drilling activity.
 - C. Spills from offshore drilling activity.
 - D. Spills from pipelines on land.
15. Which of the following techniques for cleaning up an oil spill has been most successful?
 - A. Steam-cleaning the beaches
 - B. Burning the fuel by setting it afire or using explosives
 - C. Sinking the ship that is the source for the leaking oil
 - D. Seeding the oil with microorganisms or adding limiting nutrients to stimulate natural microorganisms that degrade the oil
16. Which of the following is estimated to be the largest potential fuel resource?
 - A. Oil
 - B. Conventional natural gas
 - C. Gas in gas hydrates
 - D. Coal
17. The first of the fossil fuels to be widely used was
 - A. Coal.
 - B. Oil.
 - C. Natural gas.
 - D. Tar sand.
18. Coal is formed from
 - A. The remains of land plants.
 - B. Graphite under high pressure.
 - C. The remains of marine microorganisms.
 - D. Heavy oils like asphalt.

19. The formation of coal generally requires conditions that are
 - A. Aerobic.
 - B. Anaerobic.
 - C. Adiabatic.
 - D. Anadiabatic.
20. Under suitable conditions, the first combustible product in the formation of coal is
 - A. Lignite.
 - B. Anthracite.
 - C. Bituminous.
 - D. Peat.
21. The highest grade of coal, in terms of heat value per unit weight is
 - A. Peat.
 - B. Anthracite.
 - C. Lignite.
 - D. Bituminous.
22. The process of gasification
 - A. Extracts geopressurized natural gas.
 - B. Converts oil to natural gas.
 - C. Converts coal to gasoline.
 - D. Converts coal to natural gas.
23. The source of sulfur in coal is from all of the following except
 - A. Sulfur in the organic matter itself.
 - B. Pyrite (iron sulfide) in the coal.
 - C. Pyrite in shales associated with the coal.
 - D. Sulfurous fumes from volcanism.
24. Which of the following statements is not true?
 - A. There is sulfur in coal but not in oil or natural gas.
 - B. Much of the highest-quality U.S. coal, in terms of heat value is also high-sulfur coal.
 - C. Sulfur associated with coal can cause acid runoff from strip-mine spoils.
 - D. Scrubbers can remove sulfur gases from coal exhaust, but they consume considerable energy in so doing.
25. Dangers to underground coal miners include all of the following except
 - A. Explosion of natural gas pockets.
 - B. Radioactive radon gas.
 - C. Respiratory illness due to breathing silica.
 - D. Mine collapse.
26. A recent evidence regarding one of the health hazards for miners include
 - A. Pockets of gas that could result in explosion.
 - B. Breathing of dust that could result in black lung disease.
 - C. Mine subsidence.
 - D. Breathing radon that is radioactive which may increase the incidence of cancer.
27. Oil shale
 - A. Is rich in a tarry, asphalt-like oil.
 - B. Contains a waxy solid called kerogen.
 - C. Can be developed by using warm water to extract the oil from the rocks without mining.
 - D. Is very rare in the United States.

28. Each of the following might, in part, be strip-mined except
A. Oil shale.
B. Tar sand.
C. Coal.
D. Geopressurized natural gas.
29. A fossil-fuel source that may either be an immature petroleum deposit or a petroleum deposit that has lost its lighter hydrocarbons is
A. Peat.
B. Tar sand.
C. Oil shale.
D. Lignite.
30. Oil shale and tar sand share each of the following environmental problems except
A. The production of quantities of ash when the fuel is burned.
B. The need for a great deal of water in processing.
C. The need to mine the rock to extract the fuel.
D. The production of large volumes of waste rock from processing.
31. Concern about exploiting these is that disturbing the material by mining may release potent greenhouse gases into the atmosphere.
A. Tar sand
B. Oil shale
C. Gas hydrates
D. Kerogen
32. Canada's principal petroleum resources occur as
A. Oil.
B. Natural gas.
C. Oil shale.
D. Tar sand.
33. Oil extraction may cause
A. Black lung disease.
B. Land subsidence.
C. Acid drainage.
D. All of the choices are correct.
34. Sedimentary rocks that contain a semisolid, tarlike petroleum that is quite thick and is also referred to as tar sands is called
A. Kerogen.
B. Oil shale.
C. Methane hydrate.
D. Bitumen.
35. As sediments rich in marine microorganisms undergo deeper burial, the organic molecules are broken down into simpler and simpler hydrocarbons, progressing from heavy oils to natural gas.
True False
36. Natural oil seeps are a source of pollution and occur when no impermeable rocks trap migrating oil.
True False
37. Coal and oil are termed "nonrenewable" resources because the processes by which they formed are no longer taking place.
True False
38. Deep, hot pore waters containing geopressurized natural gas may themselves be a source of heat energy.
True False

39. Low-permeability sandstones and shales in the United States may contain significant natural gas reserves that could be extracted by artificial fracturing.
True False
40. Exploration techniques are now so efficient that approximately one out of every two exploratory wells drilled strikes a commercially valuable deposit of oil or natural gas.
True False
41. Once an oil spill occurs, it persists, virtually unchanged, for months.
True False
42. Gas hydrates are pools of water saturated with natural gas, found on the deep-sea floor and in polar regions.
True False
43. If global warming destabilizes methane hydrates in polar regions, this might lead to increased greenhouse-effect heating.
True False
44. It is easier to estimate coal reserves than oil reserves because coal is solid and does not migrate.
True False
45. Coal is in limited supply because most of it was formed early in earth's history, billions of years ago, before the atmosphere contained free oxygen; it cannot form today.
True False
46. Ash that is produced as a result of burning of coal contains nontoxic metals and silicate minerals.
True False
47. Research into in situ (underground) coal gasification is in progress, but there is concern about subsidence over the gasified coal beds.
True False
48. Strip mining is as hazardous to the miners as underground mining, because of the danger of acid drainage from strip mines.
True False
49. Except for the problems of sulfur, coal, like oil and natural gas is a very clean fuel, which is why it is popular for commercial uses.
True False
50. Process of liquefaction and gasification results in a cleaner burning coal.
True False
51. Coal strip mines can be difficult to revegetate because of the acidity resulting from weathering of sulfur in spoils.
True False
52. Oil shale is not necessarily shale and does not contain oil.
True False
53. One approach to cleaning up oil spills may be to use microorganisms that "eat" oil.
True False
54. The Exxon Valdez oil spill provided a demonstration of the efficiency of "skimmer" ships, which successfully collected most of the spilled oil.
True False
55. The United States exports some of the oil that it produces.
True False

56. To promote national security, the U.S. Strategic Petroleum Reserve is increased as necessary to maintain a one-year supply of oil.
True False

14 Key

1. The original source of energy contained in fossil fuels is
A. Solar energy.
B. Nuclear energy.
C. Geothermal energy.
D. Seismic energy.

Montgomery - Chapter 14 #1

2. At present, most of the energy used in the United States is supplied by
A. Hydroelectric plants.
B. Fossil fuels.
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Montgomery - Chapter 14 #2

3. Petroleum consists of a variety of liquid compounds which are accurately referred to as
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Montgomery - Chapter 14 #3

4. In a petroleum trap,
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B. The oil is found dissolved in pore water under pressure.
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Montgomery - Chapter 14 #4

5. The United States presently
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Montgomery - Chapter 14 #5

6. The United States imports most of its oil from these countries
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B. Iraq, Iran and Saudi Arabia.
C. United Kingdom and Norway.
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Montgomery - Chapter 14 #6

7. Most oil and natural gas is found in
A. Igneous rocks.
B. Metamorphic rocks.
C. Sedimentary rocks.
D. All of the above.

Montgomery - Chapter 14 #7

8. Primary oil recovery
A. Refers to extraction of oil principally under its own pressure.
B. Typically leads to extraction of about 90 percent of the oil in the reservoir.
C. Is no longer practiced because it is inefficient.
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Montgomery - Chapter 14 #8

9. Enhanced oil recovery methods include all of the following except
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Montgomery - Chapter 14 #9

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 - C.** Only about one third of the liquid petroleum within a field can be recovered by initial pumping.
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Montgomery - Chapter 14 #10

11. Formation of coal also results in the production of quantities of gases that are rich in
- A. Ethane.
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Montgomery - Chapter 14 #11

12. The arguments for drilling in the Alaska National Wildlife Refuge (ANWR) include all of the following except
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Montgomery - Chapter 14 #12

13. Geopressurized natural gas is gas
- A. Found in pockets in coal mines.
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Montgomery - Chapter 14 #13

14. The two principal sources of artificial oil spills are tanker accidents and
- A. Refinery accidents.
 - B. Spills from onshore drilling activity.
 - C.** Spills from offshore drilling activity.
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Montgomery - Chapter 14 #14

15. Which of the following techniques for cleaning up an oil spill has been most successful?
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Montgomery - Chapter 14 #15

16. Which of the following is estimated to be the largest potential fuel resource?
- A. Oil
 - B. Conventional natural gas
 - C.** Gas in gas hydrates
 - D. Coal

Montgomery - Chapter 14 #16

17. The first of the fossil fuels to be widely used was
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Montgomery - Chapter 14 #17

18. Coal is formed from
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Montgomery - Chapter 14 #18

19. The formation of coal generally requires conditions that are
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Montgomery - Chapter 14 #19

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Montgomery - Chapter 14 #20

21. The highest grade of coal, in terms of heat value per unit weight is
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Montgomery - Chapter 14 #21

22. The process of gasification
A. Extracts geopressurized natural gas.
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Montgomery - Chapter 14 #22

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Montgomery - Chapter 14 #23

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Montgomery - Chapter 14 #24

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 - C. Respiratory illness due to breathing silica.**
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Montgomery - Chapter 14 #25

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Montgomery - Chapter 14 #26

27. Oil shale
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 - B. Contains a waxy solid called kerogen.**
 - C. Can be developed by using warm water to extract the oil from the rocks without mining.
 - D. Is very rare in the United States.

Montgomery - Chapter 14 #27

28. Each of the following might, in part, be strip-mined except
- A. Oil shale.
 - B. Tar sand.
 - C. Coal.
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Montgomery - Chapter 14 #28

29. A fossil-fuel source that may either be an immature petroleum deposit or a petroleum deposit that has lost its lighter hydrocarbons is
- A. Peat.
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 - C. Oil shale.
 - D. Lignite.

Montgomery - Chapter 14 #29

30. Oil shale and tar sand share each of the following environmental problems except
- A. The production of quantities of ash when the fuel is burned.**
 - B. The need for a great deal of water in processing.
 - C. The need to mine the rock to extract the fuel.
 - D. The production of large volumes of waste rock from processing.

Montgomery - Chapter 14 #30

31. Concern about exploiting these is that disturbing the material by mining may release potent greenhouse gases into the atmosphere.
- A. Tar sand
 - B. Oil shale
 - C. Gas hydrates**
 - D. Kerogen

Montgomery - Chapter 14 #31

32. Canada's principal petroleum resources occur as
- A. Oil.
 - B. Natural gas.
 - C. Oil shale.
 - D. Tar sand.**

Montgomery - Chapter 14 #32

33. Oil extraction may cause
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35. As sediments rich in marine microorganisms undergo deeper burial, the organic molecules are broken down into simpler and simpler hydrocarbons, progressing from heavy oils to natural gas.
TRUE
36. Natural oil seeps are a source of pollution and occur when no impermeable rocks trap migrating oil.
TRUE
37. Coal and oil are termed "nonrenewable" resources because the processes by which they formed are no longer taking place.
FALSE
38. Deep, hot pore waters containing geopressurized natural gas may themselves be a source of heat energy.
TRUE
39. Low-permeability sandstones and shales in the United States may contain significant natural gas reserves that could be extracted by artificial fracturing.
TRUE
40. Exploration techniques are now so efficient that approximately one out of every two exploratory wells drilled strikes a commercially valuable deposit of oil or natural gas.
FALSE
41. Once an oil spill occurs, it persists, virtually unchanged, for months.
FALSE
42. Gas hydrates are pools of water saturated with natural gas, found on the deep-sea floor and in polar regions.
FALSE
43. If global warming destabilizes methane hydrates in polar regions, this might lead to increased greenhouse-effect heating.
TRUE
44. It is easier to estimate coal reserves than oil reserves because coal is solid and does not migrate.
TRUE

Montgomery - Chapter 14 #33

Montgomery - Chapter 14 #34

Montgomery - Chapter 14 #35

Montgomery - Chapter 14 #36

Montgomery - Chapter 14 #37

Montgomery - Chapter 14 #38

Montgomery - Chapter 14 #39

Montgomery - Chapter 14 #40

Montgomery - Chapter 14 #41

Montgomery - Chapter 14 #42

Montgomery - Chapter 14 #43

Montgomery - Chapter 14 #44

45. Coal is in limited supply because most of it was formed early in earth's history, billions of years ago, before the atmosphere contained free oxygen; it cannot form today.
FALSE
46. Ash that is produced as a result of burning of coal contains nontoxic metals and silicate minerals.
FALSE
47. Research into in situ (underground) coal gasification is in progress, but there is concern about subsidence over the gasified coal beds.
TRUE
48. Strip mining is as hazardous to the miners as underground mining, because of the danger of acid drainage from strip mines.
FALSE
49. Except for the problems of sulfur, coal, like oil and natural gas is a very clean fuel, which is why it is popular for commercial uses.
FALSE
50. Process of liquefaction and gasification results in a cleaner burning coal.
TRUE
51. Coal strip mines can be difficult to revegetate because of the acidity resulting from weathering of sulfur in spoils.
TRUE
52. Oil shale is not necessarily shale and does not contain oil.
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53. One approach to cleaning up oil spills may be to use microorganisms that "eat" oil.
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55. The United States exports some of the oil that it produces.
TRUE
56. To promote national security, the U.S. Strategic Petroleum Reserve is increased as necessary to maintain a one-year supply of oil.
FALSE

Montgomery - Chapter 14 #45

Montgomery - Chapter 14 #46

Montgomery - Chapter 14 #47

Montgomery - Chapter 14 #48

Montgomery - Chapter 14 #49

Montgomery - Chapter 14 #50

Montgomery - Chapter 14 #51

Montgomery - Chapter 14 #52

Montgomery - Chapter 14 #53

Montgomery - Chapter 14 #54

Montgomery - Chapter 14 #55

Montgomery - Chapter 14 #56

14 Summary

<u>Category</u>	<u># of Questions</u>
Montgomery - Chapter 14	56