SLO #3 Environmental Science

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Which of the following is an example of land used as a protected area to preserve the scenery and ecosystems?

a.	Grand Canyon National Park	c.	Great Plains
b.	Great Basin	d.	Rocky Mountains

____ 2. Eliminating invasive plants and replacing them with native plants is one aspect of

a.	urban management.	c.	range improvement.
b.	deforestation.	d.	overgrazing.

____ 3. Which of the following is an example of how people use land?

a.	to harvest wood	c.	to preserve native species
b.	to grow crops	d.	All of the above

____ 4. What can be done to sustain the productivity of rangeland?

a.	Limit herd size.	c.	Leave the land unused for a time.
b.	Eliminate invasive plants.	d.	All of the above

____ 5. Deforestation is an especially serious problem in tropical rain forests because

a.	farmers must repeatedly clear additional forest area to obtain land that can support crops.
b.	it takes so long for the replacement seedlings to reach maturity due to the hot climate.
c.	they are located in developed nations with high per person resource consumption.
d.	the downed trees are left to rot, damaging the soil.

____ 6. Why is it important to preserve farmland?

a.	Farmland provides an important oxygen source for urban areas.
b.	Farmland moderates the temperature of urban areas.
c.	Farmland provides crops and fruits to support urban and rural populations.
d.	All of the above

____ 7. Farmland may become desertified if

a.	domestic animals are allowed to overgraze the land.
b.	too many crops are grown on the land and the land gradually loses its fertility.
c.	as a result of erosion, there is no fertile soil left to grow plants.
d.	All of the above

____ 8. Which of the following best describes why many people in the world go hungry?

a.	Food production has not been increasing as fast as the human population.
b.	There is plenty of food produced for everyone to have more than enough, but it is not distributed equally.
c.	In recent years, the human population has been growing, while food production has been falling.
d.	Global warming has contributed to crop failures.

____ 9. Which of the following actions contributes to soil erosion?

a.	using compost as fertilizer
b.	allowing land to lie fallow
c.	driving farm machinery over fields
d.	all of these practices contribute to soil erosion

____ 10. Which of the following agricultural products requires the least amount of energy?

a.	beef cattle	c.	dairy cows
b.	wheat	d.	Both (b) and (c)

____ 11. One potential way to deal with the problem of seafood overharvesting is by intensifying _____ efforts.

a.	genetic engineering	c.	aquaculture
b.	subsistence farming	d.	integrated pest management

____ 12. DDT is harmful to the environment because it

a.	does not break down quickly into harmless chemicals.
b.	concentrates in the bodies of animals high in the food chain.
c.	causes some birds to lay eggs so thin that they break when the birds sit on them.
d.	All of the above

____ 13. It is true that soil loss caused by wind and water

a.	occurs more slowly in dry areas because the soil sticks together.
b.	is reduced by incorporating strips of vegetation into plowed land.
c.	only slightly exceeds the rate of soil formation on a global basis.
d.	is always the result of dramatic events such as floods and mudslides.

____ 14. No-till farming helps to conserve soil fertility because

a.	remnants of the previous crop are left to slowly decay.
b.	deep ridges are cut across, not down, the slopes of hills.
c.	the ground is carefully turned to mix soil nutrients.
d.	only organic fertilizers and natural pesticides are used.

____ 15. Pest populations that damage plants

a.	breed more slowly in hot climates.
b.	become resistant to pesticides via natural selection.
c.	include only insects and small rodents.
d.	attack wild plants with greater success than crops.

____ 16. Persistent pesticides are those that

a.	require repeated high-dose use for optimum effect.
b.	retain their popularity among U.S. farmers.
c.	become concentrated in organisms high on the food chain.
d.	possess the greatest chemical toxicity.

____ 17. Products obtained from livestock include

a.	leather, wool, eggs, meat, and manure.
b.	cotton, linen, and nylon.
c.	wood and plastic.
d.	All of the above

____ 18. Genetic engineering of food crops

a.	continues to be debated among scientists.
b.	is only used with corn.
c.	must be disclosed on food ingredient labels.
d.	Both (a) and (c)

____ 19. Which of the following is *not* a characteristic of a mineral?

a.	naturally occurring	c.	usually an inorganic solid
b.	atoms in random geometric patterns	d.	orderly internal structure

____ 20. The first step in surface coal mining is

a.	to remove and set aside the soil that covers the area to be mined.
b.	to use heavy equipment to take core samples.
c.	to test to see if quarrying would be more effective.
d.	to make cuts in the coal for easier removal.

____ 21. The layer of impurities on top of molten metal that forms during smelting is called

a.	smelt.	c.	slag.
b.	dredge.	d.	flux.

____ 22. Which of the following is *not* a regulation mining companies must follow?

a.	the Clean Water Act	c.	the Safe Drinking Water Act
b.	the Hazardous Products Act	d.	the Endangered Species Act

____ 23. Reclamation is the process of

a.	removing coal from a subsurface seam.
b.	extracting ore minerals from gangue minerals.
c.	returning land to its original or better condition after mining.
d.	protecting the habitats of local wildlife.

____ 24. Inside the combustion chamber of a coal-fired power plant,

a.	steam is directed against turbine blades and causes the blades to turn.
b.	the turbine sets the generator in motion.
c.	electricity is generated.
d.	burning fossil fuels release energy in the form of heat.

____ 25. Most of the energy consumed in the United States is used for

a.	residential electrical needs.	c.	transportation.
b.	commercial electrical needs.	d.	industrial purposes.

____ 26. Solar energy, or energy from the sun, is contained in

a.	uranium.	c.	fossil fuels.
b.	radioactive waste.	d.	all nonrenewable resources.

____ 27. Which of the following is an advantage of using fossil fuels for energy?

a.	the resulting air pollution	c.	limited quantities
b.	versatility in their uses	d.	toxic by-products

____ 28. Which of the following is an advantage of nuclear energy?

a.	It does not produce solid waste.	c.	It poses no safety risks.
b.	It is cost-efficient.	d.	It does not produce air pollution.

____ 29. The energy in fossil fuels is often converted into

a.	electricity.	c.	uranium.
b.	magnetic fields.	d.	power plants.

Completion
Complete each statement.

30. Most damage to rangeland comes from _____.

31. One of the most important ecosystem services provided by forests is removing _____ from the atmosphere.

32. Deforestation is particularly harmful in tropical rain forests because the soil is _____.

33. The health problem caused by not eating enough necessary nutrients is known as _____.

34. The name for a widespread food shortage that results in many people not having enough food is called a(n) _____.

35. Increases in crop yields during the green revolution resulted in part from the development of new crop _____.

36. Acid mine drainage is contaminated _____ that results when acid dissolves toxic minerals that exist in mine waste.

37. The Clean Water Act and the Safe Drinking Water Act ensure that _____ from mines do not threaten water quality.

38. A major source of pollution when coal is burned is _____.

Short Answer

39. Why is acid mine drainage dangerous?

40. If fossil fuels come from the remains of dead organisms, why are they *not* considered renewable resources?

Problem

41. Look for patterns in the data above. What general statement can be made about the change over time in the percentage of forest cleared in the four countries?

42. Refer to the graph above. During the 1987-88 time period, which country

shows the greatest percentage of forest loss? Explain your answer.

43. In the graph above, which country exhibits the greatest difference in percentage of forest cleared from 1981-85 to 1987-88? Explain your answer using values from the graph.

SLO #3 Environmental Science
Answer Section

MULTIPLE CHOICE

1. ANS: A PTS: 1 DIF: 1 REF: 1
OBJ: 2 STA: 10.LS.19
2. ANS: C PTS: 1 DIF: 1 REF: 3
OBJ: 2 STA: 10.LS.19
3. ANS: D PTS: 1 DIF: 1 REF: 1
OBJ: 2 STA: 10.LS.19
4. ANS: D PTS: 1 DIF: 1 REF: 3
OBJ: 2 STA: 10.LS.19
5. ANS: A PTS: 1 DIF: 1 REF: 3
OBJ: 3 STA: 10.LS.18
6. ANS: D PTS: 1 DIF: 1 REF: 3
OBJ: 1 STA: 10.LS.19
7. ANS: D PTS: 1 DIF: 1 REF: 2
OBJ: 3 STA: 11.ESS.14
8. ANS: A PTS: 1 DIF: 1 REF: 1
OBJ: 3
9. ANS: C PTS: 1 DIF: 1 REF: 2
OBJ: 2
10. ANS: B PTS: 1 DIF: 1 REF: 1
OBJ: 2
11. ANS: C PTS: 1 DIF: 1 REF: 3
OBJ: 2
12. ANS: D PTS: 1 DIF: 1 REF: 2
OBJ: 4 STA: 10.ESS.6| 11.ESS.12
13. ANS: B PTS: 1 DIF: 1 REF: 2
OBJ: 3 STA: 11.ESS.14
14. ANS: A PTS: 1 DIF: 1 REF: 2
OBJ: 3 STA: 11.ESS.14
15. ANS: B PTS: 1 DIF: 1 REF: 2
OBJ: 4 STA: 10.ESS.6| 11.ESS.12
16. ANS: C PTS: 1 DIF: 1 REF: 2
OBJ: 4 STA: 10.ESS.6| 11.ESS.12
17. ANS: A PTS: 1 DIF: 1 REF: 3
OBJ: 3
18. ANS: A PTS: 1 DIF: 1 REF: 2
OBJ: 6 STA: 10.LS.18| 10.LS.28
19. ANS: B PTS: 1 DIF: 1 REF: 1
OBJ: 1
20. ANS: A PTS: 1 DIF: 1 REF: 2
OBJ: 3
21. ANS: C PTS: 1 DIF: 1 REF: 2
OBJ: 5
22. ANS: B PTS: 1 DIF: 1 REF: 3
OBJ: 2
23. ANS: C PTS: 1 DIF: 1 REF: 3
OBJ: 3 STA: 11.LS.11
24. ANS: D PTS: 1 DIF: 1 REF: 1
OBJ: 2 STA: 11.ST.5
25. ANS: D PTS: 1 DIF: 1 REF: 1
OBJ: 3
26. ANS: C PTS: 1 DIF: 1 REF: 1
OBJ: 4 STA: 11.ST.5
27. ANS: B PTS: 1 DIF: 1 REF: 1
OBJ: 5 STA: 11.ST.5
28. ANS: D PTS: 1 DIF: 1 REF: 2
OBJ: 3 STA: 11.ST.5
29. ANS: A PTS: 1 DIF: 1 REF: 1
OBJ: 2 STA: 11.ST.5

COMPLETION

30. ANS: overgrazing

PTS: 1 DIF: 2 REF: 3 OBJ: 2
STA: 10.LS.19

31. ANS: carbon dioxide

PTS: 1 DIF: 2 REF: 1 OBJ: 2
STA: 10.LS.19

32. ANS: thin

PTS: 1 DIF: 2 REF: 3 OBJ: 3
STA: 10.LS.18

33. ANS: malnutrition

PTS: 1 DIF: 2 REF: 1 OBJ: 1

34. ANS: famine

PTS: 1 DIF: 2 REF: 1 OBJ: 3

35. ANS: varieties

PTS: 1 DIF: 2 REF: 1 OBJ: 4

36. ANS: water

PTS: 1 DIF: 2 REF: 3 OBJ: 1
STA: 10.ESS.5| 11.ESS.11| 11.ST.2

37. ANS: contaminants

PTS: 1 DIF: 2 REF: 3 OBJ: 2

38. ANS: sulfur

PTS: 1 DIF: 2 REF: 1 OBJ: 5
STA: 11.ST.5

SHORT ANSWER

39. ANS:
The reaction of oxygen with sulfur in water that seeps through mine waste can dissolve metals and other toxic substances and carry them into the watershed, where they harm aquatic life and contaminate drinking water.

PTS: 1 DIF: 3 REF: 3 OBJ: 1
STA: 10.ESS.5| 11.ESS.11| 11.ST.2

40. ANS:
It takes millions of years for fossil fuels to form. At the rate we are now using them, they will be used up much faster than they can be replaced.

PTS: 1 DIF: 3 REF: 1 OBJ: 5
STA: 11.ST.5

PROBLEM

41. ANS:
The percentage of forest cleared increased in all countries from 1981-85 to 1987-88.

PTS: 1 DIF: 3 REF: 3 OBJ: 3
STA: 10.LS.18

42. ANS:
During 1987-88, Costa Rica lost the largest percentage (7.7 percent) of forest.

PTS: 1 DIF: 3 REF: 3 OBJ: 3
STA: 10.LS.18

43. ANS:
Visual inspection narrows the choice to India or Costa Rica; India exhibits the greater increase in percentage of forest cleared over time (3.85 percent versus 3.7 percent for Costa Rica).

PTS: 1 DIF: 3 REF: 3 OBJ: 3
STA: 10.LS.18