



HOUSTON CAMPUS

SCI 210-ENVIRONMENTAL SCIENCE

FINAL EXAM

Name: _____

Date: _____

Please Read each question carefully select the best answer. Shade in your Answer on the Scantron.

- 1) The most recent success in managing the commercial fishing of eastern Pacific halibut is based on limiting the
 - A) number of fishing poles on each vessel.
 - B) size of the nets used to catch the fish.
 - C) total amount of fish each vessel can keep in a season.
 - D) amount of time each vessel is able to fish in a season.

- 2) The annual total allowable catch of the entire eastern Pacific halibut fishery is based upon
 - A) an estimation of the total eastern Pacific halibut population.
 - B) the number of fishing vessels that are used in a season.
 - C) the price of halibut in the commercial marketplace.
 - D) the size of the population of halibut prey available in the ecosystem.

- 3) Which of the following is an example of a natural good from an ecosystem?
 - A) pollination
 - B) eastern Pacific halibut
 - C) control of pest populations
 - D) carbon sequestration

- 4) At the mouth of the Mississippi River in Louisiana, the loss of coastal wetlands due to human activities contributed to the severity of storm damage caused by recent and severe hurricanes. This loss of coastal wetlands therefore represents a
 - A) loss of natural goods.
 - B) loss of natural services.
 - C) long term regional benefit to humans.
 - D) long term economic benefit to humans.

- 5) The introduction of exotic species and conversion of forests into grasslands are ecosystem changes that are mainly the result of
- A) global climate change.
 - B) increased frequency of wildfires in the past 500 years.
 - C) human activities.
 - D) the movement of continents by plate tectonics.
- 6) The ability of an ecosystem to replenish itself leads to
- A) sustainability.
 - B) decreasing consumptive use.
 - C) the conversion of ecosystem capital from one form to another.
 - D) increasing natural resources but declining ecosystem capital.
- 7) In general, as income levels rise, dependence on wild income
- A) increases and consumptive use increases.
 - B) increases but consumptive use decreases.
 - C) falls but consumptive use increases.
 - D) falls and consumptive use decreases.
- 8) Efforts to limit global deforestation should be concentrated
- A) in the northern hemisphere.
 - B) in the developing regions of the world.
 - C) wherever there is the greatest concentration of people.
 - D) in regions with the highest production of agricultural crops.
- 9) In many parts of the world, human activities are causing the depletion of water in rivers and lakes. In those regions, which of the following would most likely help?
- A) construct desalination plants to generate drinking water
 - B) switch to windmills and solar panels to generate electricity
 - C) switch to agricultural products that require less water
 - D) increase the use of railways to move agricultural products and coal
- 10) Which of the following is more related to water quality than water quantity?
- A) construction of dams
 - B) sewage treatment facilities
 - C) crop irrigation
 - D) depletion of aquifers
- 11) The decline of the polar ice caps because of increasing temperatures at the poles will
- A) increase the amount of fresh water available for human use.
 - B) decrease the largest reserve of fresh water on Earth.
 - C) increase the amount of fresh water available in aquifers.
 - D) decrease global sea levels.

- 12) Water in the oceans may become fresh water available to humans through the processes of
- A) evaporation and condensation.
 - B) transpiration and precipitation.
 - C) precipitation and infiltration.
 - D) condensation and infiltration.
- 13) The largest reserves of fresh water on Earth are found in
- A) lakes and wetlands.
 - B) rivers and groundwater.
 - C) aquifers.
 - D) polar ice caps and glaciers.
- 14) In the United States, we expect that rain shadows most frequently occur on
- A) the leeward, east side of mountain ranges.
 - B) the windy, west side of mountain ranges.
 - C) the northern slopes of mountains, which receive less sunlight.
 - D) the southern slopes of mountains, which receive more sunlight.
- 15) Which one of the following is fed by groundwater and often drained by seeps or springs?
- A) lakes
 - B) aquifers
 - C) rivers
 - D) watersheds
- 16) Gutters and storm sewers in a city are most concerned with the
- A) evapotranspiration loop.
 - B) surface runoff loop.
 - C) precipitation loop.
 - D) groundwater loop.
- 17) Which one of the following loops is least susceptible to pollution?
- A) evapotranspiration loop.
 - B) surface runoff loop.
 - C) precipitation loop.
 - D) groundwater loop.
- 18) The impact of global warming on the water cycle is expected to produce
- A) more precipitation.
 - B) fewer droughts.
 - C) fewer hurricanes.
 - D) greater agricultural productivity in currently water-stressed regions.

- 19) Most plants do best in soils with a pH that is
- A) below 2.
 - B) between 6-8.
 - C) between 8-10.
 - D) above 10.
- 20) Silts and loams are the best soil textures because they have
- A) only moderate limiting factors.
 - B) moderate infiltration but low aeration.
 - C) moderate aeration but low infiltration.
 - D) only poor infiltration and aeration.
- 21) Agricultural sustainability depends upon an understanding and proper management of the cornerstone of food production,
- A) irrigation systems.
 - B) agricultural soils.
 - C) the generation of new plant hybrids using genetic engineering.
 - D) the agricultural technology necessary to plow, plant, and harvest.
- 22) Within soil, a natural cycle of
- A) decomposers break down detritus to release nutrients used by producers.
 - B) detritus breaks down decomposers to release nutrients used by producers.
 - C) decomposers break down nutrients to release detritus used by producers.
 - D) decomposers break down detritus to release nutrients used by consumers.
- 23) Based upon soil particle size, the largest to smallest are
- A) sand, silt, and clay.
 - B) sand, clay, and silt.
 - C) clay, sand, and silt.
 - D) silt, sand, and clay.
- 24) Which one of the following soil types will hold the most water? The most water would be held by a soil consisting of equal masses of
- A) sand and silt.
 - B) clay and sand.
 - C) silt and clay.
 - D) small stones and sand.
- 25) Soils with the greatest water-holding capacity tend to have the
- A) lowest aeration and lowest workability.
 - B) lowest nutrient-holding capacity and highest workability.
 - C) highest water infiltration and highest workability.
 - D) highest aeration and lowest workability.

- 26) Which one of the following soil horizons is least likely to be interacting directly with living organisms?
- A) A horizon
 - B) O horizon
 - C) E horizon
 - D) C horizon
- 27) Detritus feeders and decomposers are most likely found in the
- A) E horizon.
 - B) A horizon.
 - C) B horizon.
 - D) C horizon.
- 28) Severe wildfires followed by heavy rains have significantly eroded the soil of a formerly forested region. Which one of the following horizons is most likely intact with little disturbance?
- A) A horizon
 - B) O horizon
 - C) E horizon
 - D) C horizon
- 29) Which one of the following would be best suited for planting crops such as corn or wheat?
- A) an irrigated aridisol
 - B) a fertilized alfisol
 - C) a plowed oxisol
 - D) an irrigated gelisol
- 30) Most plants acquire their minerals from
- A) the recycling of nutrients from detritus.
 - B) the precipitation of minerals from rainfall.
 - C) the weathering of rock.
 - D) dust storms that transport minerals into a region.
- 31) Which of the following types of pollution became much more common in the 20th century?
- A) large-scale pollution in developing countries
 - B) small-scale regional pollution in developing countries
 - C) small-scale regional pollution in developed countries
 - D) large-scale pollution in developed countries
- 32) Isolated viral outbreaks can quickly become global threats if the virus is easily
- A) transferred between infected animals and people.
 - B) transferred between people who then travel widely while infected.
 - C) transferred between people who then quickly get ill and do not travel.
 - D) transferred from infected people to people already ill with other diseases.

- 33) The greatest public health concerns about the H5N1 bird flu virus is that it will
- A) be spread from one bird to another.
 - B) be spread from birds to people.
 - C) spread out of the country of Australia.
 - D) spread from person to person.
- 34) If people cannot easily spread bird flu from person to person, how might bird flu virus spread in the world?
- A) vaccines against bird flu might spread the disease all over the world
 - B) antibiotics against bird flu will stop working
 - C) migrating birds might spread the flu widely
 - D) hunters shooting the birds and eating the meat might be infected
- 35) When specifically considering human health, the environment of a hospital nurse would include
- A) latex gloves.
 - B) air quality in the hospital.
 - C) bacterial infections.
 - D) All of the choices are correct.
- 36) People suffering from AIDS have a weakened immune system. Because of their disease, AIDS patients are
- A) more vulnerable to the risk of nitrogen in the air.
 - B) less vulnerable to the risk of bacteria in the air.
 - C) more vulnerable to bacteria, which are less of a risk to healthy people.
 - D) less vulnerable to any type of fungal, bacterial, or viral infection.
- 37) In the winter in North America, the common cold often shows
- A) high morbidity but low mortality.
 - B) high morbidity and high mortality.
 - C) low morbidity but high mortality.
 - D) low morbidity and low mortality.
- 38) The Centers for Disease Control employs many people who study epidemiology. These people might be interested in
- A) identifying new types of infectious disease.
 - B) the prevention of infectious disease.
 - C) the worldwide distribution of infectious disease.
 - D) identifying, tracking the spread of, and preventing infectious disease.
- 39) Which of the following is a good example of a cultural hazard to public health?
- A) During an earthquake in Japan, people are killed by falling pieces of a building.
 - B) Air pollution near an oil refinery releases known carcinogens into the air.
 - C) People living in southern Africa face some of the highest risks of developing tuberculosis.
 - D) Eating a high-fat diet and engaging in little exercise, a man increasingly becomes obese.

- 40) Which of the following is a good example of a physical hazard to public health?
- A) In much of the United States, mosquitoes are known to transmit West Nile Virus to people.
 - B) The use of condoms is known to reduce the risk of most sexually transmitted diseases.
 - C) A tornado destroys 23 homes and kills two people when their home collapses.
 - D) Levels of mercury in some lakes result in dangerous levels in the meat of fish.
- 41) Which of the following activities is most directly related to the dead zones in the Gulf of Mexico just west of the Mississippi River?
- A) extensive shrimp fishing
 - B) farming in the Midwest
 - C) burning coal to generate electricity in the Midwest
 - D) barge traffic on the Mississippi River
- 42) In the regions of the dead zone in the Gulf of Mexico just west of the Mississippi River, oxygen levels are
- A) highest at the bottom of the ocean, where the algae do not get enough sunlight to survive.
 - B) highest at middle ocean depths, where plants produce the most oxygen.
 - C) highest at the ocean surface, away from oxygen depleting bacteria.
 - D) lowest at the ocean surface, where fertilizers bind to and remove the oxygen.
- 43) When cities dumped sewage into natural waterways with limited capacity for dilution,
- A) oxygen levels were severely lowered and most aquatic life died.
 - B) the extra organic matter fertilized the region, which quickly filled in with new plants.
 - C) the extra organic matter created fertile areas that attracted wildlife including migratory birds.
 - D) bacterial growth greatly increased and the sewage was safely recycled into soil.
- 44) The best way to reduce the pollution of agricultural fertilizer runoff from farm fields is
- A) to treat the water before it reaches streams or rivers.
 - B) reduce the amount fertilizer leaving the farm fields.
 - C) add chemicals into the rivers and streams that neutralize the fertilizers.
 - D) raise crops in the rivers and streams that use the fertilizers.
- 45) In 2007, heavy rains contributed to an outbreak of cholera in children living in war-torn Iraq. What was the likely cause of the spread of this disease?
- A) pollution of waterways by raw sewage
 - B) outbreaks of mosquitoes
 - C) lack of protection from the rain caused the children to be very cold
 - D) rain-soaked roads prevented the distribution of much-needed food supplies
- 46) Water that comes up positive after fecal coliform testing indicates health risks most commonly associated with
- A) infection by *E. coli*.
 - B) heavy metals and toxic organic molecules.
 - C) radon and other radioactive materials.
 - D) a variety of pathogens in human sewage.

- 47) The trickling-filter system and the activated-sludge system both require
- A) high levels of oxygen.
 - B) high levels of carbon dioxide.
 - C) the addition of large amounts of chlorine.
 - D) the addition of large amounts of ammonia.
- 48) The solid-waste crisis of the 1970s and 1980s was mostly about the
- A) sanitary treatment of sewage from cities and towns.
 - B) safe storage of radioactive wastes.
 - C) removal of topsoil contaminated by chemical spills.
 - D) disposal of household and commercial garbage.
- 49) Compare the amount of municipal solid waste (MSW) generated per person in 2007 to 1960. If we remove the portion that could be recycled from the 2007 average, how would the remainder compare to the average per person MSW in 1960? The average per person MSW in 2007 would be
- A) about half that generated per person in 1960.
 - B) about the same as that generated per person in 1960.
 - C) about 10% more than that generated per person in 1960.
 - D) more than double that generated per person in 1960.
- 50) Using a natural ravine as a site for a landfill will most likely cause problems related to
- A) settling.
 - B) methane production.
 - C) incomplete decomposition.
 - D) contamination of natural waterways.
- 51) More than 450 landfills in the United States now use biogas to
- A) generate electricity and heat homes.
 - B) produce gasoline and oil products.
 - C) grow vegetables and other commercially raised plants.
 - D) promote the decomposition of the wastes buried in the landfills.
- 52) Biogas is mostly produced in landfills
- A) by the decomposition of organic materials.
 - B) by the release of compressed gases from aerosol containers.
 - C) by the evaporation of the different fluids draining from the buried waste.
 - D) when solid materials melt into fluids and evaporate.
- 53) According to EPA requirements for new landfills, leachate from the landfill must be
- A) collected in a percolating system and treated as necessary.
 - B) collected into pools at the edge of the landfill where it can evaporate.
 - C) absorbed by materials such as paper products added as the landfill is formed.
 - D) contained within the landfill using a system of plastic liners that prevent its escape.

54) The problems of where to locate new landfills has

- A) increased transportation costs.
- B) reduced the use of incinerators.
- C) reduced the amount of recycling.
- D) increased the total amount of MSW.

55) You have a bicycle accident. Although you are OK, the bike is a mess. The rear wheel is bent, it will need a new chain, and the front tire is punctured. The estimated cost of repair is about \$ 100. You can buy a new bike for about \$ 120. What is the most environmentally friendly option?

- A) repair the bike
- B) buy a new bike and toss the old one
- C) just drive your car instead
- D) toss the old bike and buy a cheap used one at a garage sale

