



Chapter 5

A. P. Environmental Science Practice Test #2

On your exam you may encounter multiple-choice questions that include graphs, diagrams, data, matching etc. The following practice test includes examples of this type of question; they will be incorporated into the multiple-choice section of 100 questions. The first 50 sample questions are of this type. Use the answer sheet to mark your answers and the answer key to check your answers, and review the concepts that you missed. USE THE ANSWER SHEET IN THE APPENDIX AT THE BACK OF YOUR STUDY GUIDE! Good luck!

Use the terms below to answer questions 1-4: a) population b) ecosystem c) species d) biome

1. All the members of a particular organism that interact and produce fertile offspring.
2. A defined area that includes the abiotic and biotic components of that specific region.
3. A very large area where the temperature, soil and rainfall are similar.
4. All members of a particular organism in a given area.

For questions 5-8 choose the most appropriate trophic level:

a) primary consumers b) secondary consumers c) autotrophs d) secondary carnivores

5. Level one
6. Level two
7. Level three
8. Level four

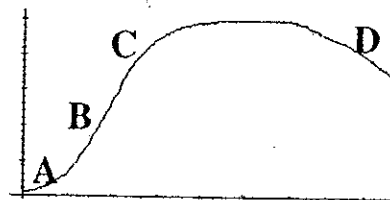
For questions 9-14, select the biome that best describes the below descriptions: (you may use some choices more than once).

a) tropical rain forest b) coniferous forest c) grasslands d) deserts e) temperate forest

9. Hot days, cool nights, thorny bushes, rodents and lizards
10. Seasonal rainfall (10-60 inches), frequent fires
11. Large grazing mammals
12. 28 degrees C average temperature, very high diversity, soil poor in nutrients
13. Seasonal weather, broad-leaved deciduous trees, Western and Central Europe, Eastern Asia, Eastern North America
14. Seasonal weather, evergreen trees, important nesting area for neotropical birds

Use the letters on the graph to answer questions 15-19:

15. Environmental resistance is greater than biotic potential
16. Occurs if an exotic species populates a new ecosystem
17. Lag phase
18. Represents the carrying capacity
19. Population held in balance by environmental resistance





Certain organisms are able to adapt to changing environmental conditions. If all organisms were grouped into two categories, a) vulnerable species and b) highly adaptive species, then select the factors below that would pertain to each. Use the choices a) vulnerable or b) highly adaptive species to match each question 20-24.

20. wide distribution
21. small size
22. long generation time
23. limited genetic variation
24. ability to migrate

Use the population histograms below to answer questions 25-28.

25. Diagram A represents:

- a. the world population projection
- b. the age structure in a developing country
- c. the age structure in a developed country
- d. age structure of India
- e. the population of a developing country that is changing into a developed country

Diagram A

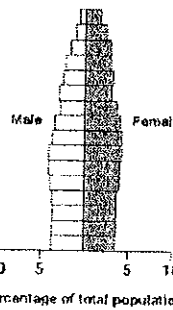
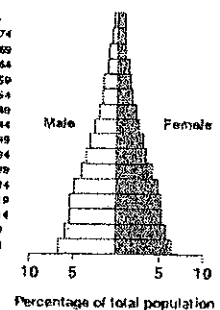


Diagram B



26. Diagram B represents:

- a. the world population projection
- b. the age structure in a developing country
- c. the age structure in a developed country
- d. age structure of India
- e. the population of a developing country that probably will be a developed country in the future

27. Referring to Diagram B, in 25 years:

- a. there will be a large number of elderly people
- b. there will be a small number of elderly people trends with only one graph
- c. there will be a large number of new borns
- d. it is impossible to determine which population is rapidly expanding
- e. there will be the greatest number of middle age people

28. Referring to Diagram B, in 25 years:

- a. there will be a decrease in the population
- b. there will be a decrease only in the younger population
- c. the population is expanding and represents a typical developing country
- d. there will be little to no change in the population
- e. it is impossible to determine population trends with only one graph



Refer to the chart below to answer questions 29-32

29. Considering the available resources in Eastern Europe, which technology would you recommend to generate electricity?

- natural gas
- petroleum
- coal
- nuclear fusion
- nuclear fission

	Petroleum (billions of barrels)	Natural Gas (trillion ft ³)	Coal (billion tons)
North America	75.7	291.4	285.2
South and Central America	89.5	219.1	23.8
Western Europe	18.9	161.5	99.7
Eastern Europe & Former USSR	58.9	1,999.4	288.4
Middle East	673.6	1,749.5	0.2
Africa	75.4	361.1	67.7
Far East and Oceania	43	359.6	322.3
World Use (1998)	26.6	83	5.04

30. Since one billion barrels of petroleum yields 5.7×10^{15} BTU's or 5.7 quadrillion BTU's, then how many quadrillion BTU's could be used in the Far East and Oceania before the supply runs out?

- 245.10 quadrillion BTU's
- 2451.00 quadrillion BTU's
- 2049.72 quadrillion BTU's
- 204972.00 quadrillion BTU's
- 724.90 quadrillion BTU's

31. Which country has the largest supply of fossil fuels?

- North America
- Western Europe
- Middle East
- Africa
- Eastern Europe and former USSR

32. Which country has the smallest supply of fossil fuels?

- North America
- Far East and Oceania
- Western Europe
- South and Central America
- Africa

For questions 33-37 match the environmental incidence with the proper place that it occurred (you may use some choices more than once).

a) Chernobyl, Ukraine b) Ogalla Aquifer c) 3 Mile Island d) Cuyahoga River

- The largest underground water deposit.
- Partial meltdown due to human and equipment errors.
- Over 135,000 people were evacuated.
- The worst nuclear power accident.
- Due to excessive dumping of chemicals, this body of water caught on fire.



38. The major emphasis of the Cairo Conference was to:
- Address the world's population growth concerns
 - Draft a treaty to ban whaling worldwide
 - Discusses the reduction of Greenhouse gases
 - Reduce the use of DDT worldwide
 - Sign a treaty that reduces air pollution
39. A preying mantis would hold what trophic level of the food chain?
- First
 - Second
 - Third
 - Fourth
 - Top
40. The path of primary and secondary sewage treatment follows in which order?
- raw sewage, primary clarifier, aeration tank, secondary clarifier, disinfection, grit chamber and release
 - raw sewage, primary clarifier, grit chamber, aeration tank, secondary clarifier, disinfection and release
 - raw sewage, grit chamber, primary clarifier, aeration tank, secondary clarifier, disinfection and release
 - raw sewage, grit chamber, primary clarifier, secondary clarifier, aeration tank, disinfection and release
 - raw sewage, grit chamber, disinfection, primary clarifier, aeration tank, secondary clarifier and release
41. Biodiversity shows the greatest in which biome?
- Temperate rain forest
 - Desert
 - Coral reefs
 - Taiga
 - Grasslands
42. The Chernobyl incidence that occurred on April 29, 1986, can be best described as:
- A complete meltdown of a nuclear reactor caused by human error
 - A partial meltdown caused by too much coolant water escaping into the atmosphere
 - An example of how redundancy issued to prevent nuclear accidents
 - How safety features of nuclear reactors can prevent serious radioactive fallout
 - A problem that exists with most nuclear reactors



43. The flow diagram of a typical activated sludge sewage treatment facility can be best followed by:
- Removal of particulate organic materials...Removal of debris and girt...Removal of colloidal and dissolved material...Disinfection
 - Removal of debris and girt...Removal of particulate organic materials.....Removal of colloidal and dissolved material...Disinfection
 - Disinfection...Removal of particulate organic materials...Removal of debris and girt...Removal of colloidal and dissolved material
 - Removal of organic materials...Removal of debris and girt... Disinfection ...Removal of colloidal and dissolved material
 - Removal of colloidal and dissolved ...Removal of organic materials...Removal of debris and girt... material...Disinfection
44. One of the proven ways to curtail urban blight is to:
- provide a means to give residents ownership in their homes and within the community
 - use government funds to build more housing developments to encourage growth
 - give resident a large tax credit or large sums of money to buy goods and services
 - encourage volunteers to repair the city's infrastructure
 - make new policy's that prevent urban blight from happening in the first place
45. To be assimilated by higher plants, nitrogen must be present as _____ or _____ ions:
- nitrogen, nitrite
 - ammonium, nitrite
 - nitrate, nitrite
 - nitrogen fixation, nitrifying
 - ammonia, nitrifying
46. A group of plants is grown in an environment without nitrogen fixing bacteria. All of the plants showed poor growth. From this experiment you could conclude that:
- Nitrogen fixing bacteria is necessary for the growth of plants
 - Nitrogen fixing bacteria is not the only factor that slows down plant growth
 - Nothing can be concluded because no controls were used
 - The environment should be tested as well to see if that has a similar effect as the lack of nitrogen fixing bacteria
 - All plants require nitrogen fixing bacteria for growth.
47. Carbon can be removed from the environment/ecosystem by which method(s)
- photosynthesis and oceans
 - animal respiration
 - both plant and animal respiration
 - decomposers such as funguses
 - carbon fixation

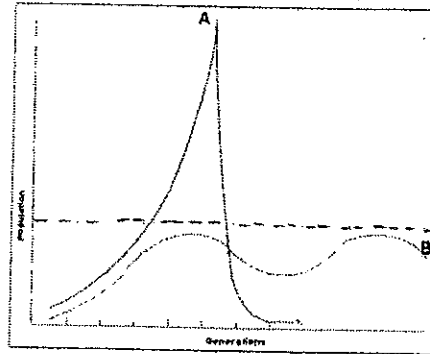


- 48 Many species of American warblers reduce competition among themselves by feeding at divergent levels and on different parts of trees. This concept may best be described as:
- habitat selection
 - survival of the fittest
 - symbiosis
 - Optimum zones
 - resource partitioning

- 49 You are an environmental scientist studying a particular ecosystem. The study site has variable salinity, and at times is seasonally dry. The area has very high level of nutrients and thick organic sediments. Of the many organisms present, you find that the predominant biota is salt-marsh grasses, mangrove swamps, shellfish, crustaceans, and wading birds. The ecosystem you are MOST likely studying is:
- Coastal Ocean
 - Lake or pond
 - Estuary
 - Inland wetland
 - Open Ocean

- 50 Refer to this diagram and choose the explanation the best describes it's components

- Curve A demonstrates population growth under optimal conditions, while curve B shows a population at equilibrium
- Curve B demonstrates population growth under optimal conditions, while curve A shows a population at equilibrium
- Both curves show a population explosion under optimal conditions
- Both curves show a population at equilibrium
- the carrying capacity is different for each population shown.



- 51 Which of the following factors would be reprehensive of a population that is most likely declining?
- ability to cope with adverse conditions
 - adverse weather conditions
 - reproduction rate
 - ability to invade new habitats
 - ability to migrate or disperse
- 52 Epiphytic plants such as bromeliads grow on the branches of trees to gain acces to sunlight, this symbiotic relationship is considered:
- parasitic
 - competitive
 - mutualistic
 - host specific
 - predator-prey



53. Which of the following is NOT part of the basic principle of ecosystem sustainability:
- the size of consumer populations in an ecosystem is maintained such that overgrazing and other forms of overuse do not occur.
 - Ecosystems show resilience when subject to disturbance
 - Ecosystems depend on biodiversity
 - Ecosystems use sunlight as their source of energy
 - Ecosystems keep waste material and replenish nutrients by recycling all elements
54. Among the following concepts, which is NOT necessary for survival and reproduction:
- adaptations for coping with climatic and other abiotic factors
 - adaptations for obtaining food and water (animals) or nutrients, energy and water (plants)
 - adaptations for finding and attracting mates (animals) or pollinating and setting seed (plants)
 - adaptations for staying in the same habitat (animals) or the congregation seeds (plants)
 - adaptations to deter predators
55. Age structure diagrams of the United States shows that:
- deaths before age 60 are relatively high
 - birth rates were high in the early 1930's due to the Great Depression
 - birth rates were high after 1946 when veterans returns and started families with relatively large numbers.
 - population rates minus immigration is increasing at a rate of 3.5
 - the total fertility rate in the 1990's is about 1.2.
56. Loam textured soils tend to have which of the following characteristics:
- 40% sand, 40% silt, 20% clay
 - 33.3% sand, 33.3% silt, 33.3% clay
 - 50% sand, 50% silt
 - 20% sand, 40% silt, 40% clay
 - 50% sand, 50% clay
57. In a soil profile the O horizon consists of:
- topsoil (mixed humus and leached mineral soil)
 - subsoil (accumulation of leached minerals like iron and aluminum)
 - weathered parent material (partly broken-down minerals)
 - Humus (surface litter, decomposing plant material)
 - Zone of leaching (less humus, minerals resistant to leaching)



58. Which of the following characteristics are necessary to support a soils ecosystem
- good supply of nutrients
 - good water holding capacity so that little or no infiltration occurs
 - low aeration
 - pH around 8.5
- all of the choices are necessary for a healthy soil ecosystem
 - i, ii, iv only
 - i, ii, only
 - i, iv only
 - i, only
59. Humus provides all of the following attributes to soil except:
- high water holding capacity
 - high nutrient holding capacity
 - mineralization
 - aeration
 - water infiltration
60. Which of the following is not considered a natural service typically performed by ecosystems?
- production of pollutants, as in the natural decomposition processes
 - erosion control and topsoil building
 - the control of the earth's climate
 - maintaining of biogeochemical cycles
 - regulation of global carbon dioxide
61. The efficiency ratio of the conversion of coal energy to electrical energy is typically about percent?
- 5-10%
 - 15-25%
 - 30-40%
 - 50%
 - 60-75%
62. Most nuclear power plants use _____ fuel as the primary energy source?
- ^{235}U
 - ^{238}U
 - plutonium 239
 - uranium ore
 - ^{239}U
63. What subatomic particles are always released during a nuclear reaction
- protons
 - neutrons
 - electrons
 - quarks
 - plutonium

64. The phenomena known as coral bleaching is
- the loss of the coral's zooxanthellae algae
 - the illegal harvesting of coral
 - caused by the cooling down of tropical oceans due to polar ice melting
 - a direct result of touching the coral polyps
 - the greenhouse effect

65. Using sterile males to control insect populations is an example of:
- chemical attractants or pheromones that attack insects during reproductive cycles.
 - how genetically engineered infertile males to control insect populations
 - effective biological control, since many female insects breed only once in their life time
 - a biological control that has not proven to be effective
 - how bacteria's cause sterility in male insects

66. A water quality test in a local lake reveals a somewhat higher than usual level of coliform bacteria. The most probable consequence of the water's quality would be that:
- the water is still safe since coliform bacteria is a naturally occurring nonpathogenic bacteria
 - the water may contain fecal coliform, which is pathogenic
 - chemical treatment is necessary to prevent a massive fish kill
 - the water is safe to swim in, but not safe to drink
 - a lowered biological oxygen demand, BOD

67. An major environmental setback of landfills is that:
- dangers associated with methane production
 - the possibility of groundwater contamination
 - settling of the compacted materials
 - sighting new locales that are conducive for landfill construction
 - all of the above

Match the following Federal regulations to the current description for questions. (you may use some choices more than once).

- | | |
|----------------------------|---------------------------|
| a. Clean Air Act | d. Endangered Species Act |
| b. Clean Water Act | e. Toxic Substances Act |
| c. Safe Drinking Water Act | |

68. Calls for setting ambient standards of particulates, sulfur dioxide, carbon monoxide and nitrogen oxides.

69. Requires industry to have a discharge permit, for waterways and report all toxic chemicals.

70. Requires manufacturing to submit a premanufacturing report to the EPA, for environmental impact assessment.

71. Requires a 50% reduction of current acid-causing emissions.

72. Provides protection from killing, trapping or uprooting protected species.

73. The minimum number of individuals needed to sustain a breeding population is called the:
- critical factor principle
 - zero number
 - population base number
 - maximum support number
 - critical number of a species
74. Which of the following atmospheric components is not considered a greenhouse gas
- nitrogen oxide
 - carbon dioxide
 - methane
 - water vapor
 - ozone
75. In 1987, the United Nations convened a conference in Canada to address the problem of ozone depletion. At the conference, affiliate nations reached an agreement to scale back CFC production. This accord is known as the?
- Montreal Protocol
 - Vancouver Principle
 - CFC UN alliance
 - Kyoto Agreement
 - CFC Proscribe Protocol
76. Fluids such as gasoline, paint solvents, and organic cleaning solutions are known to release
- nitrogen oxides compounds
 - sulfur oxides compounds
 - carbon monoxide
 - volatile organic compounds
 - particulate matter
77. Among the following air pollutants, which one has shown the greatest decline in recent years during the 1990's
- sulfur dioxide
 - carbon monoxide
 - nitrogen oxides
 - particulates
 - lead
78. Atmosphere pollutions have the greatest effect on:
- stratosphere
 - troposphere
 - mesosphere
 - all of the above
 - only a and b are correct

- 79 Which of the following considerations is NOT characteristic of cities with a high degree of livability
- high population density
 - high emphasis on the human dimension in layout and design
 - high heterogeneity of residences, businesses, stores, and shops
 - high proportion of land devoted to uses associated with automobiles
 - high degree of mobility by foot, bicycle, and mass transit

- 80 The principal adverse environmental impacts of urban sprawl include:
- loss of agricultural land
 - overpopulation, excessive violence, and poor human health
 - competition for precious land, for instance for waste disposal sites and industrial development
 - alteration of land, increased energy consumption, and impaired air and water quality
 - increased commuting time, leading to excessive air pollution and reduced productivity

- 81 The cause of saltwater intrusion along coastal cities is
- replacement of natural dunes with seawalls
 - excessive irrigation of crops with diluted water
 - excessive removal of water for the aquifer that open into the ocean
 - overuse of desalination plants
 - overuse of cisterns

- 82 One of the first wildlife protection laws in the United States was the
- Muir Condition
 - Lacey Act
 - Endangered Species Act
 - Wildlife Protection Act
 - Biodiversity Conservation Act

- 83 A species whose role is absolutely vital for the survival of many other species in an ecosystem is called a(n)
- crucial species
 - key player species
 - prized species
 - keystone species
 - critical species

- 84 An international agreement that focuses on trade in wildlife and wildlife parts is known as the:
- CITES
 - EPA
 - NASDAQ
 - IATWP
 - GFFC



85. The single largest reason for the current decline in biodiversity worldwide is
- pollution
 - poaching
 - introduction of exotic species
 - alteration of habitat
 - modern technology
86. Forest fragmentation has the greatest affect on
- specialized species
 - all species equally
 - generalist species
 - mammals
 - exotic species
87. The Convention on Biological Diversity (CBD) as a result of the 1992 Earth Summit in Rio de Janeiro drafted the subsequent requirements as part of a treaty from all of the nations that participated. Which of the following is NOT part of that treaty:
- Adopt specific national biodiversity action plans and strategies
 - Establish a system of protected areas and ecosystems within a country
 - Protect threatened species
 - Restore habitat that has been degraded
 - Concentrate efforts strictly on naturally occurring organisms other than humans
88. Referring to the idea of maximum sustainable yield (MSY):
- once the MSY is reached, the carrying capacity has been passed
 - a populations rate of sustainable increase at it's maximum level
 - a populations rate of sustainable increase is at it's minimum level
 - no system can withstand MSY abuse in terms of pollution
 - yield is reduced by decreased population
89. The Tragedy of the Commons refers to:
- the result of surpassing the optimal population
 - one person or entity who owns all of the common pool resources
 - the exploitation of common pool resources
 - urban sprawl in inner cities communities
 - a reduced crop yield due to competition
90. Biomes exist in different regions of the world due mainly to:
- geographical location
 - soil characteristics
 - light amount
 - habitat destruction
 - temperature and rainfall



- 91 Tapping into oil shale and tar sands as sources of petroleum will solve the problem of crude oil shortages because:
- oil shales and tar sands are too expensive to exploit unless the price of oil goes up considerably
 - oil shales and tar sands can't provide enough energy to meet current needs
 - the technology to extract these resources doesn't exist at present
 - a and b only
 - a, b, and c only
- 92 In natural populations, only a small percentage of the offspring survive and reproduce another generation. The adaptive features that develop in organisms include:
- As organisms grow, they become larger and more aggressive
 - become smaller and less conspicuous
 - develop any combination of traits that enhance the organism's ability to survive and reproduce
 - eventually become extinct as population numbers decline
 - none of the above
- 93 Water pollutants include:
- sediments
 - toxic chemicals
 - solid wastes
 - nutrients
 - all of the above
- 94 When groundwater is depleted faster than it is replenished, lowering the water table, the following may occur:
- the streams flow rate may decrease
 - in coastal cities, saltwater may intrude and contaminate groundwater supplies
 - agricultural lands that rely on irrigation become unproductive
 - property values decline
 - all of the above
- 95 We receive some radiation from:
- X-rays and microwaves
 - rock and stone building materials
 - cosmic rays
 - radon and uranium gas
 - all of the above
- 96 Which of the following is not found in storm water runoff?
- fertilizer
 - pesticides
 - bacterial waste and oil
 - activated sludge
 - leaves and sticks

97 A typical soil profile has horizons in which order from top to bottom?

- a. A, B, C, E, O
- b. O, E, C, B, A
- c. A, C, B, O, E
- d. O, A, E, B, C
- e. A, E, O, C, B

98 In the United States, the environmental movement

- a. began in the late 1800's
- b. was initiated in part over concern that many areas of the country were inhabited
- c. gained momentum over concerns about air and water quality
- d. became a public issue with the publication of Rachel Carson's *Silent Spring* in 1962
- e. all of the above

99 If the relative humidity of an air mass is 100% and the temperature is 85 degrees, what will happen if the temperature cools to 65 degrees?

- a. condensation occurs
- b. there will be an decrease in the humidity
- c. there will be an increase in the humidity
- d. the barometric pressure will decrease
- e. none of the above

100 What type of biome would you expect to find in a region where temperatures are about 78 degrees and where significant precipitation occurs year round?

- a. tundra
- b. tropical rainforest
- c. temperate deciduous forest
- d. desert
- e. savanna