Base your answers to questions 1 through 4 on the maps and the passage below. The maps show differences in trade wind strength, ocean current direction, and water temperature associated with air-pressure changes from normal climate conditions to EI Niño conditions.

## **EI Niño Conditions**

EI Niño conditions occur with a buildup of warm water in the equatorial Pacific Ocean off the coast of South America. The immediate cause of this buildup is a change in air pressure that weakens the southern trade winds. These are the planetary winds that move air from 30° S to the equator. Normally, these strong, steady winds, with the help of their counterparts in the Northern Hemisphere, push equatorial water westward away from South America. But, at intervals of two to seven years, these winds weaken, causing the westward water flow to reverse. This results in an accumulation of unusually warm water on the east side of the equatorial Pacific Ocean. This warm water not only changes the characteristics of the air above it, but also is thought to be the cause of weather changes around the world. EI Niño conditions may last only a few months, but often last a year or two.



## **El Niño Conditions**



- 1. Under normal climate conditions, what are the characteristics of the surface ocean current that flows along most of the west coast of South America?
  - A) cool water moving toward the equator
  - B) cool water moving away from the equator
  - C) warm water moving toward the equator
  - D) warm water moving away from the equator

- 2. Equatorial Pacific trade winds weaken during EI Niño conditions when air pressure
  - A) falls in the western Pacific and rises in the eastern Pacific
  - B) falls in both the western and eastern Pacific
  - C) rises in the western Pacific and falls in the eastern Pacific
  - D) rises in both the western and eastern Pacific
- 3. The trade winds between  $30^{\circ}$  S and the equator usually blow from the
  - A) northeast B) southeast C) northwest D) southwest
- 4. During EI Niño conditions, air above the Pacific Ocean moving over the land on the equatorial west coast of South America is likely to be .
  - A) cooler and drier than usual
  - C) warmer and drier than usual
- B) cooler and wetter than usual
- D) warmer and wetter than usual

 5. Samples of air collected from the region surrounding a large city were tested for pollutants. Which graph below best shows the probable relationship between air pollution and distance from the city?



6. The diagrams below represent two identical containers filled with nonporous uniform particles. The containers represent models of two different sizes of soil particles.



Compared to the model containing larger particles, the model containing smaller particles has

- A) less permeability and greater porosity
- B) greater porosity and greater capillarity
- C) less permeability and greater capillarity
- D) greater permeability and greater porosity

- 7. Which natural event temporarily slows or reverses surface ocean currents in the equatorial region of the Pacific Ocean, causing a disruption of normal weather patterns?
  - A) monsoons
  - B) volcanic eruptions
  - C) El Niño
  - D) deforestation
- 8. The table below shows the relationship between total yearly precipitation (P) and potential evapotranspiration (EP) for different types of climates.

Climate Type	Total Yearly P/E <sub>p</sub> Ratio	
Humid	Greater than 1.2	
Subhumid	0.8 to 1.2	
Semiarid	0.4 to 0.8	
Arid	Less than 0.4	

## **Climate Classification**

The total yearly precipitation (P) for a city in Texas is 218 millimeters. The total yearly potential evapotranspiration (E<sub>P</sub>) is 951 millimeters. Which type of climate does this city have?

- A) humid B) subhumid
- C) semiarid D) arid
- 9. Most of Earth's surface ocean current patterns are primarily caused by
  - A) the force of gravity
  - B) the impact of precipitation
  - C) prevailing winds
  - D) river currents

10. During a heavy rainstorm, soil samples *A* and *B* both became saturated with water. However, 10 minutes after the storm ended, the soils appeared as shown below.



Which statement best explains the observed change in the water content of the soil samples?

- A) The permeability of *B* is greater than the permeability of *A*.
- B) The porosity of *B* is greater than the porosity of *A*.
- C) The capillarity of *B* is greater than the capillarity of *A*.
- D) The surface runoff at *B* is greater than the surface runoff at *A*.
  - 11. The diagram below shows an experimental setup to compare water retention and permeability in two columns with equal volumes of spherical plastic beads of different diameters.



Which statement best describes the water retention and permeability in the two columns of beads?

- A) The column with 4-mm beads has greater water retention and permeability.
- B) The column with 12-mm beads has greater water retention and permeability.
- C) The column with 4-mm beads has greater water retention and the column with 12-mm beads has greater permeability.
- D) The column with 12-mm beads has greater water retention and the column with 4-mm beads has greater permeability.
  - 12. Which coastal location experiences a cooler summer climate due to ocean currents?
    - A) southeast coast of North America
    - B) northeast coast of Australia
    - C) southwest coast of South America
    - D) northwest coast of Europe
  - 13. A high air-pressure, dry-climate belt is located at which Earth latitude?
    - A) 0° B) 15° N
    - C) 30° N D) 60° N

- 14. High concentrations of anaerobic bacteria (biologic water pollutants) are often caused by a decrease in the
  - A) temperature of ground water
  - B) growth of aerobic bacteria in the water
  - C) amount of organic wastes in the water
  - D) amount of oxygen dissolved in the water

15. Which graph best represents the relationship between the particle size and the capillarity of a sample of soil?



16. The diagrams below represent two containers, each filled with a sample of nonporous particles of uniform size.



Compared to the sample of larger particles, the sample of smaller particles has

- A) lower permeability B) higher permeability
- C) less porosity
  - 17. During a dry summer, the flow of most large New York State streams generally
    - A) continues because some groundwater seeps into the streams

D) more porosity

- B) increases due to greater surface runoff
- C) remains unchanged due to transpiration from grasses, shrubs, and trees
- D) stops completely because no water runs off into the streams
- 18. Which sediment size would allow water to flow through at the fastest rate?

A) clay	B) silt
C) sand	D) pebbles

19. The table below shows the average January air temperature from 1901 to 2006 in two different cities in New York State.

Data Table		
City	Average January Air Temperature (°F)	
Albany	21.4	
New York City	29.7	

The most likely cause of this air temperature difference is that New York City is located

- A) in a different prevailing wind belt
- B) at a higher latitude
- C) near a large body of water
- D) at a higher elevation
  - 20. Which graph best represents the relationship between surface-water runoff and stream discharge?



Base your answers to questions 21 and 22 on the two graphs below, which show the relationship between the amount of rainfall during a storm and the amount of discharge into a nearby stream. Letter A represents the time when approximately 50% of the precipitation from the storm has fallen. Letter B represents the time when peak runoff from the storm is flowing into the stream. The delay is the difference in time between letters A and B on the graph. Graph I shows data before urbanization in an area. Graph II shows data after urbanization in the same area.



- 21. The delay time between points A and B on both graphs is due mainly to the time needed for
  - A) groundwater to evaporate
  - B) precipitation water to move into the streams
  - C) green plants to absorb precipitation
  - D) rainfall rate to decrease
- 22. How did urbanization affect delay time between points A and B and the maximum stream discharge?
  - A) The delay time decreased, and the maximum discharge decreased.
  - B) The delay time decreased, and the maximum discharge increased.
  - C) The delay time increased, and the maximum discharge decreased.
  - D) The delay time increased, and the maximum discharge increased.



Base your answers to questions 27 and 28 on map below, which represents an imaginary continent. Locations A and B are on opposite sides of a mountain range on a planet similar to Earth. Location C is on the planet's equator.



27. Location C most likely experiences

- A) low air pressure and low precipitation
- C) high air pressure and low precipitation
- B) low air pressure and high precipitation
- D) high air pressure and high precipitation
- 28. Compared to the climate at location A, the climate at location B would most likely be
  - A) warmer and more humid
  - C) cooler and more humid

- B) warmer and less humid
- D) cooler and less humid

29. the graph below, which shows the average yearly temperature and average yearly precipitation for Earth locations *A* through *E*. 30. The graph below represents the average temperature of a city for each month of the year.



Locations *A* and *C* have different average yearly temperatures. This difference most likely is due to the fact that

- A) A has a higher elevation
- B) *A* is located nearer to the Equator
- C) *C* has more precipitation
- D) C has a greater longitude



Where is this city most likely located?

- A) inland in the Northern Hemisphere, in a middle latitude
- B) inland in the Southern Hemisphere, in a middle latitude
- C) on a coast near the Equator
- D) on a coast in the Antarctic

Base your answers to questions **31** through **35** on the diagram, data and information below. The diagram below represents part of the laboratory setup for an activity to investigate the effects of particle size on permeability, porosity, and water retention. Three separate tubes were used, each containing 300 milliliters of beads of uniform size. Bead sizes were 4 millimeters, 7 millimeters, and 12 millimeters in diameter, respectively.



The amount of water added to each tube to cover the beads was determined. The clamp was then removed, the flow of the water was timed, and its volume was measured. Data are shown in the table below. (The amount of water retained on the 7-millimeter beads has been omitted.)

	Particle Size		
	4 mm	7 mm	12 mm
Infiltration Time (seconds)	3.7	3.0	2.4
Amount of Water Needed To Cover All Beads (mL)	147	145	147
Water Recovered from Tube After Clamp Was Removed (mL)	111	123	135
Water Retained on Beads (mL)	36		12

- 31. Soil composed of which kind of particles would have the longest infiltration time? [Assume that all particles allow some water to pass through.]
  - A) pebbles B) sand C) silt
- 32. The data table shows that all three tubes of beads had approximately the same
  - A) porosity

B) water retention

D) clay

C) permeability time

D) capillarity

33. Which graph best represents the infiltration times for these three particle sizes?



36. The data table below compares the climates of two United States cities located at approximately 43° north latitude. The data are based on a 30-year period.

Location	Maximum Temperature (°F)	Minimum Temperature (°F)	Mean Annual Precipitation (in)	Mean Annual Snowfall (in)
city A	110	-36	23.8	31.9
city B	98	-19	38.2	92.9

Data Table

Which statement best explains the climate variation between these two cities?

- A) City A and city B are located at the same longitude.
- B) City A is located at a high elevation, and city B is located at sea level.
- C) City A is located far inland, and city B is located near a large body of water.
- D) City A is located on the east coast, and city B is located on the west coast.

- 37. Which set of surface soil conditions on a hillside would result in the most infiltration of rainfall?
  - A) gentle slope, saturated soil, no vegetation
  - B) gentle slope, unsaturated soil, vegetation
  - C) steep slope, saturated soil, vegetation
  - D) steep slope, unsaturated soil, no vegetation

Base your answers to questions **38** through **41** on the diagrams below, which represent 500-milliliter containers that are open at the top and the bottom and filled with well-sorted, loosely packed particles of uniform size. A piece of screening placed at the bottom of each container prevents the particles from falling out.



38. Which graph best represents the rate of permeability of the samples?



39. Container *A* is filled with particles that could have a diameter of

A) 0.0001 cm	B) 0.001 cm
C) 0.01 cm	D) 0.1 cm

- 40. The sample in which container would have the greatest capillarity when placed in water?
  - A) A B) B C) C D) D
- 41. Assume that the samples in each container were taken from surface soil in different locations. Which location would produce the *least* amount of runoff during a heavy rainfall?
  - A) A B) B C) C D) D
  - 42. Which graph best shows the average annual amounts of precipitation received at different latitudes on Earth?



- A) rising and moist
- B) rising and dry
- C) sinking and moist
- D) sinking and dry

44. Base your answer to the following question on the water cycle diagram shown below. Some arrows are numbered 1 through 4 and represent various processes.



D) 4

Which numbered arrow best represents the process of transpiration?

- A) 1 B) 2 C) 3
- 45. The graph below shows the average monthly temperatures for two cities, *A* and *B*, which are both located at 41° north latitude.



Which statement best explains the difference in the average yearly temperature range for the two cities?

- A) City *B* is located in a different planetary wind belt.
- B) City B receives less yearly precipitation
- C) City *B* has a greater yearly duration of insolation.
- D) City *B* is located near a large body of water.
  - 46. As the temperature of the soil decreases from  $10^{\circ}$ C to  $-5^{\circ}$ C, the infiltration rate of ground water through this soil will most likely
    - A) decrease B) increase
    - C) remain the same

47. Base your answer to the following question on the diagrams below, which represent cross sections of four samples of loosely packed, uniformly sorted soil particles. The diameter of the particles is given below each diagram. All soil samples consist of solid spherical particles.



If equal amounts of 0.2-centimeter soil particles are mixed into each sample, which sample's porosity will *not* be affected?

A) A B) B C) C D) D

- 48. The planetary wind belts in the troposphere are primarily caused by the
  - A) Earth's rotation and unequal heating of Earth's surface
  - B) Earth's revolution and unequal heating of Earth's surface
  - C) Earth's rotation and Sun's gravitational attraction on Earth's atmosphere
  - D) Earth's revolution and Sun's gravitational attraction on Earth's atmosphere

49. Base your answer to the following question on the map and graph below. The map shows two cities, Arica and Rio de Janeiro, located on opposite coasts of South America. Both cities are near sea level. The graph shows the average monthly temperatures for the cities.



Why does Arica have cooler average monthly temperatures than Rio de Janeiro?

- A) Rio de Janeiro receives insolation at a higher angle than Arica.
- B) Rio de Janeiro is influenced by a warmer ocean current than Arica.
- C) Arica is farther north than Rio de Janeiro.
- D) Arica receives yearly insolation that is less intense than Rio de Janeiro.
  - 50. Base your answer to the following question on the diagram below, which represents the planetary wind and moisture belts in Earth's Northern Hemisphere.



(Not drawn to scale) The climate at 90° north latitude is dry because the air at that location is usually

A) warm and rising

B) warm and sinking

C) cool and rising

D) cool and sinking



- 56. Which New York State location is most likely to experience the heaviest winter snowfall when the surface winds are blowing from the west or north-west?
  - A) New York City B) Binghamton
  - D) Plattsburgh C) Oswego
- 57. A landfill is most likely to directly pollute
  - A) water vapor over the landfill
  - B) precipitation about to fall on the landfill
  - C) surface streams flowing to the landfill
  - D) ground water under the landfill

Zones within soil and rock are classified by the water movement occurring in the zones. Which diagram best represents the most common arrangement of these zones?



- 52. Which climate conditions are typical of regions near the North Pole and the South Pole?
  - A) low temperature and low precipitation
  - B) low temperature and high precipitation
  - C) high temperature and low precipitation
  - D) high temperature and high precipitation

58. The diagram below shows the flow of air over a mountain, from location A to B to C.



Which graph best shows how the air temperature and probability of precipitation change during this air movement?



Base your answers to questions **62** through **64** on the diagram below. Columns *A*, *B*, *C*, and *D* are partially filled with different sediments. Within each column, the sediment is uniform in size. A fine wire mesh screen covers the bottom of each column to prevent the sediment from falling out. The lower part of each column has just been placed in a beaker of water. Sediment sizes are not drawn to scale.



D

Africa

The climate of which location is warmed by a nearby major ocean current?

A) *A* B) *B* C) *C* D) *D* 

66. The diagram below shows tubes A and B partly filled with equal volumes of round plastic beads of uniform size. The beads in tube A are smaller than the beads in tube B. Water was placed in tube A until the pore spaces were filled. The drain valve was then opened, and the amount of time for the water to drain from the tube was recorded. The amount of water that remained around the beads was then calculated and recorded. Data table 1 shows the measurements recorded using tube A.



Data Table 1: Tube A		
water required to fill pore spaces	124 mL	
time required for draining	2.1 sec	
water that remained around the beads after draining	36 mL	

If the same procedure was followed with tube *B*, which data table shows the measurements most likely recorded?

A)	Data Table 2: Tube B		B)	Data Table 2: Tube B	
	water required to fill pore spaces	124 mL		water required to fill pore spaces	168 mL
	time required for draining	1.4 sec		time required for draining	3.2 sec
	water that remained around the beads after draining	26 mL		water that remained around the beads after draining	46 mL
C)			( ת ו		
0)	Data Table 2: Tube B			Data Table 2: Tube B	
	water required to fill pore spaces	124 mL		water required to fill pore spaces	168 mL
	time required for draining	3.2 sec		time required for draining	1.4 sec
	water that remained around the beads after draining	36 mL		water that remained around the beads after draining	36 mL
	· · · · · · · · · · · · · · · · · · ·		•		
6	7. During a rainfall, surface run	off will pr	obably	be 69. Compared to an	n area of E

- greatest in an area that has a
  - A) steep slope and a clay-covered surface
  - B) steep slope and a gravel-covered surface
  - C) gentle slope and a grass-covered surface
  - D) gentle slope and a tree-covered surface
- 68. Which earth material covering the surface of a landfill would permit the least amount of rainwater to infiltrate the surface?

C) sand D) pebbles

- arth's surface with gentle slopes, an area with steeper slopes most likely has
  - A) less infiltration and more runoff
  - B) less infiltration and less runoff
  - C) more infiltration and more runoff
  - D) more infiltration and less runoff

Base your answers to questions **70** through **73** on the diagram below, which shows four tubes containing 500 milliliters of sediment labeled *A*, *B*, *C*, and *D*. Each tube contains well-sorted, loosely packed particles of uniform shape and size and is open at the top. The classification of the sediment in each tube is labeled.



- 70. Water will be able to infiltrate each of these sediment samples if the sediment is
  - A) saturated and impermeable B) saturated and permeable
  - C) unsaturated and impermeable D) unsaturated and permeable
- 71. Each tube is filled with water to the top of the sediments and the tube is covered with a fine screen. The tubes are then tipped upside down so the water can drain. In which tube would the sediment retain the most water?
  - A) A B) B C) C
  - 72. Water was poured into each tube of sediment and the time it took for the water to infiltrate to the bottom was recorded, in seconds. Which data table best represents the recorded results?

C) *C* 

B)

A)

C)

Tubes	Infiltration Time (s)
A	5.2
В	3.4
С	2.8
D	2.3

Tubes	Infiltration Time (s)
А	2.4
В	2.9
С	3.6
D	3.8

Tubes	Infiltration Time (s)
А	3.2
В	3.3
С	3.2
D	3.3

D) *D* 

D)	Tubes	Infiltration Time (s)
	А	3.0
	В	5.8
	С	6.1
	D	2.8

73. Which tube has sediments with the greatest capillarity?

A) *A* 

B) *B* 

D) *D* 



The map above shows an imaginary continent in the Earth's planetary wind belt between  $30^{\circ}$  and  $60^{\circ}$  North latitude. Location *P* is on the western edge of the continent. Location *P* has mild winters with much precipitation. Which arrow indicates the direction of the prevailing winds at this location?

A) A B) B C) C D) D

Base your answers to questions **75** and **76** on the map below, which shows an imaginary continent on Earth. Arrows represent prevailing wind directions. Letters Athrough D represent locations on the continent. Locations A and B are at the same latitude and at the same elevation at the base of the mountains.



- 75. The climate at location *C* is much drier than at location *D*. This difference is best explained by the fact that location *C* is located
  - A) farther from any mountain range
  - B) closer to a large body of water
  - C) at a latitude that experiences longer average annual daylight
  - D) at a latitude where air is sinking and surface winds diverge

- 76. Over the course of a year, compared to location *B*, location *A* will have
  - A) less precipitation and a smaller temperature range
  - B) less precipitation and a greater temperature range
  - C) more precipitation and a smaller temperature range
  - D) more precipitation and a greater temperature range
- 77. An area with a high potential for evapotranspiration has little actual evapotranspiration and precipitation. The climate of this area is best described as
  - A) hot and arid B) hot and humid
  - C) cold and arid D) cold and humid
  - 78. Immediately after a moderate rainfall, the stream discharge is greater from a stream that drains a clay soil area than from a stream that drains a sand-and-gravel soil area. This discharge differs because the clay soil is
    - A) less porous, and allows less runoff
    - B) more porous, and allows more runoff
    - C) less permeable, and allows more runoff
    - D) more permeable, and allows less runoff
  - 79. During an El Niño event, surface water temperatures increase along the west coast of South America. Which weather changes are likely to occur in this region?
    - A) decreased air temperature and decreased precipitation
    - B) decreased air temperature and increased precipitation
    - C) increased air temperature and increased precipitation
    - D) increased air temperature and decreased precipitation
- 80. During the summer months, which change in location would most likely cause a decrease in the observed daytime air temperatures?
  - A) from 45° N latitude to 20° N latitude
  - B) from sea level to 5 km above sea level
  - C) from sea level on the windward side of a mountain to sea level on the leeward side
  - D) from the ocean coast to an inland location

81. The diagram below shows a laboratory setup. The rubber band holds filter paper across the base of the open tube to hold the soil sample. The tube was placed in the water as shown. The upward movement of water is represented by arrows. The height of the water that moved upward within the soil was measured. Students repeated this procedure using soils with different particle sizes. Results of the experiment are shown in the data table.





Average Soil Particle Diameter (cm)	Height of Water in Column (cm)		
0.006	30.0		
0.2	8.0		
1.0	0.5		

Results of this experiment lead to the conclusion that

- A) capillarity is greater in soils with larger particles
- B) capillarity is greater in soils with smaller particles
- C) permeability is greater in soils with larger particles
- D) permeability is greater in soils with smaller particles
- 82. What is the best explanation for these two statements?

• Some mountains located near the Earth's Equator have snow-covered peaks.

• Icecaps exist at the Earth's poles.

- A) High elevation and high latitude have a similar effect on climate.
- B) Both mountain and polar regions have arid climates.
- C) Mountain and polar regions receive more energy from the Sun than other regions do.
- D) An increase in snowfall and an increase in temperature have a similar effect on climate.

- 83. A city located near the center of a large continent has colder winters and warmer summers than a city at the same elevation and latitude located on the continent's coast. Which statement best explains the difference between the cities climates?
  - A) Windspeeds are greater over land than over oceans.
  - B) Air masses originate only over land.
  - C) Land has a lower specific heat than water.
  - D) Water changes temperature more rapidly than land.

84. The diagram below shows columns A, B, C, and D that contain different sediments.





Equal volumes of water were poured through each column. Which column of sediment retained the most water?

85. The diagrams below show the relative sizes of particles from soil samples *A*, *B*, and *C*. Equal volumes of each soil sample were placed in separate containers. Each container has a screen at the bottom. Water was poured through each sample to determine the infiltration rate.



Which graph best shows how the infiltration rates of the three soil samples would compare?



Base your answers to questions **86** through **89** on the climate graphs below, which show average monthly precipitation and temperatures at four cities, *A*, *B*, *C*, and *D*.



- 86. Very little water will infiltrate the soil around city D because the region usually has
  - A) a frozen surface

B) nearly flat surfaces

D) permeable soil

- C) a small amount of runoff
- 87. It can be concluded that city C is located in the Southern Hemisphere because city C has

Temperature

- A) small amounts of precipitation throughout the year
- B) large amounts of precipitation throughout the year
- C) its warmest temperatures in January and February
- D) its warmest temperatures in July and August
- 88. During which season does city *B* usually experience the month with the highest average precipitation?
  - A) spring B) summer

D) winter

89. City A has very little variation in temperature during the year because city A is located

C) fall

- A) on the dry side of a mountain
- B) on the wet side of a mountain

D) near the equator

C) near the center of a large landmass

90. The cross section below represents a forested area in Vermont.



91. The diagram below shows air movement over a mountain.



Compared to the climate on the windward side of the mountain, the climate on the leeward side of the mountain is

- A) drier and warmer
- B) drier and cooler
- C) more humid and warmer
- D) more humid and cooler
  - 92. Which factor most likely causes two cities at the same elevation and latitude to have different yearly average temperature ranges?
    - A) rotation of Earth
    - B) duration of insolation
    - C) distance from a large body of water
    - D) direction of prevailing winds

93. Base your answer to the following question on the diagram below, which shows air movement over a mountain range. The arrows indicate the direction of airflow. Points 1 through 3 represent locations on Earth's surface.



Compared to the climate at location 1, the climate at location 3 is

- A) cooler and drier B) cooler and wetter
- C) warmer and drier
- D) warmer and wetter

94. Base your answer to the following question on the map below, which shows locations *A* and *B* on Earth's surface at the same distance from the ocean, at the same elevation above sea level, and at the same latitude.



Which statement best explains why location A has a cooler climate than location B?

- A) Location A has a longer duration of insolation each day.
- B) Location *A* is influenced by a cold ocean current.
- C) Location *B* is farther from the equator.
- D) Location *B* has less intense insolation each day.
  - 95. Base your answer to the following question on the map below, which shows Earth's planetary wind belts.



Which wind belt has the greatest effect on the climate of New York State?

- A) prevailing northwesterlies
- B) prevailing southwesterlies
- C) northeast trades
- D) southeast trades

Base your answers to questions **96** and **97** on the graph below, which shows the average monthly temperature of two cities A and B.



- 96. Both cities have an average yearly temperature of 11°C, but city A has a much greater temperature range than city B has because city A most likely
  - A) is closer to the Equator
  - B) is farther from a large body of water
  - C) has more rainfall
  - D) has stronger prevailing winds
- 97. The temperature in city B is highest in January and lowest in July because city B is located
  - A) on the side of a mountain
  - B) on an island
  - C) in the Southern Hemisphere
  - D) at the North Pole
- 98. The cross section below shows the flow of prevailing winds over a mountain ridge.



Which location is most likely to receive precipitation?

A) A B) B C) C D) D

99. Base your answer to the following question on the water budget data and climate classification below. Table 1 shows water budget data for a location in New Jersey, and table 2 describes climate types. All data are expressed in millimeters of water.

Table 1

Water Budget Data

Month	J	F	м	А	м	J	J	А	s	0	N	D	Yearly Total
Precipitation (P)	72	68	81	75	74	87	84	82	72	76	63	72	906
Potential Evapo- transpiration $(E_p)$	0	0	3	34	83	115	134	122	84	46	15	0	636
Storage (St)	100	100	100	100	91	63	13	0	0	30	78	100	

Та	b	le	2

**Climate Classification** 

Climate Type	Total Yearly P/E <sub>p</sub> Ratio
Humid	greater than 1.2
Subhumid	0.8 to 1.2
Semiarid	0.4 to 0.8
Arid	less than 0.4

According to the information provided in table 2, the area represented by the water budget data would have a climate classified as

A) humid B) subhumid C) semiarid D) arid

100. The table below shows the latitude and the average yearly temperature for four different cities.

City	Singapore	Calcutta	Washington, D.C.	Moscow
Latitude	1° N	23° N	39° N	56° N
Average Yearly Temperature	81°F	79°F	57°F	39°F

It can be inferred from this table that the cities at higher latitudes have

- A) lower average yearly temperatures because these cities receive insolation at a higher angle during the year
- B) lower average yearly temperatures because these cities receive insolation at a lower angle during the year
- C) higher average yearly temperatures because these cities receive insolation at a higher angle during the year
- D) higher average yearly temperatures because these cities receive insolation at a lower angle during the year