

1.	The phenomenon in which city centers are hotter on average than surrounding areas is called:	
a)	green belt	
b)	heat island	
c)	situation	
d)	fall line	
e)	site	
	Ans: b Difficulty: Easy Link to: 28.5	

2.	The location of a city relative to other cities, trade routes, agricultural land, etc.	
a)	green belt	
b)	heat island	
c)	situation	
d)	fall line	
e)	site	
	Ans: c Difficulty: Easy Link to: 28.3	

3.	The location on a river that has many advantages for early cities, including: water power, navigation potential, and potential for bridge building	
a)	green belt	
b)	heat island	
c)	situation	
d)	fall line	
e)	site	
	Ans: d Difficulty: Easy Link to: 28.3	

4.	Washington D.C. was built upon swampy ground, but at a crucial political boundary between the northern and the southern states. Now, however, the city's location is criticized because it is far from the geographical center of the U.S. In these terms, modern Washington D.C. has a:	
a)	good site and a bad situation	

b)	good site and a good situation
c)	bad site and a good situation
d)	bad site and a bad situation
e)	none of these
Ans: d Difficulty: Medium Link to: 28.3	

5.	All of the following are ways in which cities exchange energy with their environment except :
a)	transport into the city and burning of fuels
b)	absorption and reflection of solar energy
c)	alpha, beta, and gamma radiation
d)	evaporation of water
e)	conduction and convection of air
Ans: c Difficulty: Medium Link to: 28.2	

6.	Paving of large areas of the surface in urban centers affects the natural hydrologic cycle (water budget) by:
a)	increasing runoff and delaying the time it takes to reach streams
b)	increasing infiltration into groundwater
c)	trapping natural nutrients that would otherwise feed streams
d)	intercepting storm runoff before it reaches streams
e)	increasing and speeding storm runoff
Ans: e Difficulty: Medium Link to: 28.5	

7.	Which of the following is the main reason that humidity in cities is different than in surrounding areas, and also is a major reason why cities are warmer than surrounding areas?
a)	decreased vegetation leads to decreased evaporation
b)	decreased vegetation leads to increased evaporation
c)	particulate pollutants increase condensation of water in the air above cities
d)	emissions of sulfur dioxide from burning fossil fuels
e)	cities have a higher albedo than surrounding areas

	<p>Ans: a Difficulty: Medium Link to: 28.5</p>
--	--

8.	In a natural ecosystem, evaporation is an important mechanism for:
a)	storing solar energy
b)	producing energy
c)	getting rid of too much surface water
d)	heating the surface
e)	cooling the surface
	<p>Ans: e Difficulty: Easy Link to: 28.2, 28.5</p>

9.	According to the textbook, what is the best way to control rats and other urban pests in the long run?
a)	make cities bad habitats for the pest species
b)	introduce predator species
c)	chemical pesticides
d)	periodic flooding
e)	integrated pest management
	<p>Ans: a Difficulty: Easy Link to: 28.6</p>

10.	Urbanization has what effect on the local hydrologic system?
a)	increased storm runoff
b)	increased lag time to flood peaks
c)	increased infiltration
d)	increased transpiration
e)	diminished flood peaks
	<p>Ans: a Difficulty: Easy Link to: 28.5</p>

11.	The main characteristic(s) of urban pest animals is (are):
	I. high rates of reproduction
	II. long average lifetime
	III. generalists in their food choices

a)	I only
b)	II only
c)	I and III
d)	II and III
e)	I, II, and III
	Ans: c Difficulty: Medium Link to: 28.6

12.	Which of the following is not an effect of urbanization on natural hydrologic systems?
a)	increased precipitation
b)	decreased runoff and flooding
c)	decreased infiltration
d)	contamination of runoff
e)	flood events peak sooner and bigger
	Ans: b Difficulty: Easy Link to: 28.5

13.	Flooding of the city of Venice became more and more common because of:
a)	increased water level in the lagoon surrounding Venice
b)	groundwater withdrawal
c)	slow sinking of the poles Venice is built on
d)	pumping of oil and gas
e)	reforestation upstream
	Ans: b Difficulty: Easy Link to: A Closer Look 28.1

14.	The term "design with nature" fits <u>best</u> with which of the following descriptions?
a)	a recreational park area in the middle of a city
b)	a city built on a river floodplain
c)	a sewage treatment plant hidden behind hills
d)	the construction of an asphalt jogging track in a recreational park area
e)	using the floodplain area within a city for parks and open land

	<p>Ans: e</p> <p>Difficulty: Medium</p> <p>Link to: A Closer Look 28.5</p>
--	--

15.	As a life-supporting system, a city must:						
	<table border="1"> <tr> <td><input type="checkbox"/></td><td>I. provide or import material resources</td></tr> <tr> <td><input type="checkbox"/></td><td>II. have ways to remove waste</td></tr> <tr> <td><input type="checkbox"/></td><td>III. maintain inputs and outputs of energy</td></tr> </table>	<input type="checkbox"/>	I. provide or import material resources	<input type="checkbox"/>	II. have ways to remove waste	<input type="checkbox"/>	III. maintain inputs and outputs of energy
<input type="checkbox"/>	I. provide or import material resources						
<input type="checkbox"/>	II. have ways to remove waste						
<input type="checkbox"/>	III. maintain inputs and outputs of energy						

a)	I only
b)	I and II
c)	II and III
d)	I and III
e)	I, II, and III

	<p>Ans: e</p> <p>Difficulty: Easy</p> <p>Link to: 28.2</p>
--	--

16.	Cities tend to be warmer than rural areas because of:						
	<table border="1"> <tr> <td><input type="checkbox"/></td><td>I. reduced evaporation and transpiration</td></tr> <tr> <td><input type="checkbox"/></td><td>II. burning of fossil fuels</td></tr> <tr> <td><input type="checkbox"/></td><td>III. increased albedo of the ground surface</td></tr> </table>	<input type="checkbox"/>	I. reduced evaporation and transpiration	<input type="checkbox"/>	II. burning of fossil fuels	<input type="checkbox"/>	III. increased albedo of the ground surface
<input type="checkbox"/>	I. reduced evaporation and transpiration						
<input type="checkbox"/>	II. burning of fossil fuels						
<input type="checkbox"/>	III. increased albedo of the ground surface						

a)	I only
b)	II only
c)	I and II
d)	II and III
e)	I, II, and III

	<p>Ans: c</p> <p>Difficulty: Easy</p> <p>Link to: 28.5</p>
--	--

17.	Aesthetic considerations in city planning can have all of the following effects except :
a)	economic benefits
b)	lure for tourism
c)	recreational opportunities
d)	higher citizen moral
e)	reduced sulfurous smog

	<p>Ans: e Difficulty: Easy Link to: 28.4</p>
--	--

18.	Global warming may have major effects on many coastal cities. As a direct result, these cities will be subjected to:
a)	less productive fisheries
b)	serious harbor siltation
c)	saltwater intrusion
d)	increased level of skin cancer
e)	inundation by rising sea level
	<p>Ans: e Difficulty: Easy Link to: Case Study, A Closer Look 28.1</p>

19.	Wildlife species that successfully adapt to urban settings tend to have all of the following characteristics except :
a)	generalists in their food choices
b)	capability of eating food that humans eat
c)	high growth rate
d)	short average life span
e)	thick exterior insulation to resist colder and wetter conditions
	<p>Ans: e Difficulty: Easy Link to: 28.6</p>

20.	Why is unconsolidated fill as a foundation for building particularly vulnerable to the shaking from earthquakes?
a)	trees cannot hold fill material in place and the ground collapses
b)	the fill can amplify shaking as well as liquify when shaken
c)	fill materials glide away under structures during an earthquake
d)	the fill acts as solid rock and structures collapse
e)	fill material solidifies and acts rigid during an earthquake
	<p>Ans: b Difficulty: Medium Link to: 28.5</p>

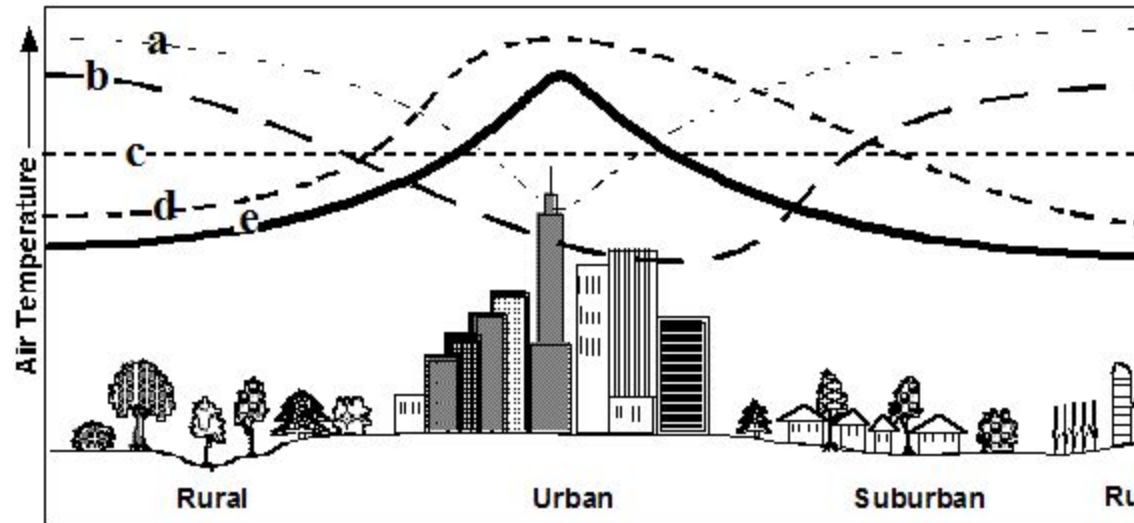
21.	Venice is a city located in the middle of a muddy lagoon, but at the heart of vital lines of commerce and communication. Using the terms defined in the <u>Environmental Science</u> text, Venice has a:
-----	--

a)	good situation and a poor site
b)	good situation and a good site
c)	poor situation and a poor site
d)	poor situation and a good site
e)	nice gondola rides, but I wouldn't want to live there
	Ans: a Difficulty: Medium Link to: 28.3, A Closer Look 28.1

22.	According to the <u>Environmental Science</u> text, an ideal urban tree would have all of the following characteristics except:
a)	thick and brilliant fall foliage
b)	a beautiful form
c)	no messy fruits
d)	no leaf litter
e)	resistance to air pollution
	Ans: a Difficulty: Easy Link to: 28.6

23.	With regards to planting vegetation in cities, the "teacup syndrome" refers to which of the following situations:
a)	cities concentrate particulates and other air pollutants that harm vegetation
b)	saplings are planted in shallow bowls that keep their roots wet in all kinds of weather
c)	particulate pollution in the air over cities inhibits normal photosynthesis
d)	urban vegetation is commonly brittle and easily shattered by vandals
e)	newly planted trees are oversaturated during wet weather and cannot reach groundwater during dry weather
	Ans: e Difficulty: Easy Link to: 28.6

24. Which of the lines shown in the figure below correctly graphs the temperature profile around a large city and its suburbs?



- | | |
|----|---|
| a) | a |
| b) | b |
| c) | c |
| d) | d |
| e) | e |

Ans: d
 Difficulty: Medium
 Link to: 28.5

25. The location of cities is influenced by two factors: "site" and "situation". Situation refers to:

- | | |
|----|--|
| a) | political and diplomatic issues that affect the location |
| b) | physical and environmental characteristics of the location |
| c) | military considerations – how defensible the location is |
| d) | the relationship between that location and surrounding areas |
| e) | the risk of natural catastrophe at that location |

Ans: d
 Difficulty: Easy
 Link to: 28.3

26. "A Closer Look 29.1" in the Environmental Science textbook discusses a problem occurring in the city of Venice, Italy. The problem is that Venice is _____; the likely cause is _____ and _____.

- | | |
|----|---|
| a) | hot; inadequate vegetation, too many tourists |
|----|---|

b)	smelly; rising global sea levels, rotting building foundations
c)	infested with rats; ocean dumping, problems with the local waste department
d)	dusty; use of coal to supply electricity, gusty winds during the summer month
e)	sinking; groundwater withdrawal, rising global sea levels
	Ans: e Difficulty: Easy Link to: A Closer Look 28.1

27.	During and right after the 2005 Hurricane Katrina Disaster, the great majority of damage and loss of life in the city of New Orleans was the result of:
a)	wind
b)	tornadoes
c)	flooding
d)	storm surge
e)	sea-level rise
	Ans: c Difficulty: Easy Link to: Case Study

28.	Urban centers alter their own climate in all of the following ways except :
a)	by contributing to temperature inversion
b)	by altering wind patterns due to surface roughness
c)	by reflecting more sunlight than an undisturbed land surface
d)	by increasing the retention of heat
e)	by altering the natural vegetation
	Ans: c Difficulty: Medium Link to: 28.5

29.	Many cities on the Atlantic coast of the U.S. are located along the "fall line". Advantages of this location include all of the following except :
a)	source of hydroelectric power for early industry
b)	fertile soils associated with the fall line fed early urban populations
c)	farthest downstream location that could be bridged
d)	farthest upstream location that could be navigated

e)	all of the factors above are advantages of fall line sites
	Ans: b Difficulty: Easy Link to: A Closer Look 28.2

30.	Most cities have one sewer system that handles both sewage and storm drainage. One problem commonly associated with this system is:
a)	during dry periods, there may be insufficient water to transport sewage
b)	city pavement traps drainage needed to wash out sewer lines
c)	heavy snow cannot be removed using the sewer system
d)	during heavy rainstorms, raw sewage may be dumped into rivers or the ocean
e)	sewers emit pollutants that contribute to many air pollution problems
	Ans: d Difficulty: Medium Link to: 28.5

31.	Cities are often build on floodplains for all of the following reasons except :
a)	the land is flat
b)	easy access to the river
c)	scenic views
d)	river transportation
e)	decreased likelihood of flooding
	Ans: e Difficulty: Easy Link to: 28.5

32.	Before modern sanitation and medicine, a major control on population density in European cities (and cities elsewhere) was:
a)	cockroaches in kitchens, which limited the food supply
b)	termites, which damaged wooden houses
c)	fleas, which carried infectious diseases
d)	pigeons, which spread excrement
e)	mice and rats

	<p>Ans: c</p> <p>Difficulty: Medium</p> <p>Link to: A Closer Look 28.3</p>
--	--

33.	Many cities of the eastern U.S. are located on the "fall line", taking advantage of:
a)	an abrupt rise in elevation, providing the possibility of water storage
b)	an area of especially fertile farmland
c)	a drainage divide
d)	an abrupt drop in elevation and numerous waterfalls providing hydro-power
e)	rugged and defensible terrain
	<p>Ans: d</p> <p>Difficulty: Easy</p> <p>Link to: A Closer Look 28.2</p>

34.	Compared with soils in rural areas, urban soils are:
a)	compacted, impervious to infiltration, and depleted in organics
b)	sandy, infertile, and loose
c)	dark, hard, and sterile
d)	sandy, salty, and loose
e)	compacted, porous, and polluted with organic material
	<p>Ans: a</p> <p>Difficulty: Easy</p> <p>Link to: 28.5</p>

35.	Which of the following statements about wildlife and urbanization is correct?
a)	natural wildlife cannot persist in urban centers and disappears
b)	all natural wildlife can tolerate an urban setting, but most would do better elsewhere
c)	natural wildlife adapts to urbanization and, in the end, is unaffected by it
d)	the mix of species changes with urbanization, as different species adapt differently to the changes
e)	the only species that can be found in urban centers are the ones that humans directly or indirectly brought in

	Ans: d Difficulty: Easy Link to: 28.6
--	---

36.	Decide whether each of the weather characteristics listed below is associated with cities or rural regions:	
	<u>cities</u>	<u>rural</u>
higher temperature	<input type="checkbox"/>	<input type="checkbox"/>
more precipitation	<input type="checkbox"/>	<input type="checkbox"/>
higher humidity	<input type="checkbox"/>	<input type="checkbox"/>
more fog	<input type="checkbox"/>	<input type="checkbox"/>
less danger of flooding	<input type="checkbox"/>	<input type="checkbox"/>

Ans:	cities, cities, rural, cities, rural
------	--------------------------------------

	Difficulty: Medium Link to: 28.5
--	-------------------------------------

37.	One of the most pressing political issues in many areas is urban sprawl. This chapter discusses the case of Boulder, Colorado. (A) List the principal measure enacted to control sprawl in Boulder. (B) List three problems that Boulder has had as a result of this strategy.
-----	--

Ans:	(A) the "blue line", a limit beyond which no city services are provided (B) high property prices, traffic congestion, large commuter population, sprawl exported to nearby areas
------	---

	Difficulty: Difficult Link to: Critical Thinking Issue
--	---

38.	Most cities have one sewer system that handles both sewage and storm drainage. Sewage is usually treated and the processed wastewater dumped into a river or the ocean. What problem can occur during heavy rainstorms?
-----	---

Ans:	Raw or partially-treated sewage is dumped along with the runoff
------	---

	Difficulty: Medium Link to: 28.5
--	-------------------------------------

39.	According to your textbook reading, why did no European Medieval town have a population greater than 15,000 inhabitants?
Ans:	City size was restricted by the ability of primitive transportation methods to bring food and necessary resources to the city and to remove wastes. In addition, increased population and population density increased the vulnerability to disease.
	Difficulty: Medium Link to: A Closer Look 28.3

40.	Why is Venice sinking?
Ans:	Because of groundwater withdrawal beneath the city and, to a lesser extent, to rising global sea levels
	Difficulty: Easy Link to: A Closer Look 28.1

41.	Name two problems associated with the use of chemical pesticides to control urban pests.
Ans:	Can be toxic to humans and other animals; pests develop resistance
	Difficulty: Easy Link to: 28.6

42.	List three localized climatic changes caused by urbanization, and discuss their possible effects on the flora and fauna of the area.
-----	--

Ans:	Cities are: more rainy; less windy (but locally concentrate wind); suffer from reduction of solar radiation up to 30% due to particulates City soil is usually compressed and the water cannot flow. Trees suffer from air particulate pollution and ozone. Dust and particles interfere with the exchange of O ₂ and C ₂ necessary for photosynthesis and respiration. Wet surroundings make the trees susceptible to fungus diseases
	Difficulty: Difficult Link to: 28.5

43.	The location of a city is strongly influenced by two general factors. Name them and explain briefly the nature of the influence of each factor.
Ans:	Site - the sum of all environmental features of that location Situation - the placement of the city with respect to other areas
	Difficulty: Medium Link to: 28.3

44.	Defend or refute the following statement: "A city is a self-contained ecosystem because it depends neither on other cities nor surrounding rural areas."
Ans:	False statement -- see discussion of cities as systems in the text
	Difficulty: Easy Link to: 28.1

45.	Before modern times, it was common to use passive solar energy to heat houses. Why has our century largely ignored this technology in favor of other heating methods?
Ans:	Cheap fossil fuels made it unnecessary to use these simpler techniques.
	Difficulty: Easy Link to: 28.5

46.	The location of cities is influenced by two factors: "site" and "situation". Give three examples each of A) good site characteristics, B) good situation characteristics.	
Ans:	A) e.g. defensible location, good geologic substrate, water source, etc. B) e.g. on trade routes, surrounding arable land, etc.	
	Difficulty: Medium Link to: 28.3	

47.	The 2005 Hurricane Katrina disaster resulted in an estimated \$75-100 billion in damages in New Orleans as a result of flooding that covered about 80% of the city. New Orleans is prone to hurricane-driven flooding because it was built where?	
Ans:	Most of it occupies what originally were wetlands, and are below sea level	
	Difficulty: Easy Link to: Case Study	

48.	Define the following terms:	
	Fall line	
	Garden city	
	Greenbelt	
	Urban site	
	Urban situation	
Ans:	<p>Fall line: on the American Atlantic and Gulf coasts, the highest point on rivers that can be navigated and the most downstream point that provides hydro-power</p> <p>Garden city: a city integrated with undeveloped land</p> <p>Greenbelt: rural area surrounding a city</p> <p>Urban site: the physical and environmental characteristics of the location</p> <p>situation: the relationship between the city and surrounding areas</p>	
	Difficulty: Medium Link to: 28.3, 28.5, 28.6, A Closer Look 28.2, A Closer Look 28.4	

49.	Describe how and why each of the following elements of the urban water budget is changed by urbanization: <ul style="list-style-type: none"> • Humidity • Precipitation • Flood hazard
Ans:	1) humidity - cities are more humid 2) precipitation - cities are wetter 3) flood hazard - flood peaks are large and come quicker
	Difficulty: Medium Link to: 28.5

50.	According to the <u>Environmental Science</u> text, what are the two dominant themes in formal city planning?
Ans:	planning for defense and planning for beauty
	Difficulty: Medium Link to: 28.4, A Closer Look 28.4

51.	Cities are generally less / equal / more (circle one) windy than similar rural areas because buildings and other structures obstruct / channel / shelter (circle one) the flow of air.
Ans:	less, obstruct
	Difficulty: Easy Link to: 28.5

52.	Explain how an animal becomes a pest to people.
Ans:	An animal becomes a pest to people when it is in an undesired place at an undesirable time doing unwanted things.
	Difficulty: Medium Link to: 28.6