1.	The major damage to the city of New Orleans associated with Hurricane Katrina in 2005 was the direct result of:
a)	wind
b)	tornadoes
c)	flooding
d)	rioting
e)	waves
	Ans: c Difficulty: Easy Link to: Case Study

2.	According to the textbook, all of the following factors contributed to the disaster in New Orleans during and after Hurricane Katrina **except**:
a)	the hurricane was larger than any other previously seen on Earth
b)	sea-level rise
c)	development of low-lying areas
d)	loss of coastal wetlands
e)	subsidence of the ground surface
	Ans: a Difficulty: Medium Link to: Case Study

3.	Levees protect the city of New Orleans from flooding. In what way did they also **contribute** to the disaster that occurred in 2005 after Hurricane Katrina?
a)	the levees caused the winds during Katrina to be stronger and more damaging than they otherwise would have been
b)	the levees prevented people from escaping the city
c)	the levees held rain water that otherwise would have drained freely to the Gulf of Mexico
d)	the levees prevented the accumulation of sediment which, combined with subsidence, caused New Orleans to sink
e)	the levees did **not** contribute in any way
	Ans: d Difficulty: Medium Link to: Case Study

4.	Earthquakes result when rocks of the Earth's crust _____.

a)	explode
b)	rupture
c)	become saturated with water
d)	separate
e)	dilate

Ans: b
Difficulty: Easy
Link to: 16.1

5.	Landslides are the down-slope movement of rock, mud, or debris driven by _____.
a)	moving water
b)	wind
c)	gravity
d)	glacial ice
e)	human factors

Ans: c
Difficulty: Easy
Link to: 16.1

6.	Of the following natural hazards, which one can be actually caused or significantly worsened (physically made larger) by human activities?
a)	earthquakes
b)	drought
c)	tsunami
d)	landslides
e)	volcanic eruptions

Ans: d
Difficulty: Medium
Link to: 16.1

7.	To be considered a _____, it must have sustained winds of at least 74 mph (119 km/hr).
a)	hurricane
b)	tsunami
c)	tornado
d)	paltroon
e)	wildfire

	Ans: a Difficulty: Easy Link to: 16.1

8.	The Saffir-Simpson scale is a 1-5 rating of the intensity of a:
a)	earthquake
b)	tornado
c)	volcanic eruption
d)	drought
e)	hurricane
	Ans: e Difficulty: Medium Link to: 16.1

9.	As defined in your textbook, a **natural hazard** is any natural process that:
a)	is not caused by humans
b)	kills people
c)	occurs over a limited time span in a defined geographical area
d)	is a potential threat to human life and property
e)	causes damage or fatalities at regular intervals over time
	Ans: d Difficulty: Easy Link to: 16.1

10.	The textbook suggested that increasing damage and loss of life from a wide variety of natural disasters and catastrophes, including hurricanes and earthquakes, are the result of:
a)	increasing geological activity over time
b)	good land-use planning
c)	global warming
d)	increasing human population
e)	El Niño
	Ans: d Difficulty: Easy Link to: 16.7

11.	Major adjustments to natural hazards and processes include all of the following except:

a)	land-use planning
b)	disaster preparedness
c)	construction of structures to control natural processes
d)	using engineering devices to reduce all natural hazards to zero
e)	bearing the loss

Ans: d
Difficulty: Easy
Link to: 16.9

12.	Which of the following statements about natural hazards is **not** true?
a)	scientists are able to identify earthquake faults with reasonable accuracy
b)	in the U.S., property damage due to natural hazards has increased through time on average, despite better methods of prediction and prevention
c)	in the U.S., tornadoes and lightning strikes have caused the highest annual loss of human life
d)	satellite imagery and advanced computer models allow meteorologists to both forecast hurricanes and predict where they will strike
e)	in the U.S., annual human fatalities from natural hazards have increased, due to development in more hazardous areas

Ans: e
Difficulty: Medium
Link to: 16.5

13.	What is the difference between a "disaster" and a "catastrophe"?
a)	a catastrophe is a disaster that requires much more money and time for recovery
b)	a catastrophe results in human fatalities
c)	a catastrophe is caused by humans; a disaster is natural
d)	a disaster is caused by humans; a catastrophe is natural
e)	disasters occur repeatedly over long periods of time, whereas catastrophes are by definition one-time events

Ans: a
Difficulty: Medium
Link to: 16.1

14.	The nature, pattern, and frequency of natural hazards such as earthquakes, floods, volcanoes, etc. in a particular location can be predicted best by looking at:

a)	astrological forecasts
b)	events of the same kind in the same area in the past
c)	scientific textbooks
d)	zoning ordinances in that area
e)	satellite imagery

Ans: b
Difficulty: Easy
Link to: 16.5

15.	The "100-year flood" is exactly equivalent to which of the following:
a)	the largest flood on record at a particular location
b)	the largest flood that can possibly occur at a particular location
c)	the flood that, once it has occurred, will not happen again for another 100 years
d)	the flood that has a 1% chance of occurring in each year
e)	the size of flood that has occurred 100 times previously at a particular location

Ans: d
Difficulty: Easy
Link to: 16.5

16.	The 2004 tsunami that killed an estimated 250,000 people around the rim of the Indian ocean was triggered by a:
a)	Category 5 typhoon (hurricane)
b)	meteor strike
c)	volcanic explosion
d)	magnitude 9 earthquake
e)	submarine landslide

Ans: d
Difficulty: Medium
Link to: A Closer Look 16.3

17.	Your textbook discussed flooding on the Yangtze River in China and landsliding in Honduras during Hurricane Mitch in 1998. In both cases, what land-use change contributed to the disaster:
a)	farming
b)	urbanization
c)	strip mining
d)	suburban sprawl
e)	deforestation

	Ans: e Difficulty: Medium Link to: 16.7

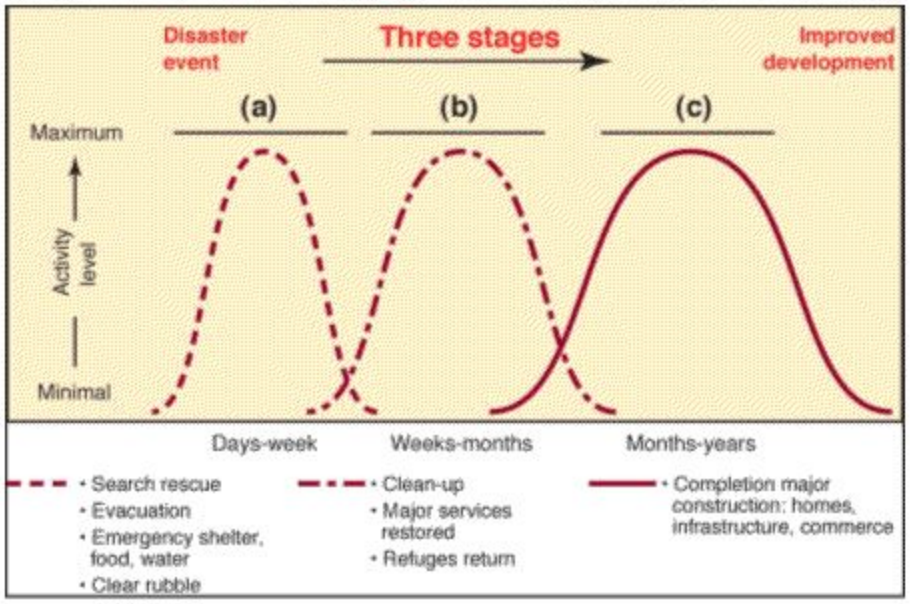
18.	The "risk" of an earthquake striking a city can be defined as the product of _____ multiplied by the consequences (for example, dollars of damage) if that earthquake occurred.
a)	the population of the city
b)	the number of times that earthquakes have struck that city before
c)	the probability that an earthquake will occur
d)	the cumulative risk from all natural hazards
e)	number of fatalities
	Ans: c Difficulty: Medium Link to: 16.7

19.	Responses to natural hazards that produce disasters can be categorized as either (a) reactive or (b) active (= "proactive"). Which of the following would be an example of an "active" response to a disaster-producing hazard:
a)	land-use planning
b)	firefighting
c)	distributing emergency food
d)	evacuating the area of the disaster
e)	removing rubble
	Ans: a Difficulty: Easy Link to: 16.9

20.	Responses to natural hazards that produce disasters can be categorized as either (a) reactive or (b) active (= "proactive"). All of the following are "active" responses to natural hazards **except**:
a)	evacuation planning
b)	protection of natural ecosystems (e.g., coastal wetlands) that protect against disasters
c)	land-use planning and zoning
d)	construction of disaster-resistant structures
e)	distributing food and shelter to disaster survivors

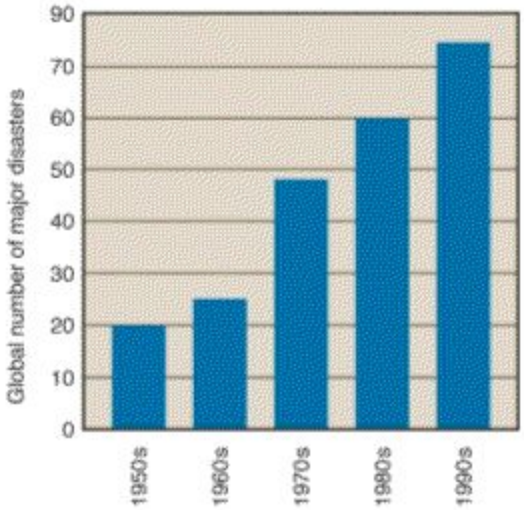
	Ans: e Difficulty: Easy Link to: 16.9

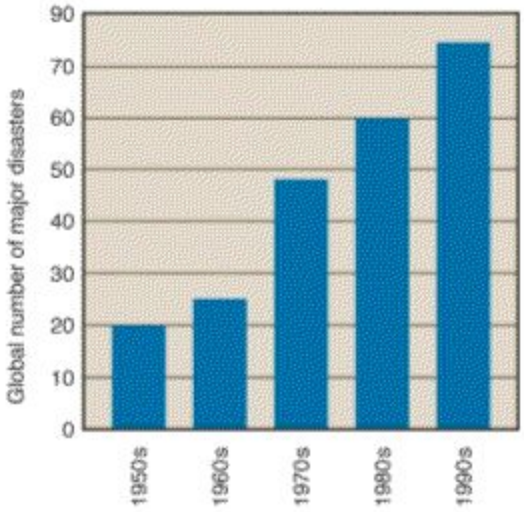
21.	The figure below illustrates the three stages of recovery from a natural catastrophe (Fig. 16.19 in your textbook). Fill in the names of the blanks (shown as a, b, and c above) in the correct order from left to right.



a)	evacuation, reconstruction, land-use planning
b)	recovery, rehabilitation, reconstruction
c)	response, relief, rehabilitation
d)	emergency, restoration, reconstruction
e)	preparation, response, restoration

	Ans: d Difficulty: Medium Link to: 16.9

22.	What trend is illustrated in the figure below: 
a)	more frequent natural disasters over time
b)	global warming
c)	ozone depletion
d)	species extinctions
e)	rising number of industrial accidents
	Ans: a Difficulty: Easy Link to: 16.10

23.	According to the textbook, the increasing trend in the figure below probably results from some combination of three factors: (1) increasing population and infrastructure in hazardous areas, (2) poor land-use choices, and: 
a)	decaying disaster-preventing infrastructure

b)	increases in these events due to land-use changes, global climate change, etc.
c)	loss of biodiversity
d)	broad political corruption in the developing world
e)	the figure above has been altered; the trend is actually down over time

Ans: b
Difficulty: Medium
Link to: 16.10

24.	Global warming has been cited as a mechanism driving the number and/or severity of natural disasters upward over time. All of the following are likely effects of global warming that may lead to increased natural hazards **except**:
a)	warming oceans → more intense hurricanes
b)	increased precipitation in some areas → larger floods
c)	less precipitation in some areas → more severe droughts
d)	increasing Arctic temperatures → unstable soils and slopes
e)	increased biodiversity → more frequent volcanic eruptions

Ans: e
Difficulty: Easy
Link to: 16.10

25.	Hurricane Katrina caused over 1800 deaths and an estimated $200 billion or more in damages to New Orleans, far more than any hurricane or other natural disaster to strike the city in its ~300 year history. List at least 4 changes or other factors that contributed to the severity of damages in 2005.
Ans:	subsidence sea-level rise loss of coastal wetlands building on low-lying ground

Difficulty: Medium
Link to: Case Study

26.	One of the recommendations following the 2005 Hurricane Katrina disaster along the Gulf of Mexico coast was to rebuild coastal wetlands. In what way would renewed coastal wetlands protect New Orleans against such events in the future:

Ans:	coastal wetlands reduce storm surge as well as wave heights at points inland
	Difficulty: Medium Link to: Case Study

27.	What is the difference between "natural processes" (defined in the textbook as "physical, chemical, and biological changes that modify the landscape") and "natural disasters"?
Ans:	in disasters, humans get in the path of the natural process
	Difficulty: Easy Link to: 16.1

28.	The textbook gave a list of 10 of the "most devastating natural hazards." For example, one of these was earthquakes. Name 5 more of those hazards.
Ans:	volcanic eruptions, landslides, hurricanes, tsunami, wildfire, tornadoes, floods, heat waves, and drought
	Difficulty: Easy Link to: 16.1

29.	Of the 10 "most devastating natural hazards" listed in the textbook (earthquakes, volcanic eruptions, landslides, hurricanes, tsunami, wildfire, tornadoes, floods, heat waves, and drought), which 3-4 can be actually caused or significantly worsened (physically made larger) by human activities.
Ans:	landslides, wildfires, floods (and possibly hurricanes, heat waves, and drought [through global warming])
	Difficulty: Medium Link to: 16.1

30.	Explain the difference between a "natural hazard" and a "natural disaster".

Ans:	A natural hazard is a general or long-term threat to human life and/or property (e.g., the threat of volcanic eruption in the Naples, Italy area), whereas a natural disaster refers to a specific event (e.g., the eruption that destroyed Pompeii in 79 AD).
	Difficulty: Difficult Link to: 16.1

31.	Your textbook discussed the example of the La Conchita landslide, which killed 10 people and destroyed 30 homes in 2005. What was the lesson from this event?
Ans:	The La Conchita landslide occurred at a site where numerous historical and prehistoric movements occurred. The community was built upon thick landslide deposits. The lesson was that homes should never have been built in that location, at least without proper study or mitigation.
	Difficulty: Difficult Link to: A Closer Look 16.2

32.	Listed below are some of the general concepts listed in the textbook for understanding the nature and extent of natural processes and hazards. Match the concept on the left with the term on the right.

Natural processes have _____.	(a) adverse effects
Hazards are _____.	(b) physical and biological
Linkages exist between different hazards	environment
and between the _____.	(c) predictable
Hazards that previously produced mostly disasters	(d) service functions
are now producing _____.	(e) catastrophes
_____ of hazards can be minimized.	

Ans:	d, c, b, e, a
	Difficulty: Medium Link to: 16.3

33.	What event killed an estimated 250,000 fatalities around the Indian Ocean region in December of 2004?

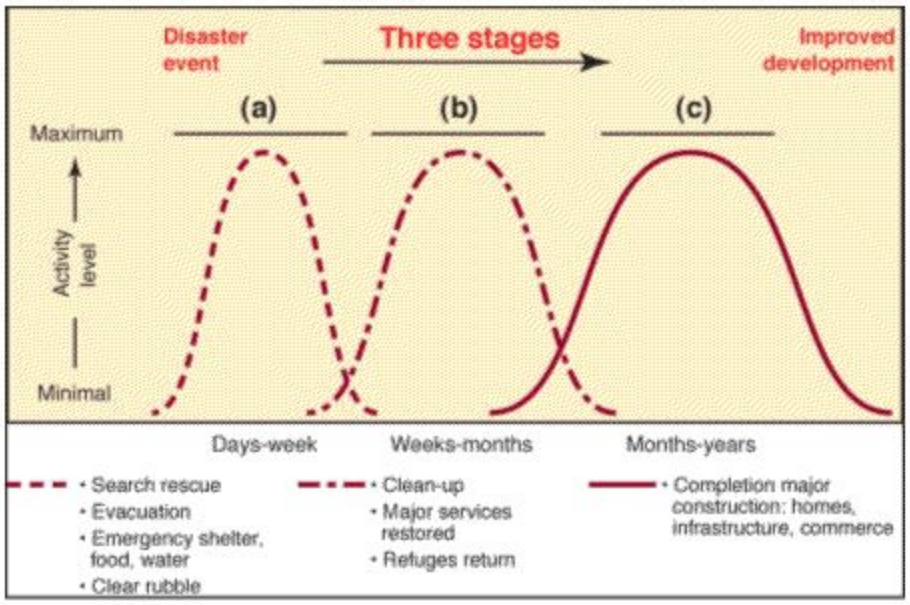
Ans:	a tsunami
	Difficulty: Easy Link to: A Closer Look 16.3

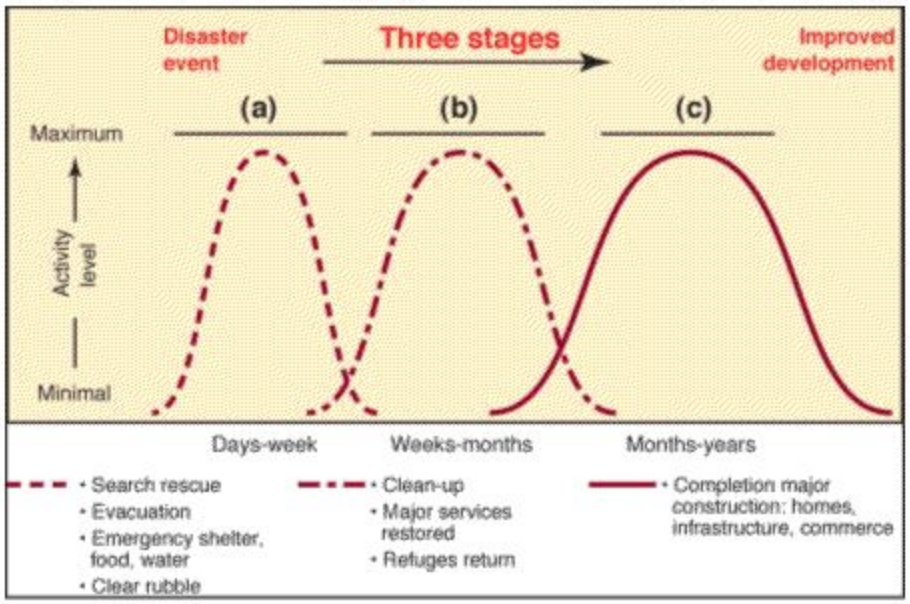
34.	What is the main reason that natural hazards that produced disasters in the past now causing catastrophes?
Ans:	Growth in human population and infrastructure in hazardous areas
	Difficulty: Medium Link to: 16.7

35.	The "risk" of a particular event, for example a natural disaster such as an earthquake, is defined as:
Ans:	The probability of the event occurring multiplied by the consequences should that event happen
	Difficulty: Medium Link to: 16.8

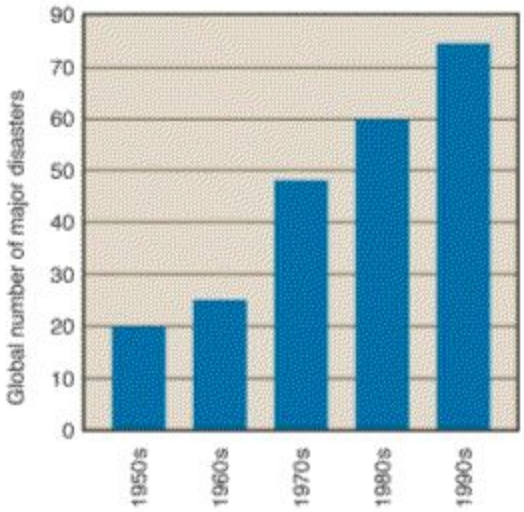
36.	How does **deforestation** increase the **risk** of landslide disasters in the deforested area, given how "risk" was defined in your textbook?
Ans:	Risk was defined as the product of probability times impact. Deforestation increases the probability of landsliding, as discussed in the text.
	Difficulty: Difficult Link to: 16.7, 16.8

37.	How does **urbanization** increase the **risk** of natural hazards, for example earthquakes, given how "risk" was defined in your textbook?
Ans:	Risk was defined as the product of probability times impact. Urbanization has negligible effect upon earthquake probabilities, but increases the number of people and the amount of damage likely to occur.
	Difficulty: Difficult Link to: 16.8

38.	What is illustrated in the figure below? 
Ans:	The three stages of recovery following a natural disaster
	Difficulty: Easy Link to: 16.9

39.	In the figure below, why does restoration activity peak after emergency response activity and before reconstruction activity? 

Ans:	It's a matter of priorities. The first priority is to save lives, etc. Only after that can manpower and resources be put into restoring services and similar activities. And restoration is both easier and a higher priority than long-term reconstruction of infrastructure that was destroyed.
	Difficulty: Difficult Link to: 16.9

40.	In the figure, the number of natural disasters worldwide has increased over time. List some of the changes that may have contributed to this increase. 
Ans:	increasing population and infrastructure in hazardous areas poor land-use choices actual increases in the number and severity of these events due to land-use changes, global climate change, etc.
	Difficulty: Medium Link to: 16.10