PART I

Instructions: Shade the letter of the correct answer on the machine scorable answer sheet provided.

SECTION A **TOTAL VALUE: 42%**

Instructions: Do ALL of the Questions in Part I, Section A.

1. What is the result of compressional forces?

   (A) formation of a rift valley
   (B) formation of Mid-Atlantic Ridge
   (C) tectonic plates moving apart
   (D) tectonic plates moving together

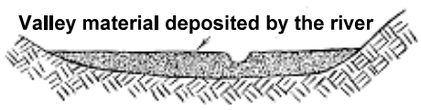
2. Which explains the formation of fold mountains?

   (A) convergent plate boundaries
   (B) fracturing of rocks
   (C) sea floor spreading
   (D) volcanic activity

3. Which describes exfoliation?

   (A) burrowing animals tunneling through the soil
   (B) cracking of a rock due to growth of plant roots
   (C) splitting of outer layers of rock usually occurring in a desert
   (D) water in cracks of rocks, freezing, expanding and fracturing the rock

4. Which describes the river in the graphic below?



   (A) flood plains well-developed
   (B) mainly vertical erosion
   (C) rapids or waterfalls developed
   (D) v-shaped valley

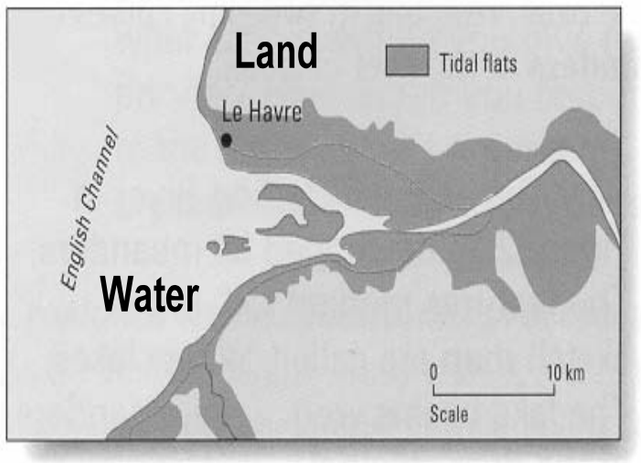
5. What is a sharp mountain ridge between two cirques?

   (A) aréte
   (B) esker
   (C) erratic
   (D) moraine

6. What is a ridge of sand, with an edge that may be curved, running away from the coastline, and developed by the longshore drift,?

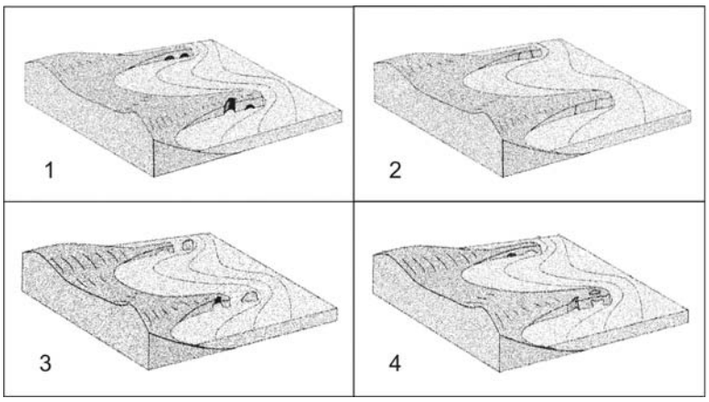
   (A) sea arch
   (B) sea cave
   (C) spit
   (D) stack

7. Which kind of delta is shown in the diagram below?



(A) arcuate
(B) digitate
(C) estuarine
(D) finger-like

8. According to the graphic below, in which sequence does a sea stack form?



(A) 1 → 2 → 3 → 4
(B) 2 → 1 → 4 → 3
(C) 3 → 4 → 1 → 2
(D) 4 → 1 → 3 → 2

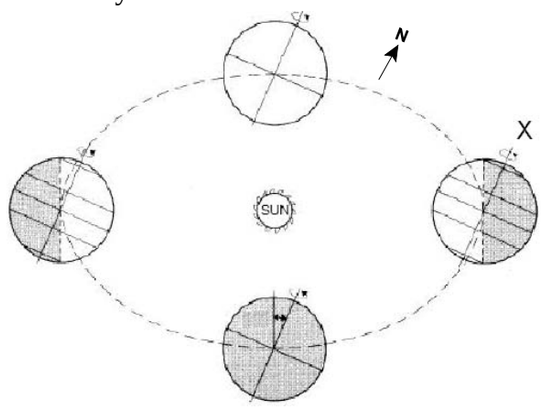
9. What adaptation is illustrated when a delta is used for farming?

(A) aesthetic appeal
(B) land form
(C) market appeal
(D) water form

10. Which describes a winter monsoon?

(A) extremely cold temperatures and very dry
(B) high humidity and strong winds
(C) strong winds and extremely cold temperatures
(D) very dry with strong winds

11. In the diagram below, what season is the Southern Hemisphere experiencing when Earth is in the position indicated by X?



(A) fall
(B) spring
(C) summer
(D) winter

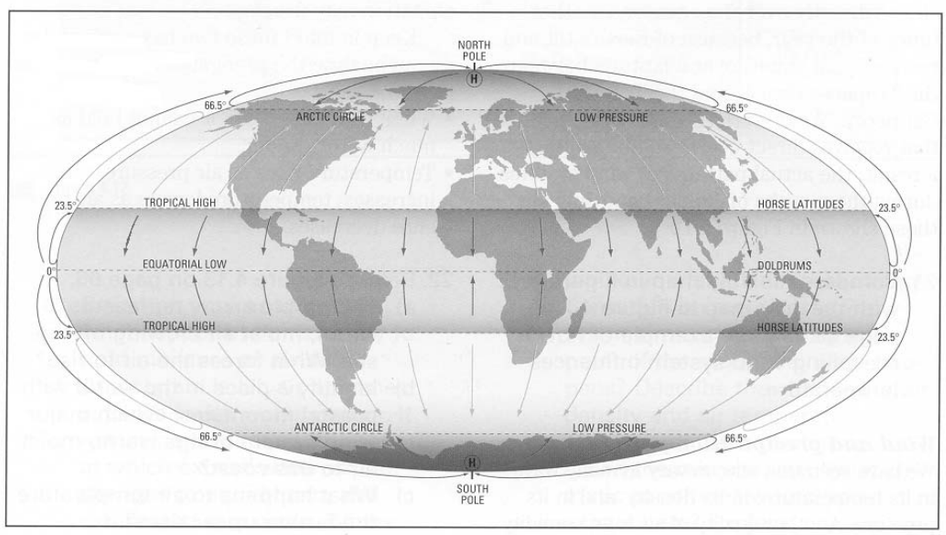
12. Which defines elevation?

(A) difference between high and low points in a region
(B) distance north or south from the equator
(C) height above sea-level
(D) height of a mountain above surrounding plains

13. Which defines ocean current?

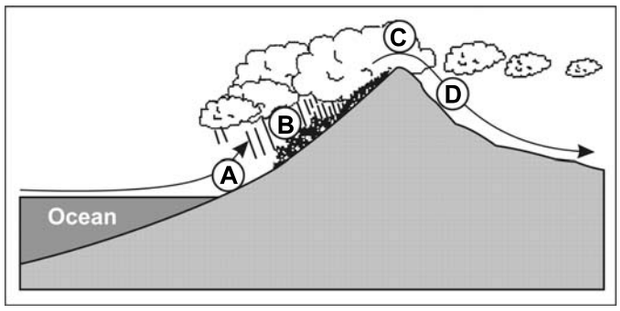
(A) permanent or semi-permanent, horizontal movement of the top 100 m of surface water
(B) permanent or semi-permanent, vertical movement of the top 100 m of surface water
(C) seasonal, horizontal movement of the top 1000 m of surface water
(D) seasonal, vertical movement of the top 1000 m of surface water

14. Which is illustrated in the graphic below?



(A) land breezes
(B) ocean currents
(C) prevailing winds
(D) tropical monsoons

15. Which letter is in the rain shadow side of the mountain, in the graphic below?

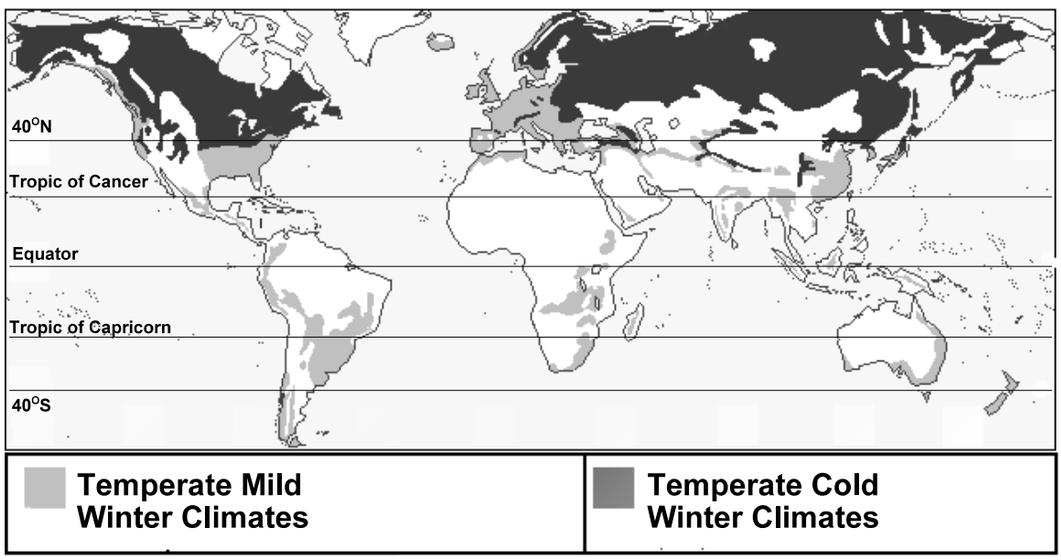


(A) A
(B) B
(C) C
(D) D

16. Which best describes Earth's temperature pattern?

(A) The further north you travel the colder it gets.
(B) The further south you travel the colder it gets.
(C) The higher the latitude the colder it gets.
(D) The lower the latitude the colder it gets.

17. According to the graphic below, which is a pattern of climate zones?



(A) All temperate, cold winter climate regions are found north of the Tropic of Cancer.
(B) All temperate, cold winter climate regions are found south of the Tropic of Cancer.
(C) All temperate, mild winter climate regions are found within 20 º north of the equator.
(D) All temperate, mild winter climate regions are found within 20 º south of the equator.

18. The greatest annual temperature range is most likely found at what location in the map below?

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

19. Which describes the sequence of nutritional needs of various species from producers to higher level consumers?

(A) biome
(B) community
(C) ecosystem
(D) food chain

20. Which factors affect soil texture?

(A) leaching, eluviation, capillary action
(B) particle size, particle type, bonding ability
(C) percent of particle type, humus, particle size
(D) precipitation levels, air movement, percent of particle type

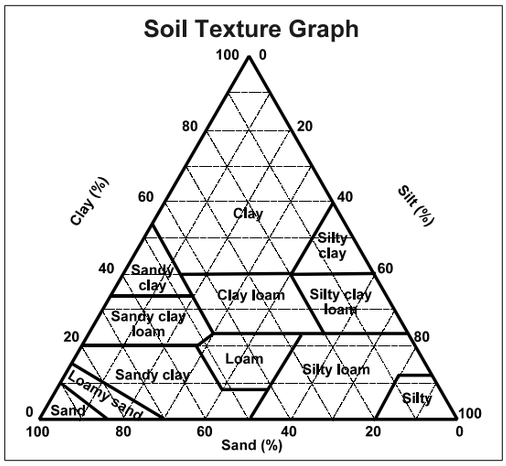
21. Which is necessary for a natural material to be considered a resource?

(A) ability to make a profit
(B) easy access to the material
(C) proximity of market
(D) used in the immediate area

22. Which is an input in a manufacturing system?

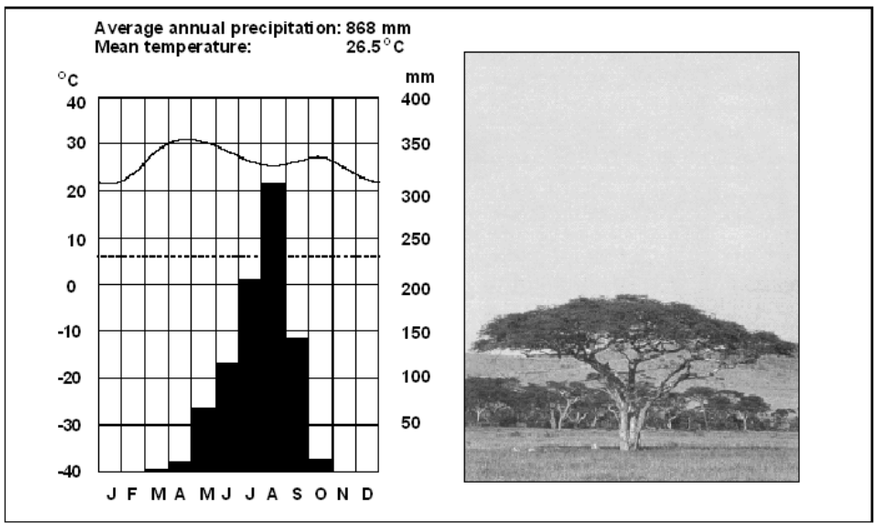
(A) analytical processes
(B) climate
(C) finished product
(D) land

23. Which combination is most suitable for farming?



(A) 85% sand, 10% clay, 5% silt
(B) 23% sand, 52% clay, 25% silt
(C) 44% sand, 20% clay, 36% silt
(D) 50% sand, 40% clay, 10% silt

24. Which ecosystem is illustrated in the graphic below?



(A) boreal forest
(B) desert
(C) savanna
(D) temperate grassland

25. Which set of farming components is correct?

	Input	Process	Output
(A)	soil	seeding	rice
(B)	ploughing	pesticides	potatoes
(C)	seed	ploughing	labour
(D)	weeding	irrigation	vegetables

26. Which is a physical factor that must be considered when an oil company places a rig in the North Sea?

(A) capital availability
(B) ease of transportation
(C) ice conditions
(D) porous rock

27. A rig must be placed in water depths greater than 200 m in an area largely protected from the effects of wave action. Which type of drilling technology would be used to accommodate these technologies?

(A) jack-up
(B) semi-submersible anchored
(C) semi-submersible dynamically positioned
(D) submersible

28. In which form of agriculture would you find high levels of technology on a small parcel of land?

(A) extensive
(B) intensive
(C) shifting
(D) subsistence

29. Which is true of oil and gas formation?

(A) forms as a result of pressure, heat, and bacterial action
(B) forms as a result of intense heating from volcanic activity
(C) forms only in fold traps
(D) forms only from dead plants and animals

30. Which is true regarding tree harvesting?

(A) Strip cutting involves the removal of mature trees only.
(B) Strip cutting is least dangerous to the environment.
(C) Selective cutting avoids damaging immature trees.
(D) Selective cutting is the most rapid and most economical.

31. Which is a major source of ocean pollution?

(A) bilge cleaning
(B) drilling mud
(C) dumping of by-catch
(D) oil spill

32. Based on the chart below, which best represents subsistence agriculture?

	Yield	Capital	Labour
(A)	low	high	low
(B)	high	low	low
(C)	low	low	low
(D)	high	low	high

33 Which is a natural input in a steel manufacturing plant?

(A) capital
(B) labour
(C) machinery
(D) power

34 In which does a synthetic process occur?

(A) computer factory
(B) fish plant
(C) oil refinery
(D) sawmill

35 The manufacturing of which product is a labour-intensive activity?

(A) automobile
(B) jewelry
(C) plywood
(D) steel

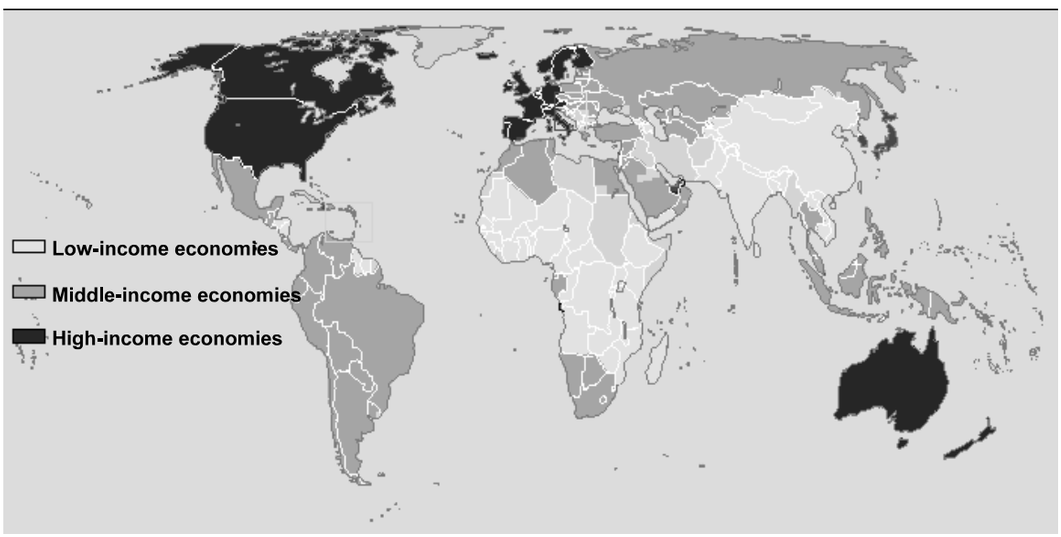
36 If low, which is an advantage of agglomerating tendency?

(A) energy costs
(B) labour costs
(C) municipal taxes
(D) federal taxes

37 Which characteristics of a labour force make it attractive to industry?

(A) high absenteeism, low turnover rate
(B) high skill level, high turnover rate
(C) low productivity, high trainability
(D) low wage rate, strong work ethic

38 According to the graphic, which region is the most industrialized?



(A) Central America
(B) Eastern South America
(C) Western Europe
(D) Western South Africa

39. Which is part of a personal service industry?

(A) insurance agent
(B) investment counsellor
(C) teacher
(D) wholesaler

40. According to the table below, which country is the most economically developed?

	Percent Employed by Sector		
	Primary	Secondary	Tertiary
(A)	27.7	22.7	49.6
(B)	52.4	16.6	31.0
(C)	5.6	32.2	62.2
(D)	42.0	21.0	37.0

41. According to the table below , which country is the most developed?

	Per Capita GNP	Life Expectancy	Literacy Rate
(A)	1100	52.7	56.64
(B)	2 530	65.9	94.6
(C)	18 400	78.6	98.2
(D)	20 100	78.1	99.0

42. Software Development Company X is interested in locating in Central America. Which would influence Company X's decision to locate in this country?

(A) literacy rates
(B) low wages
(C) suitable land
(D) warm climate

SECTION B **TOTAL VALUE: 8%**

Do only ONE of the Units in Section B

Either: Unit 6 - Population Distribution and Growth **(43 - 50)**
Or: Unit 7 - Settlement and Urbanization **(51 - 58)**

Unit 6 - Population Distribution and Growth

43. What refers to the number of people in an area?

(A) population growth
(B) population change
(C) population density
(D) population distribution

44. Which country has the fastest population growth rate, according to the table?

	1971-1981		1981-1991	
	Population Increase	Population Growth (%)	Population Increase	Population Growth (%)
(A)	26 884 000	13.2	21 300 000	9.3
(B)	2 410 000	40.9	2 400 000	28.9
(C)	3 345 000	10.3	1 900 000	5.3
(D)	1 510 000	44.5	400 000	8.2

45. In a given year, there were 755 260 live births, and 626 236 deaths. Which refers to the overall trend?

(A) actual decrease
(B) actual increase
(C) natural decrease
(D) natural increase

46. What is the dependency ratio for the country below?

Percentage under 15.....	26 %
Percentage of working force 15-64 ..	60 %
Percentage over 65.....	14 %

(A) 31 per 100
(B) 55 per 100
(C) 66 per 100
(D) 99 per 100

47. Which is used to calculate actual change?

(A) $birth\ rate - death\ rate$

(B) $(births + immigration) - (deaths + emigration)$

(C) $\frac{population\ under\ 15\ years\ +\ percent\ over\ 64\ years}{percentage\ of\ working\ age\ over\ 100} x100$

(D) $\frac{population\ change}{original\ population} x\ 100$

48. Which is the best example of a repel factor that may influence an individual's decision to migrate?

(A) distance of travel from country of origin
(B) educational opportunities at destination
(C) famine in country of origin
(D) language at destination

49. What is a collection of data on a variety of population-related characteristics, including age, gender, language, and religion?

(A) census
(B) dependency ratio
(C) growth rate
(D) pyramid

50. Which refers to the movement of people into a country or region?

(A) emigration
(B) immigration
(C) pull factor
(D) push factor

Unit 7 - Settlement and Urbanization

Note: If you are completing this unit, please ensure you shade bubbles for 51 - 58

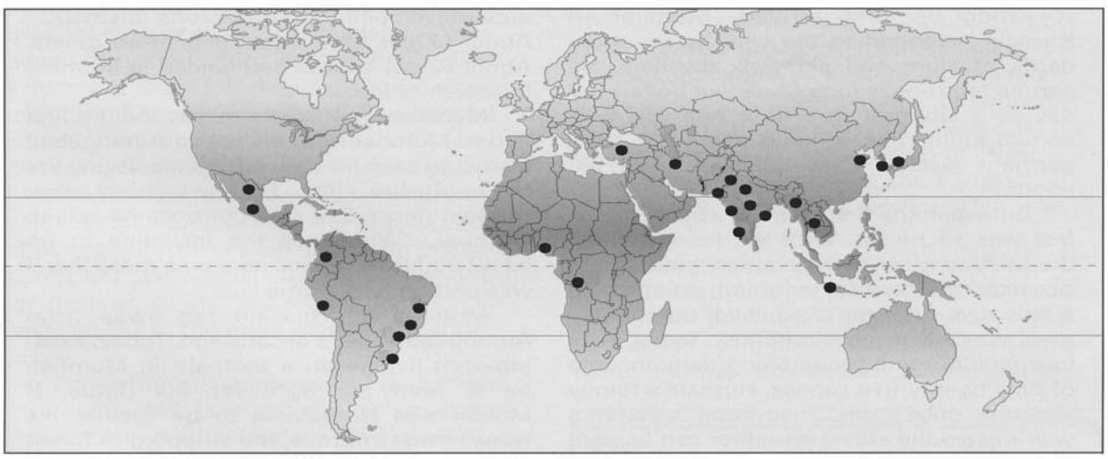
51. Which is primarily used as a classification for rural areas?

(A) availability of residential services
(B) level of government service
(C) literacy rate
(D) population size

52. What type of site is established when a company locates its work camp near a mining operation?

(A) acropolis
(B) confluence
(C) peninsula
(D) resource

53. Which region on the map represents the highest average growth rate from 1992-1995?



● **Cities with average annual growth rate (1992-95) between 3.0 and 4.4%**

(A) Africa
(B) Central America
(C) East Asia
(D) Southwest Asia

54. Which is the greatest determining factor to increased migration from the countryside to an urban centre?

(A) cost of living
(B) employment
(C) municipal taxes
(D) property value

55. Which conditions describe rank-size?

	level of urbanization	level of economic development
(A)	high	high
(B)	high	low
(C)	low	high
(D)	low	low

56. Which is, “the setting or position of a city or town in relation to other places”?

(A) acropolis
(B) confluence
(C) site
(D) situation

57. Which is, “the movement of rural populations into town and cities”?

(A) emigration
(B) primacy
(C) rank-size
(D) urbanization

58. Which land use practice uses agglomerating tendencies such as security, trucking and fire protection?

(A) commercial
(B) industrial
(C) public
(D) residential

PART II

SECTION A
TOTAL VALUE: 8%

Instructions: Do ALL Questions in Part II, Section A.

Value
4% 59. Explain the impact of any two types of new catch technologies on the ocean environment.

Value
4% 60. Explain any two factors that affect the growth of the quaternary sector.

SECTION B
Do only ONE of the Units in Section B

Either: Unit 6 - Population Distribution and Growth
Or: Unit 7 - Settlement and Urbanization

Unit 6 - Population Distribution and Growth

Value
4% 61. Briefly describe two factors that affect birth rates and two factors that affect death rates.

Unit 7 - Settlement and Urbanization

Value
4% 62. Describe two factors that contribute to the creation of a high density urban area.

PART II, SECTION C

Instructions: Part II, Section C consists of two case studies. Do ALL questions in this section.

Case Study1
Units 1 - 5

Two Hurricanes – Different Results

Hurricane Floyd - 1999

Floyd was a large and intense hurricane that pounded the central and north Bahama islands, seriously threatened Florida, struck the coast of North Carolina and moved up the United States east coast. It neared the threshold of category five intensity on the Saffir/Simpson Hurricane scale as it approached the Bahamas, and produced a flood disaster of immense proportions in the eastern United States, particularly in North Carolina.

Floyd was first detected as a tropical wave that moved off the African coast on September 2nd. The system gradually became a tropical storm and developed into a hurricane by September 10th as it moved towards the United States. It became a Category 4 hurricane on September 13th as it approached central Bahama Islands. A west-northwestward turn late on the 13th took the center through northeastern Bahamas. On September 16th wind gusts of 230 km/h and storm surges of 3 - 4 metres were reported from the North Carolina coast. The hurricane continued its journey up the eastern seaboard of the United States where it was later downgraded to a tropical storm. The storm eventually moved over the coast of New Brunswick, late on the 17th, Prince Edward Island early on the 18th, and the island of Newfoundland late on the 18th and early on the 19th.

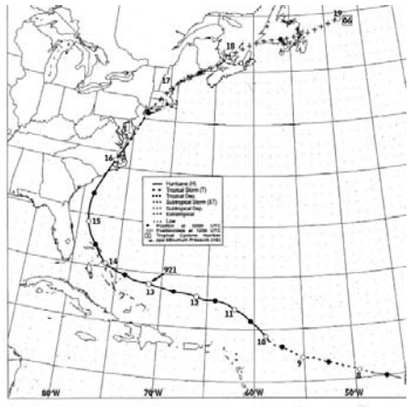


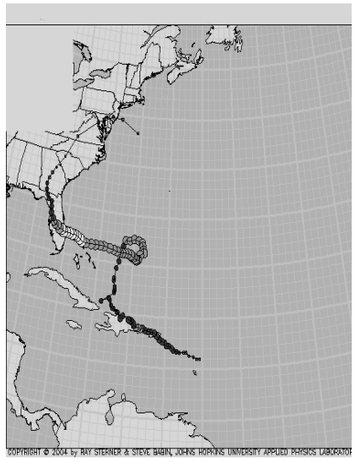
Figure 1. Best track positions for Hurricane Floyd, 07-17 September 1999.

Floyd will be most remembered in the United States for its rainfall. Many places reported new 24-hour station rainfall records. Widespread rainfalls in excess of 2 500 mm in North Carolina to amounts as high as 4 200 mm in some places were reported. These rains, aided by rains from tropical Storm Dennis two weeks earlier, caused widespread severe flooding. The flooding caused an estimated $6 billion in damages and was responsible for 55 deaths. All along the eastern seaboard there were approximately 20 000 homes destroyed and an estimated 75 000 homes damaged. As well, there were 2.5 million people without electricity at some point during the storm. Large numbers of families were housed in temporary shelters. With so much property underwater there was severe agricultural damage. "Nothing since the Civil War has been as destructive to families here," said H. David Bruton, the state's Secretary of Health and Human Services... "The recovery process will be much larger than the water-going-down process". However, soon after the hurricane was over the U.S. government provided over $3 billion in initial aid and additional funds later. Some families also had insurance for such a disaster.

On the positive side, the warning system that was in place worked out extremely well and over the entire lifetime of the hurricane, the track forecasts for Floyd were excellent. The average track errors for the official forecasts were substantially below most recent ten-year averages. These forecasts allowed for various watches and warnings to be issued for Floyd. For instance, a hurricane warning was issued for the northwest Bahamas more than 24 hours prior to the arrival. For the United States, practically the entire east coast was put under hurricane warning as a result of Floyd. Given required response times for evacuations and other preparations for such a large, severe hurricane, it was prudent to issue such warnings. As a result, over 2 million people were evacuated in the United States. This was probably the largest evacuation in U.S. history. As well, due to Hurricane Andrew in 1992 extra protection measures had been taken. Many residents were prepared by having galvanized storm shutters installed and new houses were built to a high standard.

Hurricane Jeanne - 2004

On September 28th , 2004, Hurricane Jeanne hit both the Dominican Republic and neighboring Haiti, destroying livelihoods in both countries. The storm caused flooding and triggered landslides in Haiti. With winds of 140 -160 km/h Jeanne was classified as a category 2 intensity on the Saffir/Simpson Hurricane scale.



The United Nations Stabilization Mission in Haiti reported more than 1 500 dead and 900 missing after Hurricane Jeanne tore through Haiti. Meanwhile, 300 schools were hit and 30 000 people were left homeless. In the Dominican Republic, banana plantations, cornfields, yucca, cocoa and sugar cane crops were damaged. Both places also rely heavily on the tourist industry which was also greatly affected. Electricity and telephone wires were also broken and roads destroyed. The storm destroyed 70-80% of Haiti's poorly constructed homes, scattering debris everywhere. Also, there were very few emergency protection measures in place making the damage to humans and property even worse.

Haiti itself, one of the world's poorest countries, was the worst hit of all Caribbean islands, and Hurricane Jeanne only added to the existing problems of poverty and unrest. Hunger, dehydration and the spread of disease were of major concern. The United States government provided some financial aid to the affected areas. Other world organizations also helped to provide feeding programs and assistance to children suffering from malnutrition. Although the Dominican Republic is not as poor as neighboring Haiti, the hurricane did deteriorate living conditions and destroy incomes.

Work is ongoing through many groups and organizations to help people of these countries recover. In Haiti, any work done needs to address the causes of this tragedy. "People are at rock bottom", said Prosperty Raymond, a Christian Aids's programme officer in Haiti. "They have no alternative means of survival. They turn to the last available resources - trees- which they cut down just to have a few pennies with which to buy their daily bread and make an effort to meet their families' basic needs."

Hurricane Comparison				
Hurricane	Category	Date	People left homeless	Lives lost
Floyd	4	September 13, 1999	2 000	55
Jeanne	2	September 28, 2004	30 000	1500

If one adds up the steps taken in Haiti and Dominican Republic to prepare for this disaster, one will find that there are limited resources devoted to volunteer programs, warning systems, and shelter construction. People who do make it to temporary shelters only do so after everything they own has been destroyed. In contrast, both the Bahama Islands and Florida have a good warning system in place. As a result, the residents were much better prepared for such a natural disaster.

Value

4% 63. Using the case study and your geographical knowledge, describe two ways climatic conditions affect human activity.

Value

4% 64. Using the case study and your geographical knowledge, explain two ways humans respond to hazards posed by selected land forms and water forms.

Value

6% 65. As a climatologist with an expertise in hurricanes, you will give a report to three major news networks on Hurricane Jeanne and Floyd. Using the case study and your geographical knowledge, suggest three reasons why the number of lives lost were different in each case.

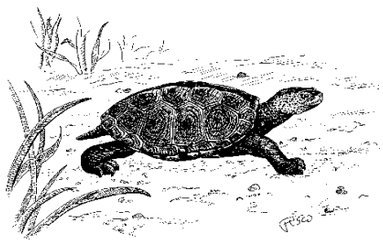
CASE STUDY 2
Units 1 - 5

Diamondback Turtles – Will they survive human impact?

Diamondback terrapins are the only species of turtle in the United States that routinely occupy brackish[1] water habitats, occurring in tidal creeks of estuaries[2] along the Atlantic and Gulf coasts from Cape Cod, Mass. to Corpus Christi, Texas. Some have distinctive markings on their heads and on their upper shell. Facial patterns often make the terrapins look like they have a moustache or are wearing lipstick. Currently, diamondback terrapins are protected under the Massachusetts Endangered Species Act as "threatened".

While the strongest hurricanes seem not to affect the terrapins, human activities past and present have. In the 1800s and early 1900s, terrapins were heavily exploited as a gourmet food source, earning them the label of "most celebrated of American turtles." Prices soared and a market was born to supply the big eastern cities of Baltimore, Philadelphia and New York. The diamondback terrapin became one of the most economically important reptiles in the world.

Today, the terrapin again faces human threats. Some of these human threats include death by drowning in crab and lobster traps, habitat degradation and negative interactions associated with human recreational activities. One study has even suggested that heavy beach use might reduce nesting by terrapins. In short, automobiles run over turtles crossing the road to lay eggs and boat propellers injure them resulting often in death. Other threats come from nature. On average, less than 20% of turtle eggs laid, survive through the first year. One of the main reasons turtles don't survive is that they are preyed upon by skunks, raccoons, crows, seagulls, and other predators. Raccoons, muskrats, skunks, and crows eat the turtle's eggs, as well, young hatchlings are often eaten by gulls, crows and black-crowned night-herons. Although the hatchlings are less vulnerable to predation when in water, they can still be preyed on by herons and predatory fish. As well, coyotes are now increasing and migrating to the eastern United States in areas occupied by the Diamondback Turtle. Coyotes will consume both baby turtles and larger adult ones. Actually, when available, a coyote will prefer to eat Diamondback Turtles compared to other food sources.



Habitat: Brackish[1] water of salt marshes, estuaries[2] and tidal creeks.
Weight: Males, 0.5 pounds; females, 1.5 pounds.
Length: Males, 10-12cm; females, 14-18cm
Life Expectancy: 25-40 years of age.
Food: Fishes, marine snails, invertebrates, mussels, clams and worms.
Status: State regulated.

Expanded Development affecting Turtle Habitat

Development or modification of their habitat by humans, which occurs even today regardless of their protected status, threatens the turtles survival. As the human population increases, the natural beauty and integrity of an area will soon decline. The construction and transportation infrastructure necessary to accommodate a large increase in human density have several inevitable impacts on wildlife. Habitat alterations and road-kill can potentially claim a large number of animals every year in suburban regions or force them to relocate. As an area is fragmented and food, shelter, and mates become scarcer and farther apart, it becomes increasingly difficult for Diamondback Turtles to maintain their existence. Turtles are slow moving, require several years to reach sexual maturity, and the eggs and young are extremely vulnerable and highly palatable to predators.

Presently more than 16 000 acres of forest and farmland are converted to lawns, buildings, parking lots, and roads every year in Massachusetts. Also, turtles are often difficult to see in their natural environment, and are easily overlooked by operators of bulldozers and other heavy equipment.

[1] brackish - Somewhat salty water.
[2] estuary - A semi-enclosed body of water that is open to the open sea.

Pesticides can potentially reduce food sources for turtles, which eat mainly invertebrates. Pesticides and fertilizers are often used during the Spring season on farm fields and lawns that are very close to the wetlands where these turtles live. Toxins have been detected in the Diamondback Turtles system, as well as, trace amounts in their eggs, which are eaten by other animals causing other concerns.

Land-use conversion - Stetson Meadows, Norwell
In 1997, the recreation department proposed the installation of playing fields on approximately 20 acres of the upland portion of the property, where the turtles have been sighted on several occasions. In 2000, a town cemetery was proposed for the same site. It was recently discovered that the turtles are nesting in the small grassy field that is used as a parking lot for visitors' automobiles. Users of such areas, and local residents in general, need to be made aware of the habits of these animals in order to prevent permanent losses. One suggestion is to construct a kiosk at the entrance to the lot with photos and information turtles, explaining the situation to new visitors.

Hundreds of housing developments are presently being planned throughout Plymouth County, and the number of new proposals increases each year. New roads will provide access to presently undeveloped areas, opening up more opportunities for local human population growth and suburban sprawl. Two recently proposed land transactions in southern Plymouth County will soon convert more than 12 000 acres of wetlands and fields into housing and recreational facilities, roads, and commercial centers.

Each year as our population expands and industry grows, less area is available for the Diamondback Turtle to survive. The question that now faces us is: How much of this valuable wetlands can we afford to develop?

Value
4% 66. "The trace amounts of toxins found in eggs of turtles could potentially impact other members of the food web in this ecosystem." Using the case study and your geographical knowledge, explain this statement.

Value

4% 67. Using the case study and your geographical knowledge, briefly explain one short-term and one long-term impact on the wetlands if development continues.

Value

6% 68. "Economic development sometimes comes at the expense of wetland conservation." You are asked to propose a plan that would ensure both economic development and wetland conservation. Using the case study and your geographical knowledge, explain two ways in which you would accomplish this.

SECTION D

Do only ONE of the Units in Section D. Note; both units use Case Study 3 below.

Either:	Unit 6 - Population Distribution and Growth
Or:	Unit 7 - Settlement and Urbanization

CASE STUDY 3

Rio de Janeiro: A City of Contrasts

Rio de Janeiro is known for its beauty, and is one of the most interesting cities in the world. Placed between miles of beaches and mountains, Rio has developed into a primate city for Brazil, second only to Sao Paulo. Founded in 1567, Rio has grown into one of the largest metropolitan areas in the world. With a population of over 12 million, Rio is home to many different faces and is considered the cultural heart of Brazil. From its carnivals to love for soccer and from the wealthy beaches of Copacabana, Leblon, and Ipanema to the extremely poor living in the hillside slums (favelas), Rio makes up a diverse population.

Rio de Janeiro is situated on one of the most unique sites in the world. The city is located just north of the Tropic of Capricorn along the Brazilian Atlantic coast. The terrain is characterized by steep granite hills and mountains which are offshoots of the mountain range Sierra do Mar. One of the most famous is the coastal mountain Sugar Loaf, which is the landmark most commonly associated with Rio. The original city was founded just inland from the coast on an inlet known as Guanabara Bay. Rio is an important seaport located along the maritime traffic routes that link the coastal cities of northeastern Brazil and the more economically developed areas of southeastern Brazil.

City Expansion

Since the hills existed mainly to the south, most expansion was directed northward. The northern region was much flatter and most development concentrated along the western side of the bay. Eventually the docks moved northward too and a separation occurred between the industrial sector to the north and the commercial sector to the south. With the discovery of gold and diamonds in nearby Minas Gerais and the increasing demand for the traditional exports of coffee, sugar, rubber, and cotton, Rio became a major port for Brazilian exports. Much of the city began to modernize. With a growing population came improvements in such infrastructure as sewage, telephone, street lighting, and paved roads.

Improvements in transportation allowed for more development to focus in on Rio from the outlying areas. Any wealthy establishments to the north were forced out by the increased expansion of industry and headed to the small fishing villages along the Atlantic coast. The first modern skyscrapers were built and the city began to expand. While this modernization occurred, great disparities in wealth began to emerge and the first slums (favelas) showed up along the hillside. With the demolition of the older, lower income housing to make way for the modern skyscrapers, the poor were forced out and formed favelas away from the city. Modernization came rapidly without regard for preservation of the original Art Nouveau style architecture of Rio. A new airport and subway were also built. With expansion came unsanitary conditions and re-occurrence of yellow fever. New sewer systems, waste control, garbage, and the filling in of swamps nearly rid the city of the fever and put an end to the negative image Rio had gotten in the international community. The concentration of wealth and population around the core of Rio forced the poor out of the city and into suburbs. After World War II, Rio developed into a modern city, accepting the same problems that come with such a change (severe poverty, limited public services, traffic congestion, and pollution). As more people moved from the countryside to Rio, the problem of overcrowding increased. Though the city may change over time, Rio will always have its beautiful hills and beaches for which it is known.

The Three Zones

The three distinct zones that exist in Rio are known as the South Zone, the Central Zone, and the North Zone. Each has a different land use, economic and social structure.

The South Zone is known for its sandy beaches, beautiful mountains and ocean views. This area is very affluent and is defined by the famous beaches. The area is spread out for several miles, squeezed between the mountains to the north and the coastline to the south. This zone has many apartment buildings, hotels, galleries, and theatres and is one of the most densely populated regions in the world. Next to the wealthy in this zone you will find the favelas, located along the steep mountain sides.

The Central Zone, also known as the Central Business District, is the downtown of Rio and the centre for all of the commerce, banking and business. It is indeed the old inner city of Rio. The municipal and state governments are located here. The narrow streets allow for incredible congestion during rush hour periods and add to the already severe problems of pollution.

Favelas

The North Zone is the main port area and centre of industry in Rio. The airport and the main soccer stadium, holding 200 000, is located there. There are three main centres in this zone that vary in economic status by location. This zone is characterized by its lack of utilities. The North Zone has the fastest growing population. Many that settle here are poor migrants from the rural areas of Brazil because land values are cheaper.

Rio de Janeiro, like most cities in the developing world, is experiencing a drastic increase in population. This increase has come mostly in the form of the rural poor migrating to the cities. Because of the land values and the enormous demand for space, these poor are forced into squatter settlements known as favelas. The most famous favelas are those built along the hillside. The houses are made from a mixture of clay and sand, wood, brick and sheet metal. These poor quality houses are prone to accidents, mainly from heavy rainfall and landslides. Favelas are often troubled by drug related crime and gang warfare. Today, there are over 500 favela communities existing within the city of Rio and they comprise about a third of the population. The city of Rio is growing at a rate of 2.7% a year; however the favelas are growing at a rate of 7.5% a year. This massive and uncontrolled urbanization has extended Rio's utilities and infrastructure passed its limit. The rich provide many of the jobs, in way of services, that help sustain the livelihood of the faveladors. Many of the rich rely on the cheap labor and service jobs that the faveladors supply.

Rio de Janeiro: Absence of infrastructure among the poor and non-poor, 1981-1988 (% without services)

Facility		1981	1985	1988
piped water	poor	51.2	35.6	35.6
	non-poor	18.7	8.2	12.9
sewage	poor	53.1	27.0	31.8
	on-poor	22.6	8.1	9.7
garbage collection	poor	59.7	52.0	51.5
	non-poor	27.0	17.8	23.5
basic education	poor	17.2	15.7	17.1
	non-poor	6.6	3.2	5.1

The percentage of population growth in the favelas, compared to the city, 1950-1991.

Year	Favelas (% growth)	Rio's (% growth)
1950	7.24	-
1960	10.2	41.5
1970	13.3	28.6
1980	12.3	19.8
1981	18.3	7.6

This over-urbanization is seen by some as a positive aspect, creating a perfect atmosphere for new industrial development. Because of the cheap, surplus labor that exists in the favelas,

industries could find an easy market for locating and making money. Still others view the favelas as just another part of the framework of Rio. It is a natural occurrence of the city and is compared to a weed growing in a garden. There will always be weeds. Despite their views, little is being done to modernize the favelas or even deal with the shortage of utilities. As cleared rain forest land becomes unproductive, farmers give up and move to the city. Despite efforts to stop the in migration, people have just kept coming to Rio de Janeiro.

Do only ONE of the Units in Section D

Either: Unit 6 - Population Distribution and Growth
Or: Unit 7 - Settlement and Urbanization

Unit 6 - Population Distribution and Growth

Value

4% 69. With reference to the case study and your geographical knowledge, explain why, in recent years, the rate of population growth in the favelas is greater than the rate of population growth in the city of Rio de Janeiro.

Value

6% 70. You are a government official responsible for dealing with the uncontrolled growth of favelas. What are three possible solutions that would solve the problems created by rapid growth of favelas?

Unit 7 - Settlement and Urbanization

Value
4% 71. Identify one site and one situation feature of the city of Rio de Janeiro.

Value
6% 72. You are a town planner with the city of Rio de Janeiro. Using the case study and quality of life indicators, describe three solutions to solve the problems currently experienced in the favelas.