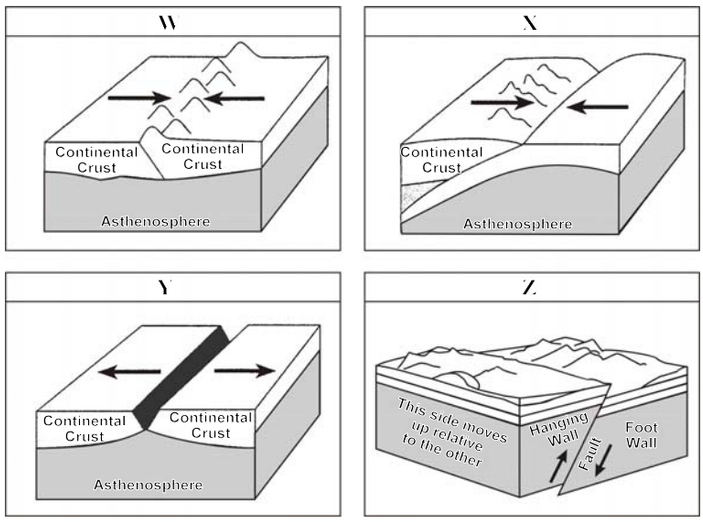
PART I

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. Which illustrates landforms produced by tensional forces?

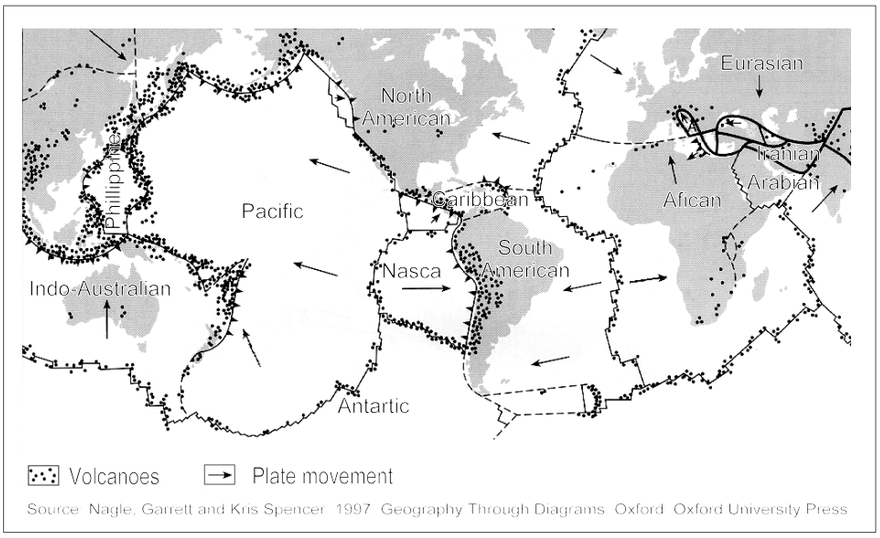


(A) W
(B) X
(C) Y
(D) Z

2. Which type of volcano has a symmetrical shape, steep sides, and a large crater?

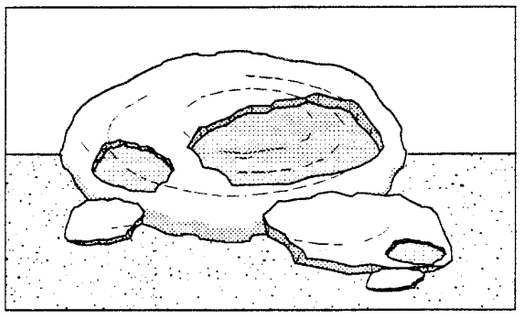
(A) ash & cinder
(B) composite
(C) lava domes
(D) shield

3. According to the map, which phrase best describes the location of volcanoes on Earth's surface?



(A) along the edge of plate boundaries
(B) along the southern edges of continents
(C) in the middle of continents
(D) in the middle of oceans

4. What type of physical weathering has occurred in the graphic below?



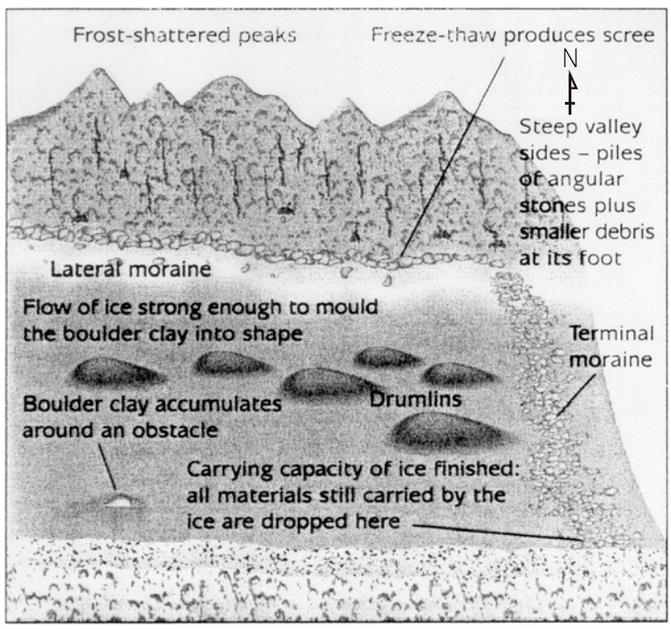
(A) exfoliation
(B) frost fracture
(C) oxidation
(D) solution

5. What stage in the life cycle of the river is described below?

small in size, fast flowing, low volume, v-shaped and straight, few tributaries

(A) late maturity
(B) maturity
(C) old age
(D) youth

6. According to the diagram of a glaciated region in which direction did the glacier move?

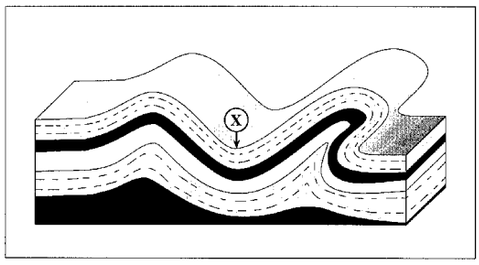


(A) east to west
(B) north to south
(C) south to north
(D) west to east

7. Which term refers to a ridge of sand that runs away from the coastline, was developed by a longshore drift, and has an edge that may be curved?

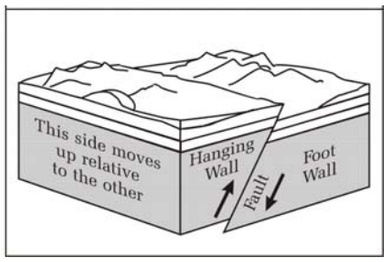
(A) barchan
(B) bay bar
(C) spit
(D) tombolo

8. Which process and feature are illustrated at X?



(A) compressional and anticline
(B) compressional and syncline
(C) tensional and anticline
(D) tensional and syncline

9. What fault is the result of compressional forces in the graphic below?



(A) normal
(B) overthrust
(C) reverse
(D) transform

10. What term refers to Earth spinning on its axis?

(A) orbit
(B) revolution
(C) rotation
(D) seasons

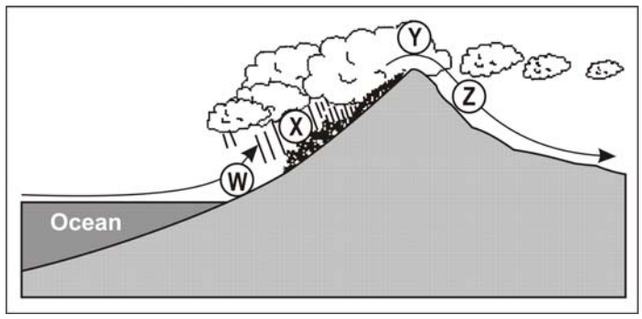
11. Which best describes the summer solstice in the Northern Hemisphere?

(A) equal length of day and night
(B) noontime sun directly overhead at its farthest point north
(C) noontime sun directly overhead at its farthest point south
(D) occurs twice a year

12. What two factors help explain why Earth experiences seasons?

(A) distance of the sun from Earth, and Polar Ice Caps
(B) revolution of Earth around the sun, and the sun's distance from Earth
(C) the Polar Ice Caps, and the tilt of Earth's axis
(D) tilt of Earth's axis, and the revolution of Earth around the sun

13. Which letter indicates the leeward side of the mountain, in the graphic below?

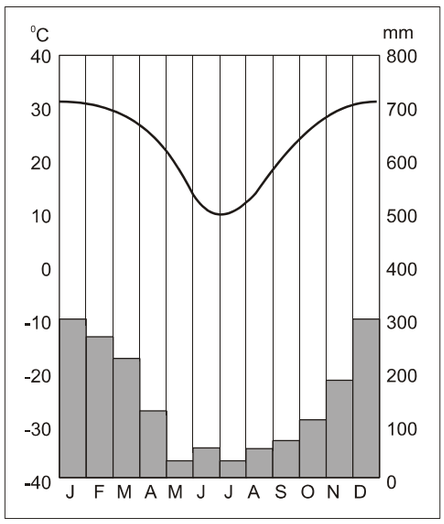


(A) W
(B) X
(C) Y
(D) Z

14. Which area has the greatest annual temperature range in the graphic below?

(A) W
(B) X
(C) Y
(D) Z

15. Which phrase describes the climate in the climograph?



(A) cool summer temperatures, dry winters
(B) cool summer temperatures, wet winters
(C) hot summer temperatures, dry winters
(D) hot summer temperatures, wet winters

16. How does the Coriolis Force deflect wind in each hemisphere?

	Northern Hemisphere	Southern Hemisphere
(A)	left	left
(B)	left	right
(C)	right	left
(D)	right	right

17. Which set of weather conditions would most negatively impact an alpine ski resort?

(A) - 25 ^{O}C, moderate breeze, no precipitation
(B) - 10 ^{O}C, no wind, light snow
(C) 0 ^{O}C, moderate breeze, flurries
(D) + 5 ^{O}C, high winds, rain

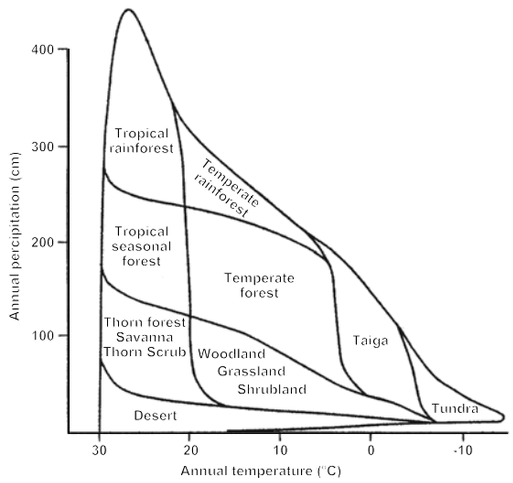
18. Which phrase describes the relationship between elevation and temperature?

(A) As height above sea level decreases, temperature decreases.
(B) As height above sea level decreases, temperature stabilizes.
(C) As height above sea level increases, temperature decreases.
(D) As height above sea level increases, temperature stabilizes.

19. Which term refers to the increase in the accumulation of toxins in the higher trophic level of the food chain?

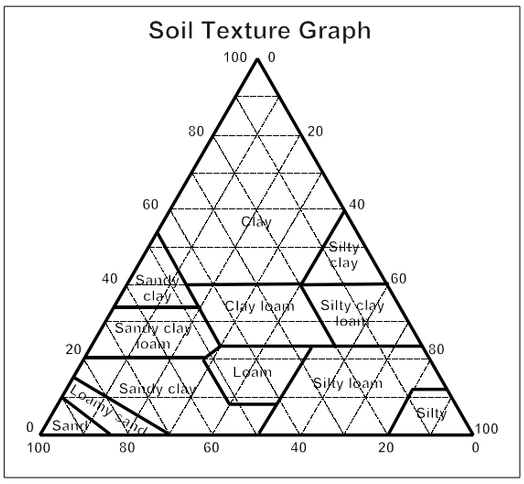
(A) biological amplification
(B) climax vegetation
(C) energy transfer
(D) pollution transfer

20. Which world ecosystem is defined as having between 200 - 330 cm annual precipitation and annual temperature between 2 - 20^{o} C ?



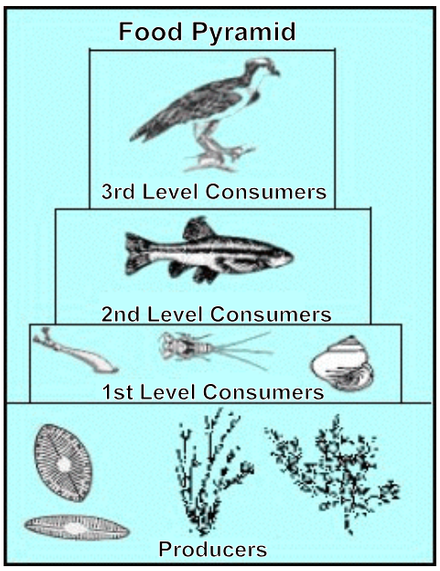
(A) desert
(B) taiga
(C) temperate forest
(D) temperate rainforest

21. According to the graph below, which soil texture would be least suitable for farming?



(A) 20% sand, 30% clay, 50% silt
(B) 30% sand, 60% clay, 10% silt
(C) 33% sand, 33% clay, 34 silt
(D) 40% sand, 30% clay, 30% silt

22. Why are there fewer organisms at the highest trophic level in the graphic below?



(A) There are fewer producers at the higher trophic levels.
(B) There are more producers at the higher trophic levels.
(C) There is a decrease in energy from one trophic level to the next.
(D) There is an increase in energy from one trophic level to the next.

23. Which would be considered a process in an agribusiness industry?

(A) capital
(B) climate
(C) technology
(D) transportation

24. Which is a human input into a farming operation?

(A) climate
(B) labour
(C) seeds
(D) soil

25. Which physical factor must be considered when making a decision to recover offshore oil?

(A) job descriptions
(B) shift rotations
(C) skilled labour
(D) weather conditions

26. Which type of drilling technology would be used in the following situation?

> To drill for oil a company must face high seas, ice conditions, in water depths greater than 2500m.

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

27. Which type of farming operation is described below?

> The growing of rice on a small plot of land in order to feed family members only.

(A) agribusiness
(B) commercial
(C) extensive
(D) subsistence

28. Which form of agriculture is usually found in areas with low land value where high revenues are unimportant?

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

29. Which farming method is described below?

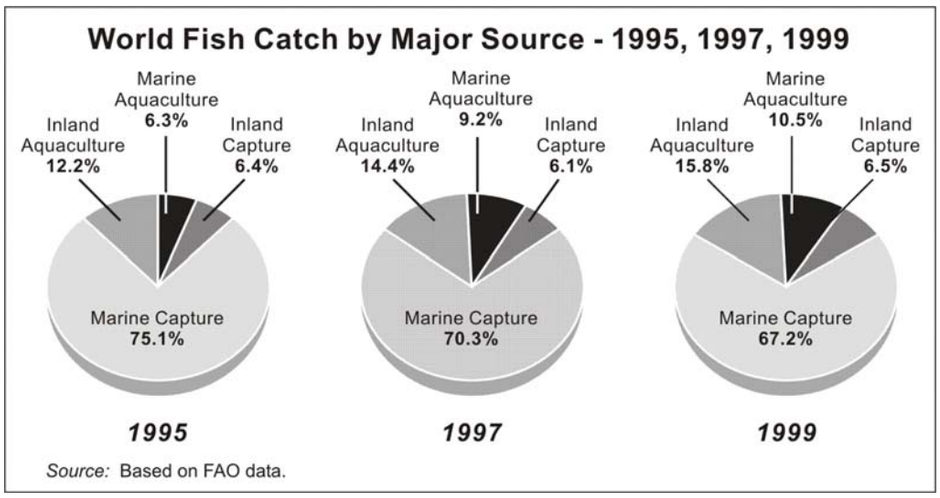
> A farmer clears the land by cutting all the undergrowth and burning the remaining vegetation before planting crops in the ashes. After several years, this process is duplicated elsewhere.

(A) agribusiness
(B) commercial
(C) nomadic herding
(D) shifting cultivation

30. Based on the criteria below, which farming operation best represents intensive agriculture?

	Operation	Labour	Capital	Yield
(A)	1	low	high	high
(B)	2	high	high	high
(C)	3	high	high	low
(D)	4	low	low	low

31. According to the diagram below, which source of fish experienced the smallest amount of increase from 1995-1999?



(A) inland aquaculture
(B) inland capture
(C) marine aquaculture
(D) marine capture

32 Which statement best describes the impact of freezer factory trawlers on the ocean environment?

(A) decrease in fishing activity during spawning season
(B) decrease in the fish stocks
(C) increase in the fish stocks
(D) increase in the number of inshore fishermen

33. Which is a natural input in an automobile manufacturing plant?

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

34. Which industry best represents a conditioning process?

(A) automobile assembly line
(B) computer assembly industry
(C) oil refinery
(D) sawmill

35. The manufacturing of which commodity is the best example of a capital intensive activity?

(A) automobile
(B) clothing
(C) jewelry
(D) shoe

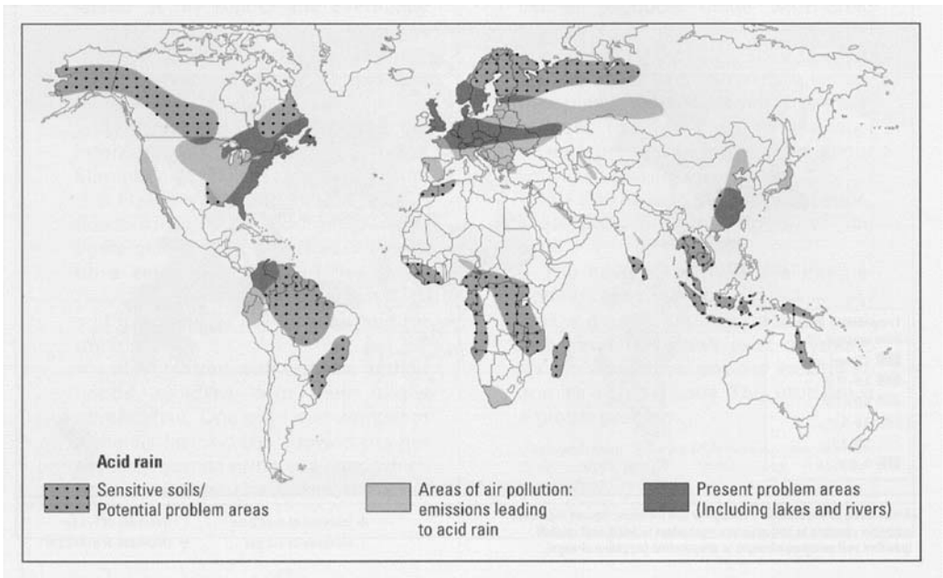
36. Which industry has outputs which are not large in size and is developed for the general consumer?

(A) capital intensive
(B) heavy
(C) labour intensive
(D) light

37. Which best describes a pulp and paper industry?

	Final Product	Industry
(A)	increases in weight	near market
(B)	increases in weight	near resource
(C)	decreases in weight	near market
(D)	decreases in weight	near resource

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



(A) Australia
(B) Eastern Asia
(C) Eastern North America
(D) Western North America

39. Which economic activity is service based but entails the use of high technology?

(A) primary
(B) secondary
(C) tertiary
(D) quaternary

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

	% Employed by Sector			
	Country	Primary	Secondary	Tertiary
(A)	1	23.3	20.5	56.2
(B)	2	75.0	18.9	6.1
(C)	3	3.4	22.0	74.6
(D)	4	46.0	23.0	31.0

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

	Country	PerCapita GNP	Life Expectancy (years)	Persons per Telephone
(A)	1	600	49.3	825.4
(B)	2	18 300	77.0	2.1
(C)	3	18 700	78.2	3.5
(D)	4	900	42.2	10.1

42. Telebus software development is interested in locating in Laos, Southeast Asia. Which factor would influence Telebus locating in this country?

(A) availability of suitable land
(B) literacy rates
(C) wages
(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. Which is used to calculate population density?

(A) $\frac{emigration}{population}$

(B) $\frac{households}{population}$

(C) $\frac{population}{immigration}$

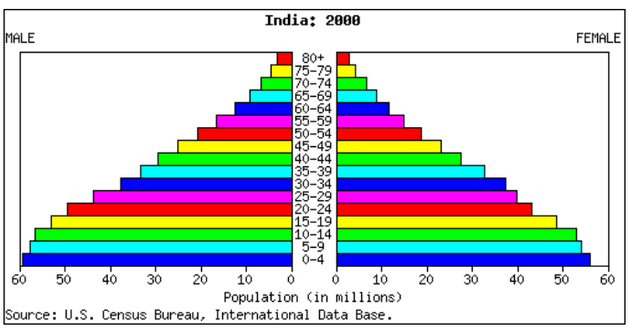
(D) $\frac{population}{land\ area}$

44. Which trend is illustrated in the table below?

Year	Population (millions)
1971	3.5
1981	4.5
1991	5.0

	Population	Growth Rate
(A)	decreasing	decreasing
(B)	decreasing	increasing
(C)	increasing	decreasing
(D)	increasing	increasing

45. Which best describes the population pyramid diagram below?



(A) contracting
(B) decreasing
(C) expanding
(D) stationary

46. What is defined as, “the very young and older age group not employed who are supported by each set of 100 working age people” ?

(A) actual change
(B) dependency ratio
(C) natural change
(D) population growth rate

47. Which is used to calculate actual population change?

(A) birth rate - death rate

(B) (births + immigrants) - (deaths + emigrants)

(C) $\frac{\text{\% population under 15 years + \% population over 64 years}}{\text{\% of working age people}} x100$

(D) $\frac{\text{population change}}{\text{original population}} x100$

48. Which is the best example of an intervening obstacle that may influence an individual’s decision to migrate?

(A) civil war at the origin
(B) distance of travel from origin
(C) higher standard of living at destination
(D) job opportunities at destination

49. Which best defines census?

(A) population data collected by a government
(B) formula used to calculate population dynamics
(C) poll conducted by a political party
(D) projection of migration trends

50. Which refers to the movement of people out of 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 answers for 51 - 58

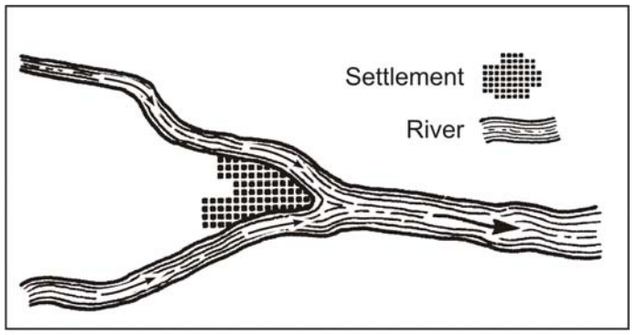
51. Which contributes to a high density urban area?

(A) ineffective transportation linkages
(B) relatively low cost residential housing
(C) significant employment opportunities
(D) spreading of businesses throughout an area

52. Which best describes the location of buildings in a community with a compact settlement shape?

(A) close together
(B) located on a major transportation route
(C) scattered
(D) spread out in small pockets

53. Which physical feature accounts for the shape of the settlement pattern shown in the graphic below?



(A) peninsula
(B) river confluence
(C) river meander
(D) sheltered harbour

54. Which statement best describes the term “site”?

(A) the distinct features or qualities of a general geographic area
(B) the distinct features or qualities of a specific location
(C) the setting or position of a city as it relates to the capital city
(D) the setting or position of a city as it relates to other places

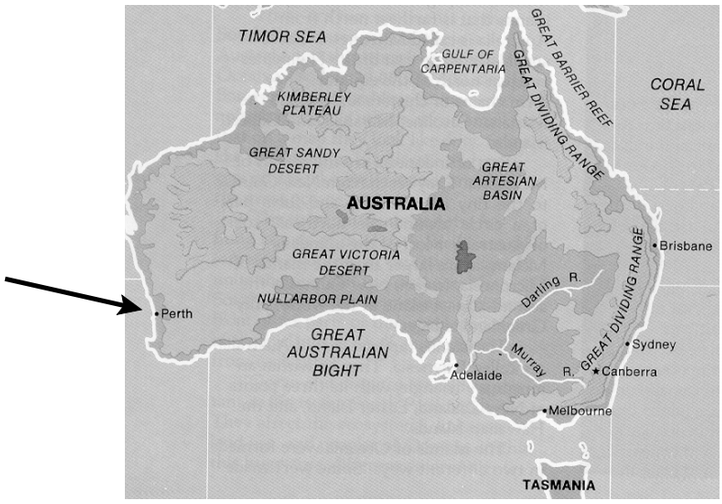
55. Which best defines a metropolis?

(A) capital city of a country
(B) city resulting from the merging of multiple cities
(C) dominant center of a region in terms of finance and economics
(D) largest city in a country

56. Which is the best example of commercial land use?

(A) ball field
(B) shopping mall
(C) single-family home
(D) warehouse

57. According to the map, which situation factor restricts Perth's growth in size?



(A) coastal plateau location
(B) cold wet climate
(C) located at the confluence site of a major transportation route
(D) proximity to Great Victoria Desert and distance from capital city

58. Which best describes a peninsula site?

(A) access to the ocean on three sides and good defense capabilities
(B) located on a hilltop which provides easy defense
(C) provides fresh water, river access, and natural defense
(D) where two rivers merge, providing wide-ranging access to interior regions

PART II

SECTION A
TOTAL VALUE: 8%

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

Value

4 59. Based on the selections below and your geographical knowledge, explain why Florida is not affected by environmental risks the same way Haiti is affected.

Headline 1

Florida was hit by four hurricanes in a single season, a two-month barrage of storms that triggered the nation's biggest natural-disaster response.

The hurricanes took 117 lives in Florida, destroyed more than 25 000 homes and heavily damaged 4600 more. Damage was estimated at $42 billion, surpassing the $34.9 billion caused in 1992 by Hurricane Andrew, the nation's single most costly storm.

Headline 2

The Haitian community of Fort Pierce is facing similar pain and frustration. Parts of Haiti were devastated by Hurricane Jeanne, where about 2000 people were killed, and the needs there are even greater.

"The people in Haiti are expecting help, but people here can't send money because they don't have jobs," says the Rev. Ducasse Francois of Notre Dame Church. "The people here are not only worried about themselves but they worry very much about their families there. It makes things even harder."

In Haiti, where thousands were swept away by floods unleashed by Tropical Storm Jeanne, and the Eastern Caribbean island of Grenada, where 90 percent of all buildings were damaged or destroyed by Hurricane Ivan, recovery has been painfully slow.

Value

4 60. Explain two strategies for a sustainable fishery.

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. Choose a country and using the demographic transition model, classify that country, giving two reasons to support your answer.

Unit 7 - Settlement and Urbanization

Value
4

62. Urban Centre A is a city in a developed country and Urban Centre B is a city in a developing country. Both are experiencing different regional growth rates. Explain two reasons that would account for this difference.

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

The Nile Basin
A Unique and Shared Resource

The Nile is one of the world's great rivers. Throughout history, this unique waterway has nourished livelihoods, supported a vast array of ecosystems, and played a central role in a rich diversity of cultures. As the world's longest river, the Nile traverses almost 6700 kilometers from its major source of Lake Victoria to its delta in Egypt on the Mediterranean Sea.

World's Population Concentration

The Nile flows from south to north and is formed by three major tributaries: the White Nile, the Blue Nile, and the Atbara. For centuries farmers in the basin have depended on the water of the Nile for their crops. The Nile Valley and the Nile Delta rank among the world's most fertile farming areas. The fertility and productivity of the land adjacent to the Nile depends largely on the silt deposited by floodwaters. Intensive agriculture is practiced by the majority of the peasant population. As the flooding recedes, sowing and plowing begin using primitive equipment.

Commercial industry is a large cause of pollution along the Nile. Industries along the banks have trapped priceless soil beneath kilometers of concrete. Discharges of toxic chemicals from factories into the delta and other parts of the river have threatened the area and the supply of fresh drinking water. Ground water is declining in quality from industrial abuse.

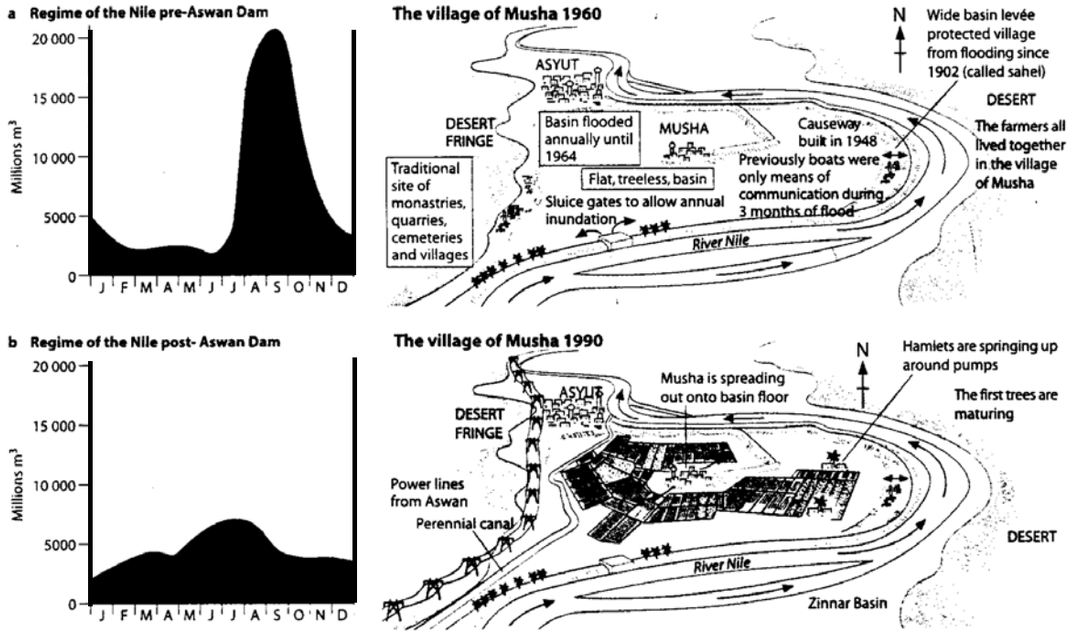
There has been a long history of disputes among the nations who share the Nile. These countries are now forming the International Nile Basin Association to control the usage of the resource. Historically Egypt has had the most control over the Nile but now the other countries are fighting to have more usage rights so that it would increase their country's standard of living.

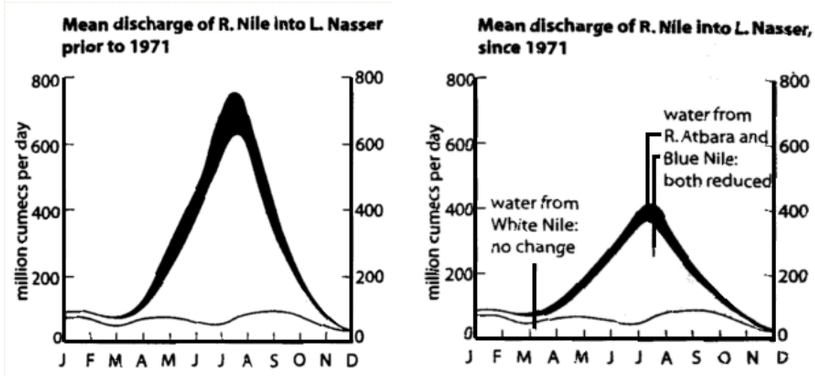
An overview of critical information on the Nile Basin Countries

Country	Population (millions)		Population in basin (% of total pop.)	GNP / Capita US $	Foreign Aid - as a % of GDP	% Labor force in farming		Life expect (years).	Infant Mortality Rate (per 1000)	% Contribution of farming to GDP
	1998	2030	1999	1998	1991-93	1970	1990	1990 - 95	1990-95	1999
Burundi	7	12	52	140	23	94	92	48	102	54
Egypt	61	92	95	1290	10	52	40	62	67	17
Ethiopia	61	114	39	100	n/a	91	86	47	119	50
Rwanda	8	15	80	230	19	94	92	46	110	47
Sudan	28	50	85	290	n/a	77	69	52	78	39
Uganda	21	41	100	310	17	90	85	42	115	45

Despite the extraordinary natural provisions of the Nile Basin, its people face considerable challenges. Today, the basin is characterized by poverty, instability, rapid population growth, environmental degradation and frequent natural disasters. Some of the countries in this area are among the poorest in the world. Population is expected to double placing additional strain on scarce water and other natural resources. Cooperative development of the rivers' resources hold significant opportunities for maximizing benefits for all countries.

For several thousand years, the people who lived along the Nile measured the year by the river's cycle. Each spring water rose above its banks and flooded the lowlands. With the floods came rich sediments and soils filled with nutrients which enhanced farming. The construction of dams on the Nile, particularly the Aswan High Dam, transformed the mighty river into a large and predictable irrigation ditch. Lake Nasser, the world's largest artificial lake, has enabled planned use of the Nile regardless of the amount of rainfall the area receives. The dam produced hydroelectricity, helped control floods and ensured a steady supply of water throughout the year.





Along with the benefits of the Aswan High Dam, however, came several costs. Cultural groups had to abandon their homes when the land was flooded leaving behind ancient sites and monuments. In addition, much of the now-irrigated farmland suffers from salinization - a buildup of salt. The dam also traps the Nile's rich loads of sediment from going downstream causing the farmers to rely on expensive manufactured fertilizers. Other changes caused by the dam includes the demise of industries such as the brick-making and fishing. Nutrients in the sediments behind the dam caused increased growth in aquatic weeds and disease-causing microorganisms. The decrease in silt concentration downstream on the delta has had several severe effects. Coastal erosion is very active on the delta. As the land gradient at the delta area is very low, the global rise of sea level, caused by global warming, will aggravate the problem.

In little more than a century, human societies have so altered rivers that they are no longer adequately performing many of their evolutionary roles or delivering many of the ecological services on which human economies have come to depend. The Nile is one such river.

Value

4 63. With reference to the case study and your geographical knowledge, describe two effects chemical fertilizer use may have on the Nile ecosystem.

Value

4 64. With reference to the case study and your geographical knowledge, aside from the chemical fertilizers, describe the short and long-term impacts the Aswan High Dam has had on the area.

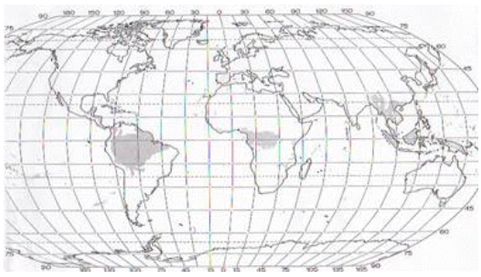
Value

6 65. "*The people of the Nile River Basin do not enjoy a high standard of living.*" With reference to the case study and your geographical knowledge, what social and economic changes could a member of the International Nile Basin Association make to improve the situation of these countries?

CASE STUDY 2
Units 1 - 5

Deforestation: The Unkindest Cut

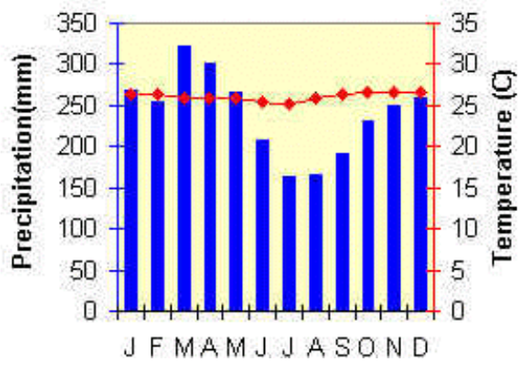
The Earth is made up of many different ecosystems, but none more spectacular and life-sustaining than the forests. We depend on the world's forests to regulate climate, clean air and water, conserve precious soil and provide habitat to much of the planet's wildlife.



Forests of all types are giving way to population pressures, causing irreversible damage to an integral part of our biosphere. Of the approximately 6 750 000 square miles of lush forest canopy that once covered the planet, only 40 percent remains.

Trouble in the Tropics

Of primary concern is the loss of Earth's tropical rainforests. The effects of rainforest destruction are felt by every community in the world. Although tropical rainforests cover less than seven percent of the world's land surface, they are home to more than half the species of all living things. Rainforests are a treasure house of foods, medicines and other resources we have only begun to discover. Less than one percent of rainforest species have been studied for their potential usefulness.



Tragically, 100 acres of tropical rainforest are destroyed every minute. The World Resources Institute estimates that the planet loses 51 million acres of rainforest every year to agriculture, ranching and timbering in Southeast Asia, Africa, and Central and South America. Of the 20 million square kilometres of rainforest that once circled the globe, fewer than 8 million square kilometres remain, and these are being destroyed at an ever-increasing rate.

A Deep-Rooted Problem

What drives humans to destroy this precious ecosystem? The causes which are varied and often interconnected include:

(i) A lack of knowledge regarding the rainforest

Brazil is a case in point. In 1969, Brazil enacted a National Integration Program with the goal of populating Amazonia, a remote inland region of the rainforest, with thousands of landless and unemployed people to engage in agriculture. Another goal of the program was to encourage wealthy investors to clear forest land for raising cattle for export. The program proved a disaster because the project developers failed to realize the richness of the once-vast Amazon rainforest is in its trees and not its soil. Land cleared by slash and burn techniques will support a farmer for a year or two before the soil erodes and the farmer is forced to relocate and continue this destructive process.

(ii) The need for firewood

Nearly half of the world's population depend on wood for fuel to cook and heat their homes. It is estimated that almost 100 million people are unable to meet their minimum fuel needs. The endless search for wood dominates the lives of millions of women and children, especially in Asia and Africa, who spend anywhere from 100 to 300 days each year looking for firewood.

Timber harvesting

Tropical forests provide about one fifth of all the wood used worldwide in industry, and that share is expected to grow as the world's population continues to increase. In the process of harvesting timber, industries build roads to facilitate retrieval of the wood deeper in the rainforest. These roads open once-impenetrable forests to exploitation by miners, hunters, ranchers and farmers.

American Deforestation

While rainforest destruction is a globally significant issue, the cutting down of "old-growth forests" has developed into a national controversy. Old-growth refers to native, or "virgin forest", land which has never been logged. At one time, old growth covered some 15 million acres in the American Pacific Northwest. Some areas included trees ten feet wide, 275 feet tall, and 1220 years old. As a result of their size and bulk, old growth trees represent valuable lumber to loggers. During the past century, some 12 million acres have been cleared. Less than 5 percent of the U.S. original, virgin forests remain today.

As the U.S. population increases, so does the demand for lumber. Each year, each person in the US uses in wood and paper products the equivalent of one 18-inch wide, 100-foot tall tree. Currently, 80 percent of the remaining old-growth forests are slated for logging. This alarms environmentalists who see these forests as a biologically rich area, valuable to both the country and planet. Of particular concern is the logging practice known as clear cutting and its related environmental consequences.

After the Fall

Both tropical and old-growth forests are rapidly disappearing because they are being logged and burned faster than they are being replenished. Many of the effects of deforestation are the same for both tropical and old-growth forests. One of the catastrophic consequences of continued deforestation is mass species extinction, especially in the rainforests, home to more than 80 million species.

Additionally, deforestation causes forests to lose their mediating effects on rainfall, resulting locally in erosion, drought and flooding. Globally, deforestation affects the world's climate. A broad uprising of air follows the rainforest around the equator, driven, in part, by heat absorbed by tropical forests. This massive uprising helps drive the circulation patterns of the entire global atmosphere. Tropical deforestation can disrupt this process, resulting in reduced rainfall and altered weather conditions over a large portion of the globe.

All deforestation adds to the atmospheric pool of rising carbon dioxide emissions, hastening the onset of global warming. An intact forest naturally removes carbon dioxide from the air and stores it through the process of photosynthesis. When trees are cut down, this carbon dioxide is released into the atmosphere.

Thus, while cutting of trees is a local activity, the consequences can be far reaching.

Global Warming Worst in Arctic

"The Inuk hunter who falls through the depleting ice is connected to trees cut in the tropical rainforest."
The Telegram, Nov. 15, 2004

Major Findings of Arctic Impact Report

- The treeline will move northward.
- Thawing permafrost will damage northern infrastructure.

The Telegram, Nov. 15, 2004

Value

4 66. Using the case study and your geographical knowledge, explain the climatic conditions that produce tropical rainforests.

Value

4 67. Using the case study and your geographical knowledge, describe two strategies for sustainable management of the world's forests.

Value

6 68. As an environmentalist concerned about the disappearance of the rainforest, you want to educate foresters, who are currently clear-cutting, about other timber harvesting techniques. Suggest an alternate method of harvesting and defend the practice by comparing the two techniques from an environmentalist view.

SECTION D

Do only ONE of the Units in Section D

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

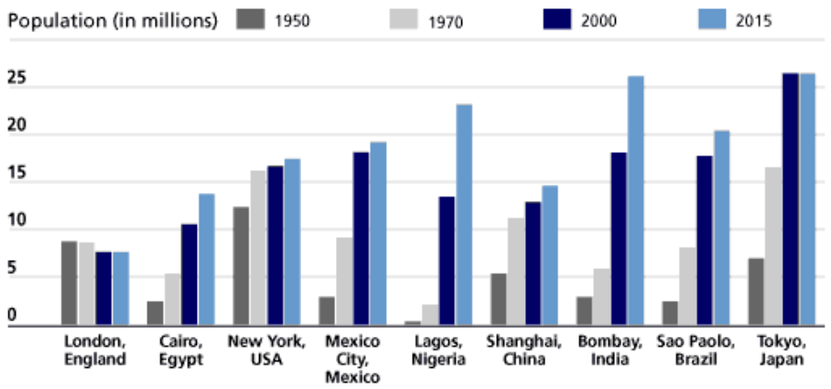
CASE STUDY 3

Mexico City: Urban Haven or Monster

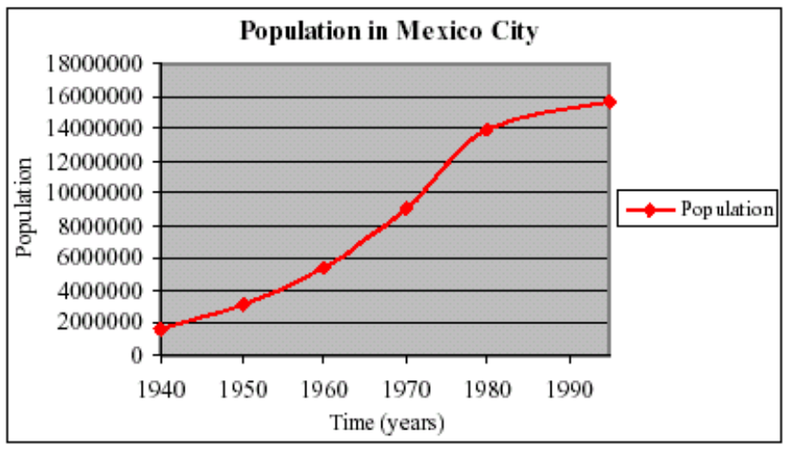
It is anticipated that by the year 2030 more than 60% of the world's population will live in cities. Most of this growth will take place in less developed countries. In recent decades, Mexico City has been an example of phenomenal urban growth.

Growth of Urban Centres, 1950–2015

Source: United Nations, *World Urbanization Prospects, The 1999 Revision.*



Mexico City grew very rapidly between 1950 and 1980 with an average annual growth rate of 4.2 percent. Although this rate has recently declined to approximately 1% because of a government population control policy, Mexico City currently contains more than 17 million people.



The city continues to grow because of natural increase but most of its growth is caused by rural to urban migration. Presently, over one-third of the city's population is comprised of migrants. Some leave rural areas because of a lack of arable land, land deterioration and a diminishing amount of land per farmer. Many other non-agricultural workers, lacking skills and education, move in search of a better life. While most migrants do not view the city as an urban monster, a city with a population density of 6600 persons per square kilometer presents many challenges.

City	1997 Population (millions)
Mexico City	17.7
Guadalajara	4
Monterrey	3.3

SLUMS

Housing standards within the Federal District of Mexico City are high by international standards where only the upper and middle classes can afford land. However, on the edge of the metropolis extreme poverty exists where the poor have no choice but to rent or build a house. Substandard shelters are erected from cardboard, sheet material or any other available waste product. A typical dwelling contains a small, single room with one or two beds shared by all members of the family. These facilities may have a gas or petroleum stove while some are fortunate to have a television. In many areas a few public water taps are available. Public sanitation and drainage are provided to some of the people, but the vast majority uses the bottom of the gully. A lack of electricity is common and roads are most often unpaved.

Many of these slums are catchment areas for the more than 10 000 tons of solid waste produced daily in Mexico City. Over one quarter of the garbage is dumped illegally and remains in the streets. The poor find accommodations and things to sell from there. Besides being unaesthetic and causing many health problems, it is a major pollutant of the city's groundwater.

WATER RESOURCES

The demand for water in Mexico City is enormous with most being consumed for domestic use. Most residents are served by a water connection or standard pipe. Those without service must obtain water from water trucks supplied by the government or private vendors. It is estimated that the total annual consumption is 2.4 billion metres^3, about 364 liters per capita per day. The city currently relies on groundwater sources for more than 80 percent of its supply. This exceeds the natural recharge by 50 to 80 percent. As a result, the groundwater level is decreasing by one metre per year causing structural damage to buildings, roads, railways and underground pipelines.

The waste management of Mexico City has caused many conflicts with nearby regions. As a richer city it uses all available water and gives back water with harmful substances. The State of Mexico has reported that 23 percent of the wells do not meet the standard for coliform bacteria and 11 percent do not meet the standard for inorganic constituents. Many irrigation areas outside the city apply raw sewage channeled from the city to their fields. Although it is illegal for farmers to use this water to irrigate their crops, the prohibition is not always respected nor enforced. It is not uncommon to find vegetables highly contaminated posing a direct threat to human health.

Mexico City has attempted to combat its water problems through education and improved efficiency standards. One effort, for example, was to replace 350 000 toilets with 6 litre models to conserve enough water to meet the needs of 250 000 residents.

AIR POLLUTION

Compared to other mega cities in developing countries, Mexico City is generally clean except for its air pollution. The U.S. based World Resources Institute has named the city as the most dangerous for children in the world. Any primary school teacher knows a disturbing fact of life: children rarely use the color blue to paint the sky. Sadly, Mexico City's air has gone from among the world's cleanest to one of the dirtiest in one generation; ahead of Beijing, Tehran, and Calcutta. It is six times higher than the acceptable limit by The World Health Authority and it reaches harmful levels more than half of the days each year. Levels of ozone, a pollutant that protects us from solar radiation in the upper atmosphere but is dangerous to breathe, are twice as high as the maximum allowed for one hour a year. This occurs several hours per day for every day in Mexico City. The average visibility of seven miles in the 1940s is presently a mile. And, snow–capped volcanoes that were once a part of the landscape are very seldom visible. Respiratory diseases are rampant among children and the elderly.

Automobiles and industry are the main reasons for this air pollution. A World Resources Institute study, funded by The World Health Organization, concluded that nitrogen dioxide, sulfur dioxide and total suspended particulates (TSPs)- tiny particles of everything from dust to

heavy metals that get deep in lung tissue and cause damage are the major sources. While some cities in China are dirtier in pollutants such as TSPs, Mexico City is the worst when combining all three measures. Levels of these pollutants now regularly break international standards by two or three times.

Mexico City is partly a victim of its physical geography. Sitting at the bottom of a bowl-shaped valley winds are prevented from sweeping away fumes from the 3 million cars and 36 000 factories. While places like Los Angeles in the developed world have almost double the number of cars, those in Mexico City are on average 10 years old. Poor quality fuel and engines that run badly worsen the problem. In addition, the air also contains the dried fecal remains from millions of gallons of sewage dumped in open areas near the city and from some 3 million stray dogs. Mexico City is one of the few places in the world where gastrointestinal diseases such as hepatitis and dysentery can be inhaled.

Humberto Bravo, a scientist at the National Autonomous University in Mexico has stated that, "Mexico City's air pollution is a criminal act against the city's population." Some scientists perceive the other population challenges of Mexico City in the same light. Yet people continue to migrate there.

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. "*Mexico City should shut its doors to migrants*." With reference to the case study and your geographical knowledge, suggest two reasons why this policy should or should not be implemented. Support your answer.

Value

6 70. The government of Mexico City has decided to take measures to reduce population growth. Give three reasons why you agree or disagree with this action.

Unit 7 - Settlement and Urbanization

Value

4 71. With reference to the case study and your geographical knowledge, describe the quality of life indicators in Mexico City.

Value

6 72. You are a peasant farmer living on the outskirts of Mexico City with the opportunity to move into the city. Based on your personal quality of life preference and supporting your response with three reasons, what would you decide to do?