

PART I

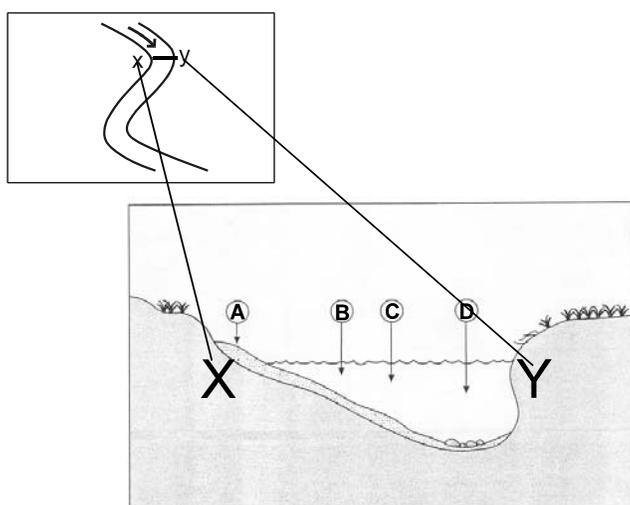
Instructions: Shade the letter of the correct answer on the machine scorable answer sheet provided.

SECTION A

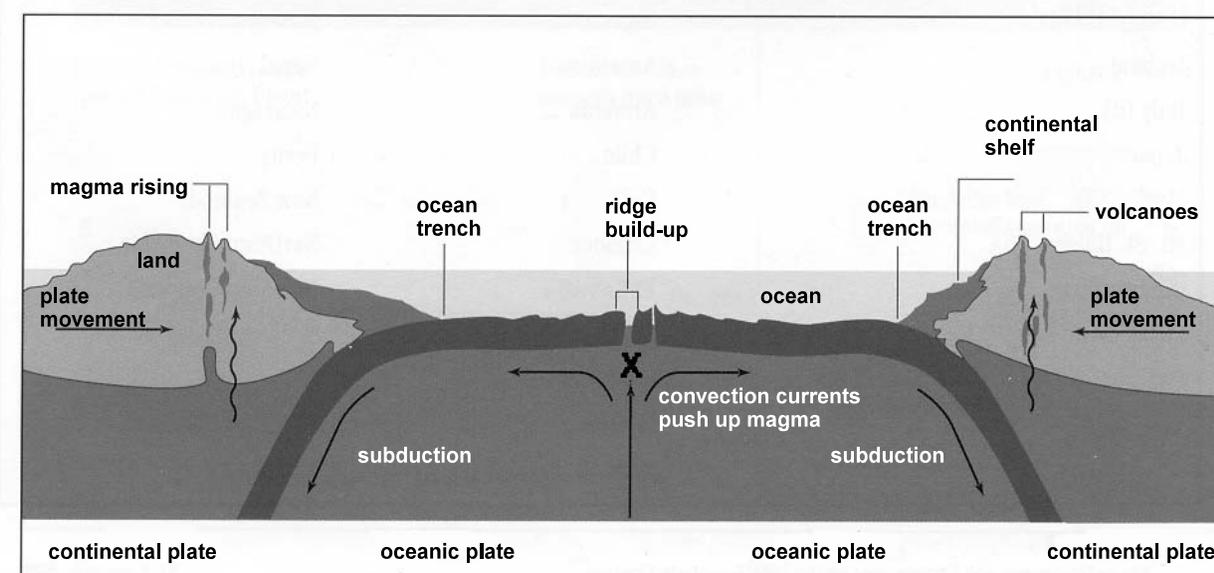
TOTAL VALUE: 42%

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

1. In the diagram below, at which location in the river's channel is vertical & lateral erosion the greatest?

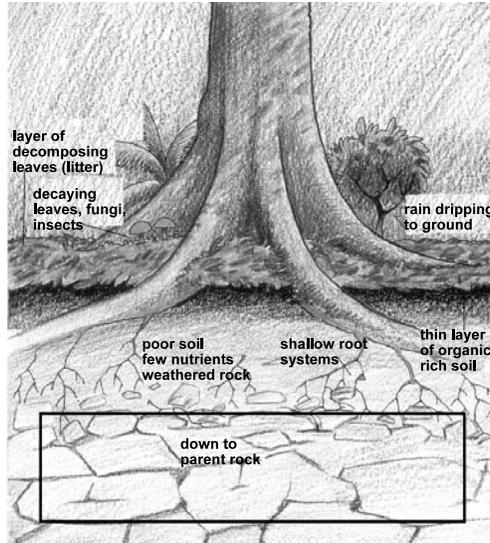


- (A) A
 (B) B
 (C) C
 (D) D
2. Which landform develops when debris carried by a glacier is deposited at the front edge of a melting glacier?
- (A) drumlin
 (B) esker
 (C) hanging valley
 (D) terminal moraine
3. In the diagram below, what force is occurring at position X?

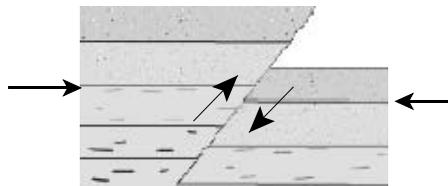


- (A) compressional
 (B) folding
 (C) subduction
 (D) tensional

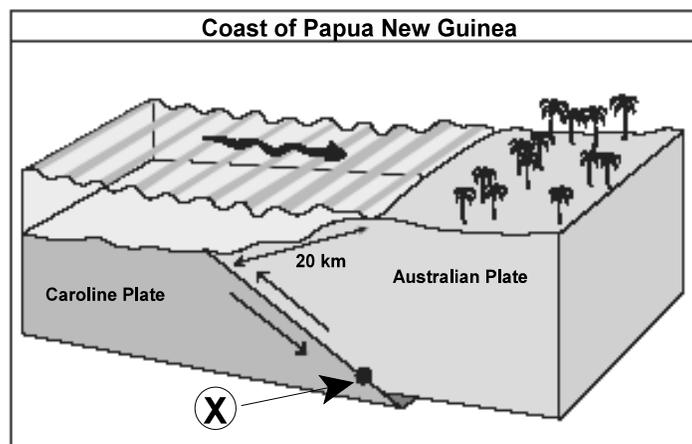
4. What type of physical weathering has occurred in the drawing below?



- (A) exfoliation
 - (B) frost fracture
 - (C) oxidation
 - (D) plant growth
5. Which type of volcano has a wide, gentle, sloping dome approximately 1 km high?
- (A) ash & cinder
 - (B) composite
 - (C) lava dome
 - (D) shield
6. Which fault is the result of compressional forces shown in the diagram below?



- (A) normal
 - (B) overthrust
 - (C) reverse
 - (D) transform
7. In the diagram below, what force created the result at location X?



- (A) compressional
- (B) folding rock
- (C) sea floor spreading
- (D) tensional

8. What stage in its life cycle does a river have flat relief, little or no slope, very little velocity, and elaborate meanders?

- (A) early maturity
- (B) maturity
- (C) old age
- (D) youth

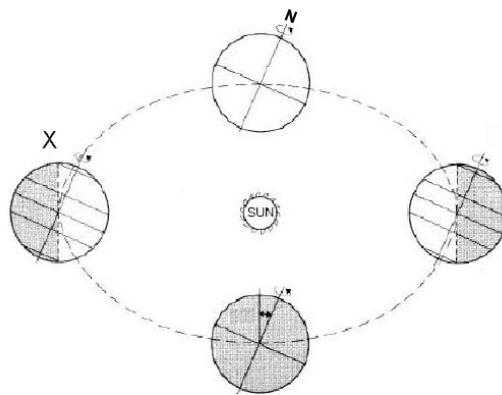
9. What is the correct sequence for the straightening of a coastal headland?

- (A) arch → stack → cave
- (B) arch → cave → stack
- (C) cave → arch → stack
- (D) cave → stack → arch

10. What creates the Coriolis Force?

- (A) equinox
- (B) revolution
- (C) rotation
- (D) solstice

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



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

12. Why are the North and South Poles colder than the tropics?

- (A) Coriolis force deflects the sun's rays from the poles.
- (B) Light has to travel through less atmosphere and loses energy.
- (C) Poles are further from the sun and the light has to travel a greater distance.
- (D) The sun's rays are spread over a larger surface area.

13. Which conditions result in a land breeze?

- (A) absence of a water body
- (B) colder land and warm waters
- (C) high pressure over the water
- (D) warm day time temperature

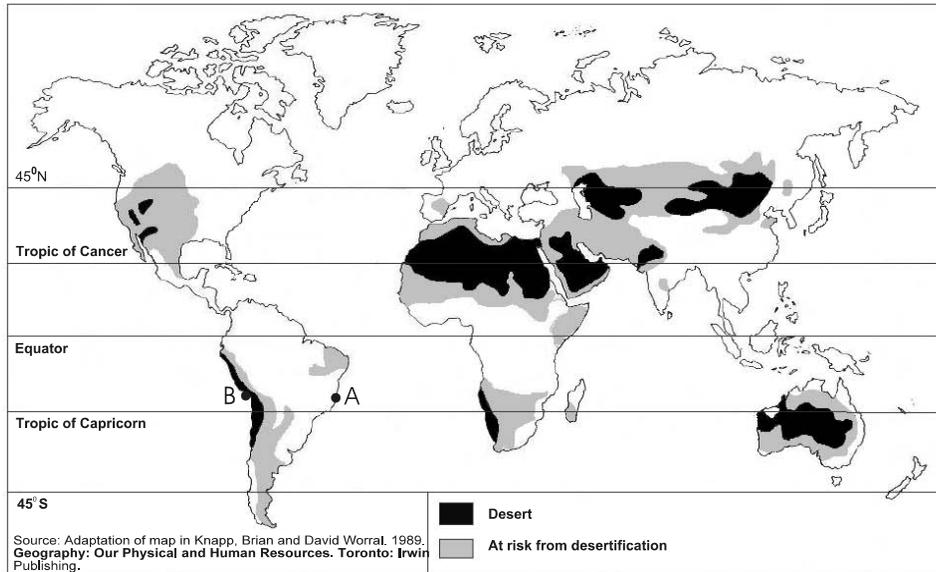
14. Which is true?

- (A) As distance from the equator increases prevailing winds decrease.
- (B) As distance from the equator increases prevailing winds increase.
- (C) As height above sea level increases, temperature decreases.
- (D) As height above sea level increases, temperature increases.

15. Which occurs during a summer monsoon?

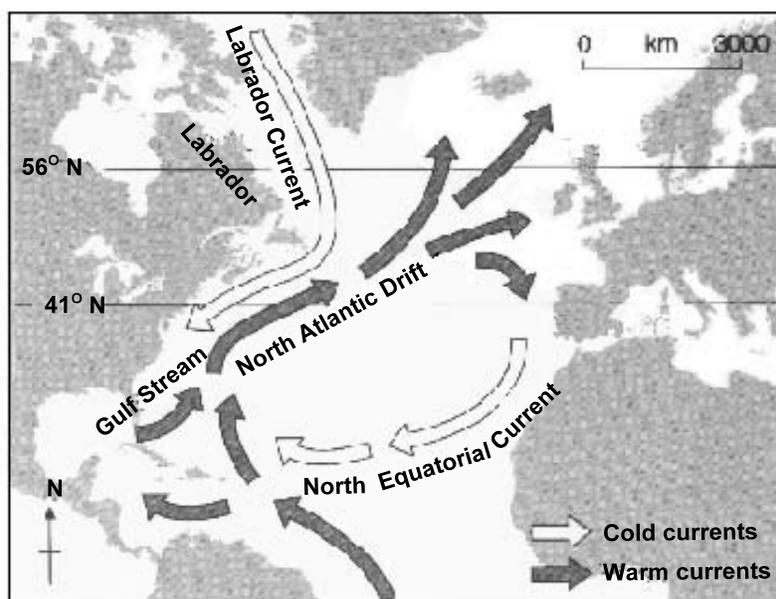
- (A) heavy rain season
- (B) low pressure over the ocean
- (C) very dry season
- (D) winds from land to ocean

16. In the map below, location A has high annual precipitation while location B has low annual precipitation. Which factor is most responsible for this phenomenon?



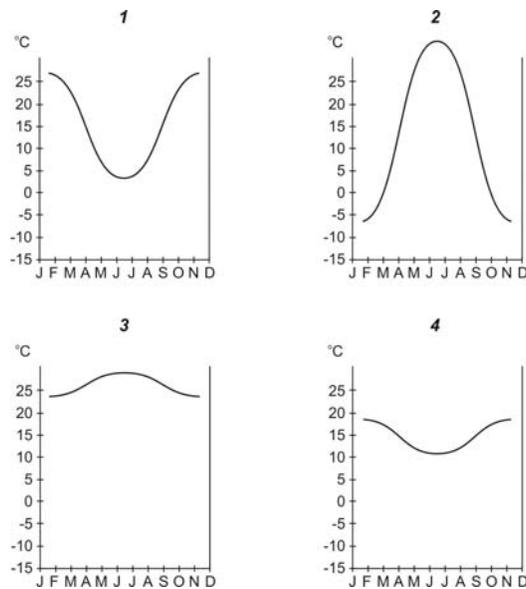
- (A) coriolis force
- (B) latitude
- (C) prevailing winds
- (D) temperature

17. According to the diagram below, how does the Labrador current affect the coast of Labrador?



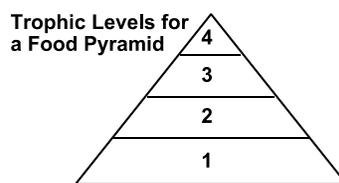
- (A) high summer humidity and heavy cloud cover
- (B) high wind levels and occasional fog
- (C) low annual precipitation and cool summers
- (D) low atmospheric pressure and mild winters

18. Which sequence identifies the South to North arrangement of temperature profiles?



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

19. If a toxin were to enter a food chain, at which trophic level would biological amplification be highest?

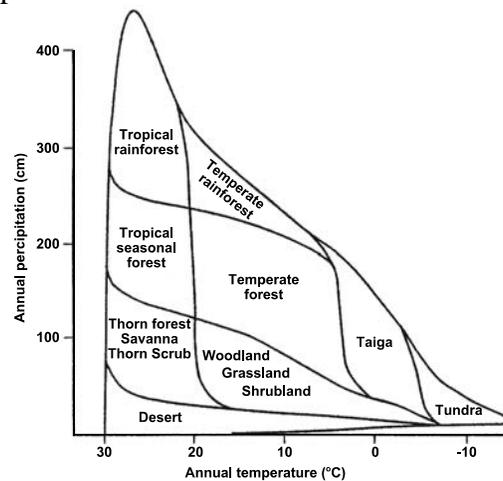


- (A) 1
- (B) 2
- (C) 3
- (D) 4

20. Which refers to the network of relationships among plants, animals, and the non-living things in an environment?

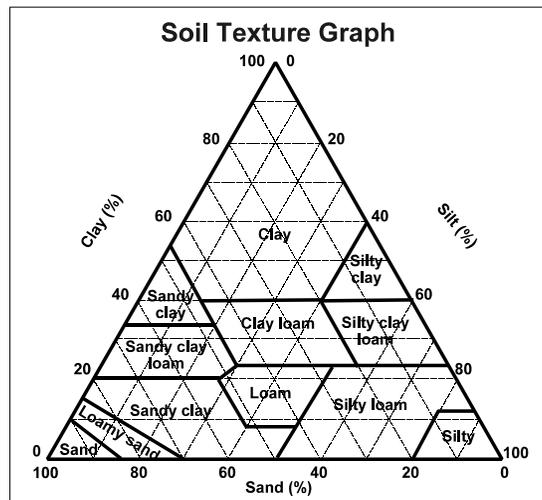
- (A) biological amplification
- (B) ecosystem
- (C) energy level
- (D) food chain

21. Which world ecosystem is defined as having between 100 - 200 cm precipitation per year and annual temperature between 0 - 20° C ?



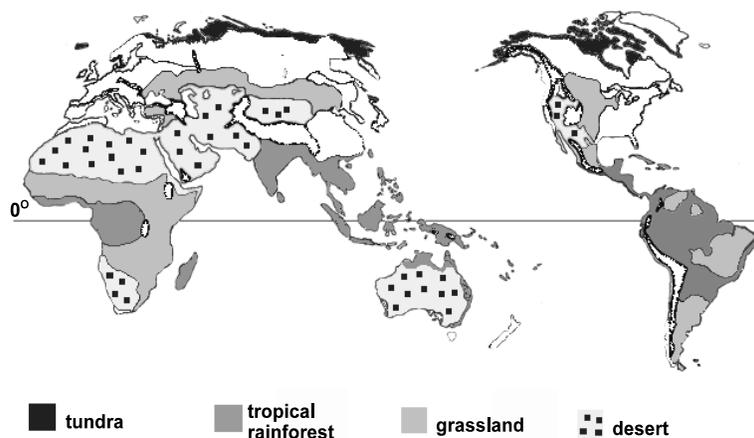
- (A) desert
- (B) savanna
- (C) temperate forest
- (D) woodland grassland

22. According to the graph below, which soil texture would be least suitable for large plants?



- (A) 10% sand; 10% clay; 80% silt
- (B) 25% sand; 65% clay; 10% silt
- (C) 33% sand; 33% clay; 34% silt
- (D) 75% sand; 15% clay; 10% silt

23. According to the graphic below, which ecosystem is predominant at high latitudes?



- (A) desert
- (B) temperate grassland
- (C) tropical rainforest
- (D) tundra

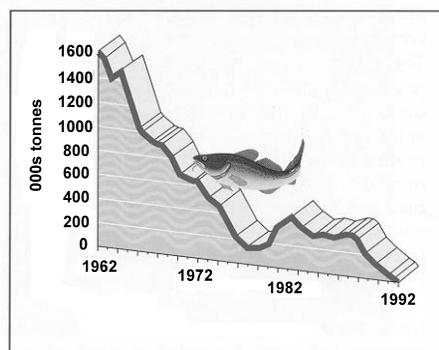
24. Which refers to the potato in a farming operation?

- (A) capital
- (B) input
- (C) output
- (D) process

25. Which is part of an off-shore oil recovery operation?

- (A) “hit and miss” drilling
- (B) oil spills
- (C) sedimentary rock
- (D) shift rotations

26. Which type of farming operation involves the growing of rice to sell?
- (A) agribusiness
(B) commercial
(C) extensive
(D) subsistence
27. Which refers to a unique farming system?
- (A) agribusiness
(B) commercial
(C) extensive
(D) subsistence
28. Which is the first step in locating an oil field?
- (A) computerized cross-section of rock created
(B) decision made upon the location of a wild cat well
(C) hydroponics sounds plotted in seismograms
(D) sound-emitting equipment towed over the ocean floor
29. Which type of tree harvesting is characterized by low yields, small groups of mature trees being removed, and maintenance of access roads?
- (A) block cutting
(B) clear cutting
(C) selective cutting
(D) strip cutting
30. Which is a strategy of a sustainable fishery?
- (A) control the quality of the by-catch
(B) control the quota for alternate species
(C) increase the number of factory freezers
(D) increase the number of fishing licenses
31. Which is the largest threat to forest resources?
- (A) discovery of mineral deposits
(B) expanding populations
(C) land needed to grow food
(D) shifting agriculture
32. According to the graphic below, what impact has the management of the fish resource had on the marine ecosystem?



- (A) empty seas
(B) “fish wars”
(C) moratorium
(D) “ocean nomads”

33. Which is a human input in an automobile manufacturing industry?

- (A) climate
- (B) land
- (C) machinery
- (D) raw materials

34. Which represents an analytic process?

- (A) electronics industry
- (B) oil refinery
- (C) skate board manufacturing
- (D) soft drink production

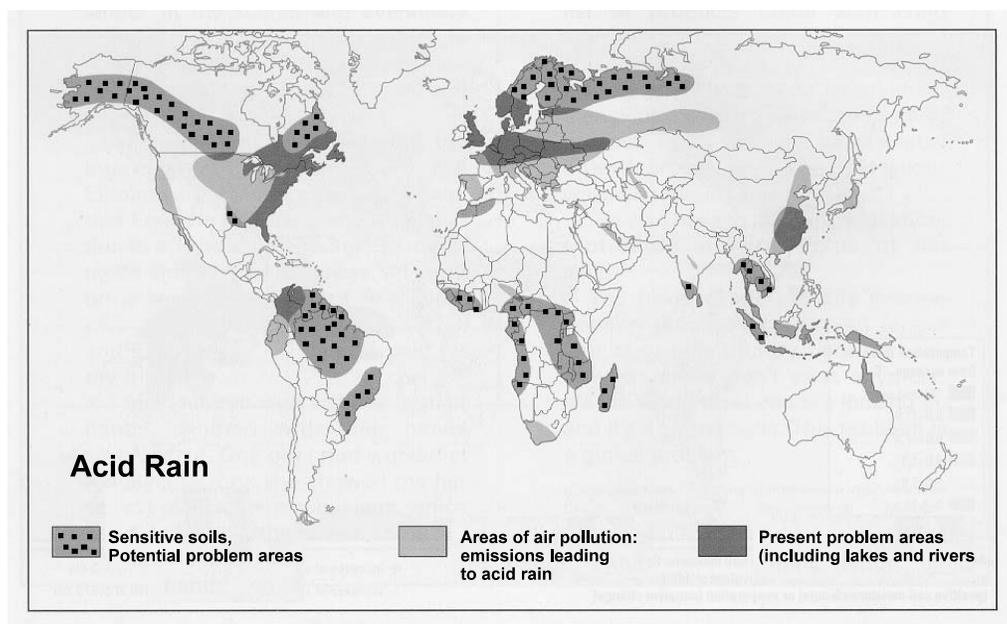
35. Which industry uses more machine input than human input?

- (A) capital intensive
- (B) labour intensive
- (C) market oriented
- (D) resource oriented

36. Which would be considered a market-oriented industry?

- (A) bakery
- (B) fishery
- (C) pulp and paper
- (D) steel manufacturing

37. According to the map below, which is the most industrialized region?



- (A) Eastern Asia
- (B) South America
- (C) Southern Africa
- (D) Western Europe

38. Which involves the use of high technology to produce, retrieve, store and distribute information?

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

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

% Employment by Sector			
	Primary	Secondary	Tertiary
(A)	21.6	7.2	71.2
(B)	41.2	18.3	40.5
(C)	62.8	18.7	18.5
(D)	4.7	31.6	63.7

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

	GNP/Capita (US\$)	Death Rate (per 1000)	Birth Rate (per 1000)	% employed in service
(A)	7 700	22	53	4.9
(B)	8 200	24	49	50.9
(C)	26 900	9	15	75.6
(D)	12 300	26	37	67.4

41. Which is a public tertiary activity?

- (A) gas station attendant
- (B) grocery clerk
- (C) insurance agent
- (D) R.C.M.P. Officer

42. What is true about tertiary activity?

- (A) developing countries tend to have high levels of tertiary activity
- (B) developed countries tend to have low levels of tertiary activity
- (C) manufacturing decreases, tertiary activities increases
- (D) manufacturing increases, tertiary activities increases

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 term best describes the population of a country with the characteristics below?

Population: 31 457 600
Land Area (km²): 9 970 600

- (A) densely populated
- (B) evenly distributed
- (C) sparsely populated
- (D) unevenly distributed

44. What is the overall result for a year in which there were 476 552 live births, and 590 363 deaths?

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

45. Which is used to calculate natural population change?

- (A) *births – deaths*
- (B) *(births + immigration) – (deaths + emigration)*
- (C) $\frac{\text{population change}}{\text{original population}} \times 100$
- (D) $\frac{\text{population}}{\text{land area}}$

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

Percentage under age 15: 15.3 %
Percentage over age 64: 15.4 %
Percentage of working age 15 - 64: 69.3 %

- (A) 225.7
- (B) 125.7
- (C) 44.3
- (D) 22.4

47. Actual change is defined as net change due to which combination?

- (A) births, deaths, immigration, and emigration
- (B) births and deaths
- (C) emigration and immigration
- (D) emigration and deaths

48. Which is the best example of a push factor?
- (A) cost of travel
 - (B) cultural diversity
 - (C) family reunification
 - (D) political unrest
49. Which may be used by a government to determine the number of elected representatives needed for a region of the country?
- (A) census
 - (B) dependency ratio
 - (C) immigration laws
 - (D) pyramid
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 bubbles 51 - 58.

51. What classification do governments use primarily for an urban area?
- (A) availability of recreational services
 - (B) level of government services
 - (C) literacy rates
 - (D) population size
52. Which best defines a linear settlement shape?
- (A) located along several transportation systems
 - (B) located primarily along one transportation system
 - (C) positioned close together
 - (D) scattered over a large area
53. Which is strategic for defensive reasons because of its hilltop location?
- (A) acropolis
 - (B) confluence
 - (C) peninsula
 - (D) resource
54. Which factor best accounts for a significant change in population for a city?
- (A) climatic conditions
 - (B) employment opportunities
 - (C) recreation activities
 - (D) transportation linkages
55. Which set of city populations would be classified as rank-size?
- | | | | | |
|-----|-----------|-----------|-----------|---------|
| (A) | 1 500 000 | 1 400 000 | 1 000 000 | 900 000 |
| (B) | 2 000 000 | 425 000 | 400 000 | 375 000 |
| (C) | 1 000 000 | 500 000 | 450 000 | 400 000 |
| (D) | 2 000 000 | 1 000 000 | 650 000 | 500 000 |
56. Which quality of life indicator is typical of a developing country?
- (A) high literacy rates
 - (B) high unemployment rates
 - (C) low crime rates
 - (D) low fertility rates
57. Which best defines a megalopolis?
- (A) dominant center of their region in terms of finance and economics
 - (B) largest city in a country in terms of physical land size
 - (C) the city in a country that is the capital of that country
 - (D) the boundaries of several large cities merge together
58. Which is an example of residential land use?
- (A) apartment buildings
 - (B) convention centres
 - (C) cottage hospital
 - (D) shopping mall

SECTION B

Do only ONE of the Units in Section B

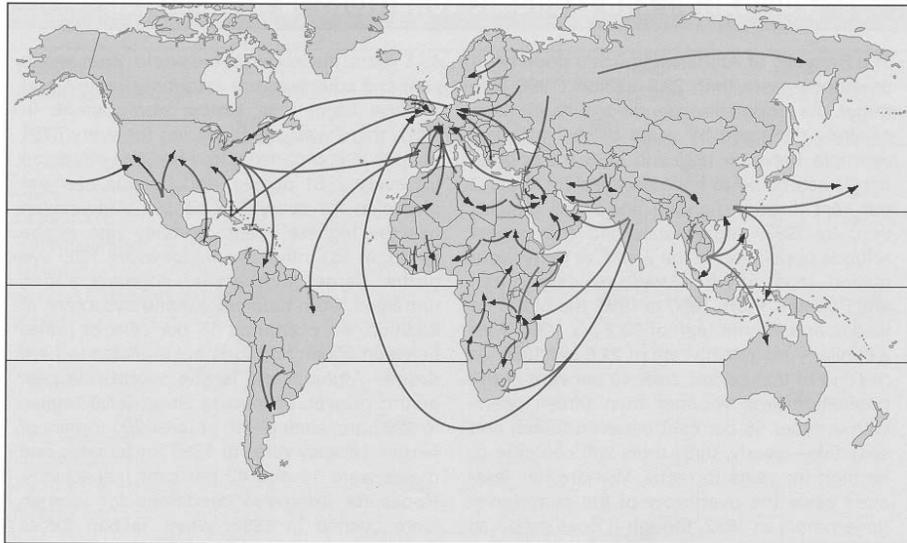
Either: Unit 6 - Population Distribution and Growth
Or: Unit 7 - Settlement and Urbanization

Unit 6 - Population Distribution and Growth

Value

3%

62. Using the diagram of world migration patterns, provide three reasons that would explain these patterns.



Unit 7 - Settlement and Urbanization

Value

3%

63. Explain how situation influences a community's growth in size.

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

Nuclear Power and its Impacts

Nuclear energy has many benefits, particularly in the areas of environment and health. Nuclear energy emits no combustion by-products, no acid gases and no greenhouse gases. It is a clean, safe, and an economical energy source that does not contribute to air pollution, global warming or acid rain. Globally, nuclear power avoided the release of some 550 million metric tonnes of carbon dioxide (CO₂) in 1999. The World Health Organization (WHO) estimates that suspended particulate matter from fossil fuels generation and use is responsible for more than 500 000 premature deaths per year.

A major challenge for the world today is finding the balance between the world demand for electricity and the environmental impacts of supplying that demand. According to the World Energy Council (WEC), by the year 2050, the earth will require energy supplies two to three times more than those needed today. Since no one source has the capability of supplying all of the world's energy requirements, nuclear energy can be used in conjunction with other energy sources (such as fossil fuels, hydroelectric and renewables) to address current and future needs. Nuclear energy is the only proven, non-carbon-based source capable of generating enough electricity for large-scale industrial, residential, and commercial needs, with no air pollution.

The nuclear power plant is a particularly dangerous use of nuclear energy. Unlike conventional power plants, nuclear plants have a relatively short life-span -- 30 years -- before critical reactor components become permanently radioactive. At that point the plant must be either closed down (i.e., mothballed), or its entire reactor core replaced at great expense. To date, there is no solution regarding where to store used power plant reactor cores. Compounding the storage problem is an accumulation of used radioactive fuel rods, which have a life-span of only three years.

Source 1

If you set aside Three Mile Island and Chernobyl, the safety record of nuclear [power] is really very good.

-Treasury Secretary Paul O'Neill, June 2001

Source 2

Three Mile Island: 28 March, 1979

A major accident occurred at the Three Mile Island nuclear plant near Middletown, Pennsylvania. At 4:00 a.m. a series of human and mechanical failures nearly triggered a nuclear disaster. 200,000 people were forced to flee the region. Despite claims by the nuclear industry that "no one died at Three Mile Island," a study by Dr. Ernest J. Sternglass, professor of radiation physics at the University of Pittsburgh, showed that the accident led to a minimum of 430 infant deaths.

	Fossil Fuel (BTU)	Hydro (kWh)	Nuclear (kJ)
World	7 669 958	2 376 106	2 167 515
Africa	281 518	50 531	7200
North America	2 491 646	641 208	709 994
USA	2 236 388	276 463	610 365
South America	97 291	410 479	8 192
Asia	2 403 166	526 107	351 498
Europe	2 237 226	708 654	1 090 631

Source 3

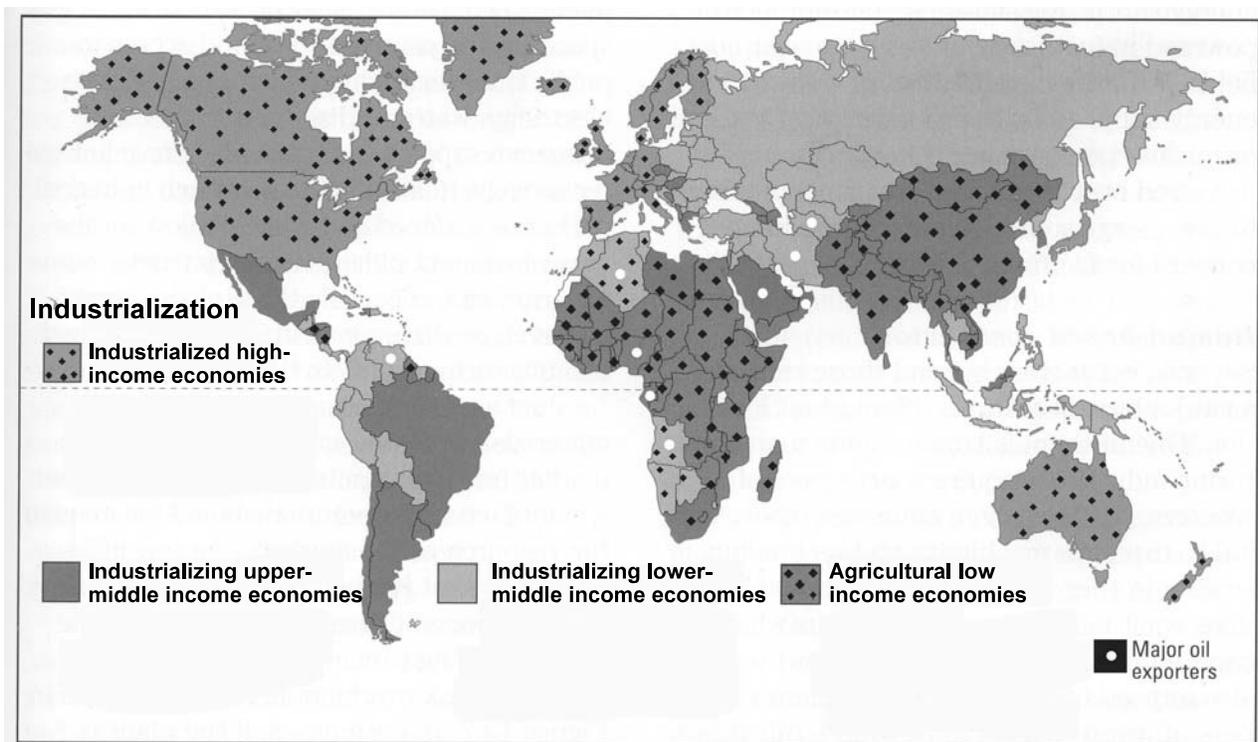
Chernobyl: 26 April, 1986

In 1986, an explosion ripped through Reactor 4 of the Chernobyl nuclear power plant in Ukraine. It was the world's worst nuclear accident. Human error, compounded by a faulty technical design, led to the accident. Sixteen years later, the radiation remains. It's there in the soil, in the animals, in the people. The Ukrainian government now says hundreds of thousands of people suffer from Chernobyl-related illnesses. Many children in the surrounding areas were exposed to radiation doses sufficient to lead to thyroid cancers. Subsequent studies in the Ukraine, Russia and Belarus were based on national registers of over 1 million people possibly affected by radiation. And that may be just the beginning. Among scientists, there's deep concern about long-term genetic damage to future generations.

"There's certainly enough radiation here to contaminate those mice and cause genetic effects that we're seeing. They're mammals and we're mammals. If it's going to cause genetic effects in their DNA, then we know that we are also going to be at hazard if we get these same levels inside our bodies," This research may have ramifications beyond the contaminated 30-kilometer zone around Chernobyl. "We may have a Chernobyl in some other location someday."

Within the former Soviet Union large areas of agricultural land are still excluded from use and are expected to continue to be for a long time. In a much larger area, although agricultural and farm animal activities are carried out, the food produced is subject to strict controls including the restriction of distribution and use outside this contaminated zone.

Similar problems, although of a much lower severity, were experienced in some countries of Europe outside the former Soviet Union, where agricultural and farm animal production were subjected to controls and limitations for varying amounts of time after the accident. While most of the restrictions have been lifted, there are still several areas in Europe where restrictions on the distribution and slaughter of animals is in effect. For example, several hundred thousand sheep in the United Kingdom and reindeer in some Nordic countries.



CASE STUDY 2

Units 1 - 5

The Saami People: Reindeer Herders of Northwestern Europe

The Saami (also known as Lapps, a term not accepted today) are an aboriginal people who live in the northwestern Arctic region of Sweden, Finland and the Russian Federation. Anthropologists believe that these indigenous people have lived in this region for at least 4000 years. Like many aboriginal groups, they have led a nomadic, hunter-gatherer way of life and peaceful lifestyle in their own region. For most of their existence, they remained isolated from the ongoing cultural and industrial development occurring in the rest of Europe. Throughout modern history, the Saami have been heavily influenced by industrial development and government policies in each of the countries they inhabit.

Anthropologists have identified two types of Saami people, those of an eastern origin which are similar to northern Asians, and those from western areas of Europe (known as Europids). Most recent studies favour western rather than eastern heritage.

The methods of survival used by the Saami are considered an excellent example of efficient use of the natural environment.

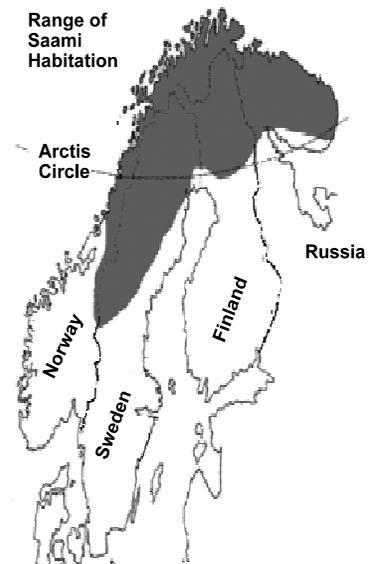
Some have been known to have fished and hunted seals in Scandinavian coastal areas, but in the late Middle Ages, Swedish people who practiced agriculture moved toward the coast, pushing the Saami further north. The same happened in Finland so that now the original Saami people can only be found north of the Arctic Circle.

Saami people have traditionally settled with a population pattern that involved low populations spread out over large areas. Most communities were isolated from those around them and many families made use of large hunting areas. For this reason, several Saami cultures and languages have developed. They have also had a tendency to establish cultural connections with other European groups within their regions and countries. Examples of this are most notable in Sweden and Norway with Germanic peoples and with Russian and Karelian cultures on the Kola Peninsula.

The ways in which the Saami have made use of their resources has mainly depended on where they lived. Those who lived in coniferous forest (such as in Sweden) lived mainly by hunting and fishing. Reindeer were used for transportation and as a source of food and clothing. The mountain dwelling Saami are most famously considered to be the “reindeer Saami.” For these people, the reindeer is the most important part of the traditional economy. They live on the fields (bare mountain ranges) in Sweden and Norway and on the far northern highlands. Here they carry out nomadic reindeer herding. They also do some fishing and trap willow grouse. A third group are the River Saami who mainly fish for salmon in major rivers in the Scandinavian/Russian region. They also raise some agricultural and domestic animals. Their settlement patterns are usually more permanent. A last group are the sea Saami who are coastal dwellers, living by hunting in the winter and fishing in the summer. They also depend on seals as a main food source.

In many areas of this Arctic region, such as the Kola Peninsula in Russia, the Saami are the original inhabitants of the area. Compared with other similar indigenous peoples in the world, the effects on their traditional native economies by interaction with other groups, have been similar. This has mainly involved disruption of their migration and settlement patterns and their agricultural practices.

In Sweden, dams, hydro power facilities, and mining have destroyed traditional reindeer migration paths. Railways, roads, settlements, and forestry access networks have blocked reindeer from migrating back and forth between mountain and lowland regions. This has disrupted their normal summer/winter migration pattern. These developments have also caused the Saami to lose the large tracts of land they once were able to use for herding. The Swedish



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

China's Population: Changes and Challenges

Since the founding of the People's Republic of China (PRC) in 1949, China currently the world's most populous country, has undergone massive changes. The founders of the PRC have controlled its economy and all means of production in order to reduce poverty and to expand access to resources. Other actions have caused mortality and fertility rates to swiftly decline. These changes, however, created challenges for today's Chinese society.

Figure 1

Population Indicators for China., 1950, 2003, and Projection to 2050

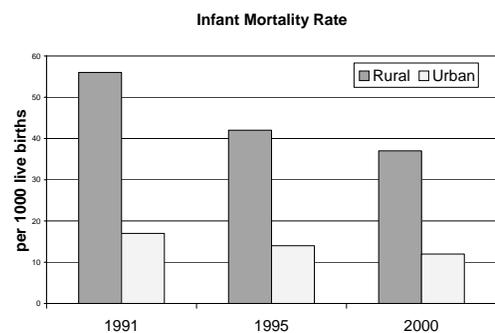
Year	Population (millions)	Percent Urban	Life expectancy at birth (years)	Total fertility rate (children/women)	Infant mortality rate
1950	565.0	18	40.1	6.2	195
2003	1292.3	41	71.4	1.7	23
2050	1394.4	-	81.0	1.7	6

Figure 2

Mortality Decline

China's death rate has significantly declined over the past 50 years. The new government purchased, stored and distributed grain to alleviate local famines and created national infrastructure so food could reach those in need. This along with a massive public health program lowered mortality rates. Although universal access to health care originally was a top priority, a shift towards a market-oriented system in the early 1980s meant that many poor people in rural areas could not

afford nor did they have access to appropriate health care. Malnutrition and treatable diseases during infancy were common along with infant and maternal deaths.



Rural to Urban Migration

Today urban areas are attracting millions of migrants who are willing to live in harsh conditions to earn income. Food is no longer rationed because of economic reform and can be bought on the open market. As well, some jobs are no longer assigned by the state and many take jobs as construction workers, factory workers and nannies. State regulations on hiring, salaries, housing costs and other aspects of life, however, dampens permanent rural to urban migration and makes it difficult to survive in the city. Many circular migrants move back and forth between their home villages and urban areas. Although between 30 and 100 million Chinese people from rural areas were living in cities by the mid-1990s, the state still perceives rural to urban migration as potentially disruptive to Chinese society.

Fertility Decline

Between the 1960s and 1980s, China experienced one of the most rapid declines in fertility ever recorded for a nation. In 15 years, the number of children per woman fell from approximately six to two. Other Asian countries including South Korea and Thailand experienced similar declines but over a 40 year period. China's decline is especially significant considering its low gross national product and level of urbanization.

This trend began in the 1950s and 1960s when the Chinese government began to pay close attention to urban fertility levels. Couples in these centres wanted fewer children. Fertility declines accelerated in the 1970s and early 1980s because of strict birth planning policies. Levels fell more slowly in rural areas as many rural families were permitted a second child.

The degree to which China's decline in fertility is a direct result of its One Child Policy is often debated since the Chinese government launched a series of economic reforms during this time. These economic changes made middle-class lifestyles, luxury products, and higher education more readily available; consequently, many parents began to scale back the number of children they desired.

Greying Population

Fertility rates fell so fast in China that it has not been able to fully adapt to the sharp decline. The proportion of the population age 60 years is now more than ten percent as compared to seven percent in 1953. As a result, the dependency ratio has changed significantly. Traditionally, the Chinese government relied on the family to care for the elderly but a growing number of young people are caring for parents and four grandparents - a phenomenon known as a 4-2-1 family. Wealthier individuals have begun to transfer this responsibility to private nursing homes but this has met with much resentment. Elderly people were traditionally honoured and today's elderly population expect to be looked after as well. Some have even sued their families for neglect. Will families be able to maintain this burden? By the year 2030, officials estimate that care for a projected 300 million elderly will consume a full 10% of China's income.

Figure 3

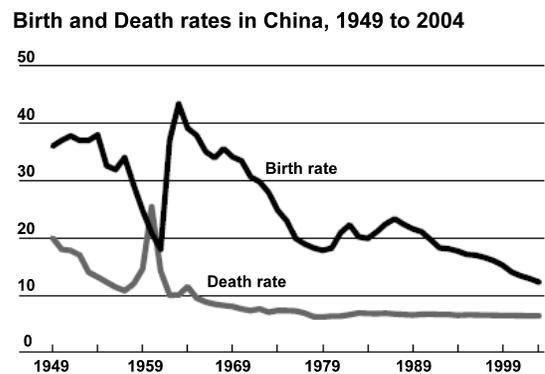
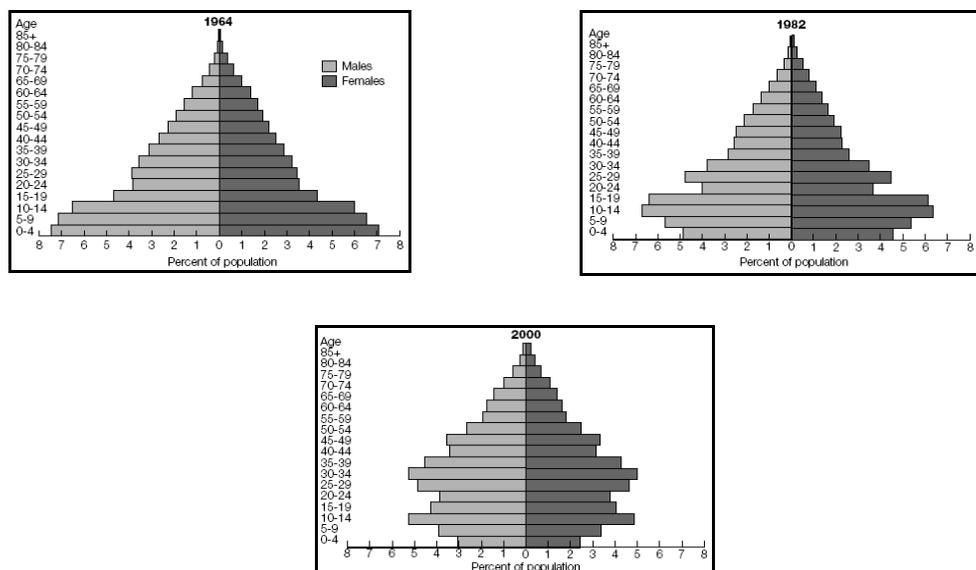


Figure 4 China's Population by Age and Sex, 1964, 1982, and 2000



The Future

Since moving to a market economy and opening up to international trade, China has experienced enormous growth but change has created many challenges. In the future, fertility is expected to remain low and mortality levels will continue to decline for many, especially those who can obtain better healthcare through the private sector. While demographers cannot fully predict what will take place, over the next fifty years they will continue to examine the impact of these demographic shifts on social and economic inequalities, labour migration, family structures and society at large. Given China's "new" place in global society, its demographic future should be of interest to all.

