PART I

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

SECTION A
TOTAL VALUE: 36%

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

Unit 1 - Major Land and Water Forms (1 - 10)
Unit 2 - Patterns in Weather and Climate (11 - 20)
Unit 3 - Ecosystems (21 - 25)
Unit 6 - Manufacturing and Service Activities (26 - 32)
Unit 10 - Global Economic Disparities (33 - 36)

1. Which term refers to the thin layer of material that forms Earth's crust?

   (A) inner core
   (B) lithosphere
   (C) mantle
   (D) outer core

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

   (A) ash-and-cinder
   (B) ash-and-lava
   (C) composite
   (D) shield

3. Which is a feature of alpine glaciation?

   (A) arête
   (B) drumlin
   (C) erratic
   (D) esker

4. Which term is used to refer to the landscape feature in Graphic 4?

   (Refer to Graphic 4 in the booklet provided)

   (A) barchan
   (B) erg
   (C) esker
   (D) hamada

5. What is the sequence of land form features shown on the line from A to B in Graphic 5?

   (Refer to Graphic 5 in the booklet provided)

   (A) plains, mountains, plateaus, plains
   (B) plains, plateaus, mountains, plains
   (C) plateaus, plains, mountains, plains
   (D) mountains, plains, plateaus, plains

6. According to the map in Graphic 6, which statement **best** describes the relationship between active volcanoes and plate movement?

(Refer to Graphic 6 in the booklet provided)

(A) Volcanoes are almost always found at the center of plates that form the continents.
(B) Volcanoes are dispersed along edges of plates that slide past each other.
(C) Volcanoes are formed when continental plates collide.
(D) Volcanoes are formed where plate movement causes tensional and compressional forces.

7. According to Graphic 7, in which climate zone would mechanical weathering be **most** pronounced?

(Refer to Graphic 7 in the booklet provided)

(A) arid
(B) continental
(C) tropical wet
(D) tropical wet and dry

8. Which term **best** describes the type of delta shown in Graphic 8?

(Refer to Graphic 8 in the booklet provided)

(A) arcurate
(B) bay bar
(C) digitate
(D) estuarine

9. Which stage in the life cycle of a river is shown in Graphic 9?

(Refer to Graphic 9 in the booklet provided)

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

10. Which sequence illustrates the processes that resulted in the straightening of the coastline illustrated in Graphic 10?

(Refer to Graphic 10 in the booklet provided)

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

11. Which phrase best describes a weather condition?

(A) cloudy skies and a high of 18^0C
(B) colder in the mountains than on the coast
(C) hot summers and cold winters
(D) unseasonably mild winters

12. In Graphic 12, which season is occurring in the Northern Hemisphere when Earth is at position "X"?

(Refer to Graphic 12 in the booklet provided)

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

13. What creates the Coriolis force?

(A) Earth's rotation
(B) gravitation
(C) ocean currents
(D) pressure zones

14. Which term is used to refer to the type of rainfall shown in Graphic 14?

(Refer to Graphic 14 in the booklet provided)

(A) convectional
(B) cyclonic
(C) frontal
(D) orographic

15. What is the temperature range of the climate data below?

Month	J	F	M	A	M	J	J	A	S	O	N	D
Temp. (ºC)	-8	-6	-3	1	7	11	15	14	11	5	2	-5

(A) -8 ºC
(B) 7 ºC
(C) 15 ºC
(D) 23 ºC

16. Which term **best** refers to winds that produce dry winters and wet summers?

(A) easterlies
(B) monsoons
(C) northeast trades
(D) westerlies

17. According to Graphic 17, which factor most accounts for the difference in temperature between Oporto and New York?

(Refer to Graphic 17 in the booklet provided)

(A) cold wind from the north
(B) difference in latitudinal location
(C) difference in ocean currents
(D) warm winds from the south

18. According to Graphic 18, which statement best describes the relationship between temperature and latitude?

(Refer to Graphic 18 in the booklet provided)

(A) Temperature decreases as distance relative to the equator decreases.
(B) Temperature decreases as distance relative to the equator increases.
(C) Temperature increases as distance relative to the equator increases.
(D) Temperature increases as altitude at the equator increases.

19. Which phrase best describes the climate represented by the climograph in Graphic 19?

(Refer to Graphic 19 in the booklet provided)

(A) cool, wet summers and mild, dry winters
(B) cool, dry summers and mild wet winters
(C) hot summers with an even distribution of rainfall
(D) hot, wet summers and mild, dry winters

20. In Graphic 20, which line represents the east to west sequence of climatic regions given in the box below?

arid - highlands - tropical wet - tropical wet and dry

(Refer to Graphic 20 in the booklet provided)

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

21. Which term refers to the relationships shown in Graphic 21?

(Refer to Graphic 21 in the booklet provided)

(A) ecosystem
(B) food chain
(C) food pyramid
(D) food web

22. In Graphic 22, at which trophic level are primary producers found?

(Refer to Graphic 22 in the booklet provided)

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

23. Which phrase **best** describes the climax vegetation in a savanna ecosystem?

(A) broad-leaf, deciduous trees
(B) limited plant life, with shallow roots
(C) tall grasses, with occasional trees
(D) trees with thin needle leaves

24. In which set of climatic conditions would the type of vegetation shown in Graphic 24 be found?

(Refer to Graphic 24 in the booklet provided)

(A) cold temperatures all year with very little rainfall
(B) cool, dry summers and mild, wet winters
(C) warm to hot temperatures with distinct wet and dry seasons
(D) warm to hot temperatures with rain all year long

25. Which type of manufacturing process is illustrated by the processing of wood into wooden shingles and fence posts?

(A) analytic
(B) conditioning
(C) heavy industrial
(D) synthetic

26. According to the table below, which industry would most likely locate near a large workforce?

Industry	Required Units of Labour	Required Units of Capital
1	10	10
2	5	15
3	20	5
4	10	20

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

27. Which term **best** refers to a manufacturing operation in which a weight-loss in inputs contributes to a value-gain in outputs?

(A) heavy industry
(B) light industry
(C) market-oriented industry
(D) resource-oriented industry

28. Which term **best** refers to the kind of scenario described below?

> The owner of a coffee and bagel shop decides to open a business near an office complex and shopping mall.

(A) agglomerating tendency
(B) light industry
(C) primary activity
(D) tertiary activity

29. Which is an example of a public tertiary activity?

(A) courier services
(B) fire protection
(C) flea markets
(D) furniture manufacturing

30. Which type of industries are described in these scenarios?

> Nova Crafts Coop is a craft workers' cooperative that produces knitted goods aimed at the tourism market.
>
> Novelty Chocolate Limited is a privately-owned enterprise that produces specialty chocolates as gift items.

(A) capital-intensive
(B) heavy industry
(C) light industry
(D) primary industry

31. A producer of apple juice would most likely locate the juicing operation at which numbered location in Graphic 31?

(Refer to Graphic 31 in the booklet provided)

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

32. According to the table below, which country experienced the greatest growth in its tertiary sector from 1890 to 1992?

Growth in the Service Sector for Selected Countries (% increase)

Country	Year					
	1890	1959	1960	1970	1980	1992
France	27.0	25.9	39.5	47.2	55.5	65.8
Germany	25.0	36.4	32.2	42.8	52.7	58.5
Japan	13.0	33.7	41.8	47.4	54.7	59.0
United Kingdom	31.0	45.4	48.5	53.6	61.1	71.3
United States	30.0	54.7	57.1	62.3	67.1	72.5

(A) France
(B) Japan
(C) United Kingdom
(D) United States

33. Which term refers to the situation described below?

> To increase agricultural production, the Nigerian government decided to help small-scale farmers. It gave them subsidies for growing crops, and helped them in the use of simple tools and animal power in ways that suited local conditions. Traditional inputs and processes were used to increase self-sufficiency.

(A) appropriate technology
(B) green revolution
(C) reformed land practices
(D) infrastructural change

34. According to the indicators given in the table below, which pair contains the most developed country and the least developed country in that order?

Selected Indicators						
Country	Infant Mortality	Per Capita Use of Electricity (kWh)	Per Capita GNP (USD)	Farming as % of GNP	Computers per 1000 people	Phones per 1000 people
Italy	5.4	4 314.9	19 470	2.9	179.8	1 211.1
Kenya	77.7	129.3	340.0	20.8	4.9	14.6
Romania	18.7	1 703.9	1 710	12.4	31.9	286.5
Turkey	34.5	1 275.8	2 540	15.2	38.1	525.5

Source: World Bank

(A) Italy and Kenya
(B) Kenya and Romania
(C) Romania and Turkey
(D) Turkey and Italy

35. According to the map in Graphic 35, which group of regions is most highly developed?

(Refer to Graphic 35 in the booklet provided)

(A) Africa, Australia, and Europe
(B) Australia, Europe, and North America
(C) Europe, North America, and South America
(D) South America, South Asia, and Africa

36. Which country in the table below has the **highest** standard of living?

Selected Development Indicators					
Country	% Growth Rate	Life Expectancy (years)	Industry as % of GNP	Literacy	Mobile Phones per 1000 People
Costa Rica	1.65	76.02	30.7	95.7	160
Denmark	0.30	76.72	25.0	100.0	534
Kenya	1.27	47.49	13.0	83.3	5
Madagascar	3.02	55.35	14.0	67.3	5

Source: World Bank

(A) Costa Rica
(B) Denmark
(C) Kenya
(D) Madagascar

End of Units 1-3, 6 and 10

SECTION B
Do only ONE of the Units in Section B

Either:	**Unit 4 - Resources on the Land**	**(37 - 44)**	**Value: 8%**
Or:	**Unit 5 - Resources in the Oceans**	**(45 - 48)**	**Value: 4%**

Unit 4 - Resources on the Land

37. Which term refers to the process by which particles of insoluble inorganic matter are transported downward through the soil?

(A) accumulation of humus
(B) capillary action
(C) eluviation
(D) leaching

38. Which term is used to refer to agriculture with a high level of capital and labour inputs and high yields?

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

39. Which primary advantage is provided by the farming practice shown in Graphic 39?

(Refer to Graphic 39 in the booklet provided)

(A) exposes more area to direct sunlight
(B) makes it easier to rotate crops
(C) prevents excessive soil erosion
(D) provides more space for planting crops

40. Which forest harvesting practice is shown in Graphic 40?

(Refer to Graphic 40 in the booklet provided)

(A) block cutting
(B) clear cutting
(C) selective cutting
(D) strip cutting

41. In which type of rock is coal located?

(A) granitic
(B) igneous
(C) metamorphic
(D) sedimentary

42. Using the triangular graph of soil texture in Graphic 42, which combination would make the **least** favourable soil for farming?

(Refer to Graphic 42 in the booklet provided)

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

43. In which set of climatic conditions, recorded at four weather stations and shown in the tables below, would root crops, such as potatoes, turnips, and carrots, naturally be grown?

Station A	J	F	M	A	M	J	J	A	S	O	N	D
Temperature (^{0}C)	15	18	18	20	22	23	25	23	21	18	17	16
Precipitation. (mm)	25	20	18	16	13	11	9	11	14	18	20	23

Station B	J	F	M	A	M	J	J	A	S	O	N	D
Temperature (^{0}C)	-30	-32	-29	-21	–12	0	7	6	-1	-12	-17	-28
Precipitation. (mm)	10	11	9	9	10	9	10	11	14	11	9	9

Station C	J	F	M	A	M	J	J	A	S	O	N	D
Temperature (^{0}C)	-3	-4	0	4	10	15	19	20	16	10	5	-1
Precipitation. (mm)	121	110	113	102	109	99	98	96	107	110	113	120

Station D	J	F	M	A	M	J	J	A	S	O	N	D
Temperature (^{0}C)	27	27	27	27	26	26	25	26	27	27	27	27
Precipitation. (mm)	262	196	254	269	305	234	224	183	130	175	183	264

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

44. According to Graphic 44, which region has the greatest problem with soil loss?

(Refer to Graphic 44 in the booklet provided)

(A) arid
(B) eastern continental
(C) high latitude
(D) mid latitude

End of Unit 4

Unit 5 - Resources in the Ocean

45. What is the **best** indicator of oil quality?

(A) mass
(B) porosity
(C) translucence
(D) viscosity

46. According to the table below, which phrase **best** describes the total impact of the fishing and oil industries on the Newfoundland and Labrador economy?

Newfoundland and Labrador
Economic Impact of Ocean Industries (Average of 1997-1999)

Sector	Impact on GDP	
	% of GDP	% of Total Employment
Fish Harvesting	4.0	6.7
Fish Processing	4.2	5.7
Oil Exploration	1.0	0.3
Oil Production	4.8	0.6
Oil Development	6.1	2.2

Source: Government of Newfoundland and Labrador

(A) contributes about 15 % of the province's GDP
(B) contributes about 35% of the province's GDP
(C) makes up about 15% of the province's employment
(D) makes up about 35% of the province's employment

47. Which species would be reduced in numbers if sand lances were to be eliminated from the marine ecosystem shown in Graphic 47?

(Refer to Graphic 47 in the booklet provided)

(A) auklets
(B) cephalopods
(C) kittiwakes
(D) salmon

48. According to Graphic 48, which source of fish experienced the greatest growth from 1995-1999?

(Refer to Graphic 48 in the booklet provided)

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

End of Unit 5

SECTION C

Do only ONE of the units in Section C

Either:	**Unit 7 - Linkages in Human Interaction (49 - 56)**	**Value: 8%**
Or:	**Unit 8 - Population (57 - 64)**	**Value: 8%**
Or:	**Unit 9 - Settlement and Urbanization (65 - 72)**	**Value: 8%**

Unit 7 - Linkages in Human Interaction

49. Which is an example of a line-haul cost for a courier company?

(A) gasoline
(B) heat and light
(C) office cleaning
(D) office rental

50. What is the connectivity index for the network shown in Graphic 50?

(Refer to Graphic 50 in the booklet provided)

(A) 0.5
(B) 1
(C) 13
(D) 26

51. According to the table below, which place is least accessible to the remaining three places in terms of time-distance?

Units of Time Distance					
Node	**1**	**2**	**3**	**4**	**Total**
1	-	10	60	40	110
2	10	-	40	25	75
3	60	40	-	30	130
4	40	25	30	-	95

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

52. Which term refers to the definition provided below?

> The tendency of regions to limit their economic activities to supplying goods and services most suited to the region's resource base.

(A) linkage
(B) market-orientation
(C) specialization
(D) supply-demand match

53. Which term is used to refer to a destination or intersection point in a transportation network?

(A) hub
(B) junction
(C) node
(D) terminal

54. Which network is **most** efficient?

	Network	Number of links	Number of Nodes
(A)	1	3	5
(B)	2	8	8
(C)	3	9	6
(D)	4	7	9

55. In which situation would trade ties be strongest?

	Situation	Commodity	Country A	Country B	Ease of Transfer
(A)	1	steel	surplus	low demand	high
(B)	2	paper	surplus	high demand	low
(C)	3	timber	shortage	high demand	low
(D)	4	fish	surplus	high demand	high

56. With reference to the table below, which statement describes the relationship between a region's level of development and its trade in manufactured goods?

Value of Imports/Exports of Manufactures for Selected Countries (2000)

Country	Value of Imports ($ millions)	Value of Exports ($ millions)
Developed Countries		
Belgium	131	144
France	240	245
Germany	337	459
Japan	213	449
Developing Countries		
Armenia	428	84
Cameroon	796	78
Costa Rica	4 915	3 595
Uganda	605	22

(A) In developed countries, the value of manufactured exports is equal to the value of manufactured imports.
(B) In developed countries, the value of manufactured imports is more than the value of manufactured exports.
(C) In developing countries, the value of manufactured exports is more than the value of manufactured imports.
(D) In developing countries, the value of manufactured imports is more than the value of manufactured exports.

End of Unit 7

Unit 8 - Population

57. Which term is **best** defined below?

How people are spread throughout a region's land area

(A) population concentration
(B) population density
(C) population distribution
(D) population sparsity

58. According to Graphic 58, which region has a population growth rate that contrasts greatest with the area indicated by "X" in central Africa?

(Refer to Graphic 58 in the booklet provided)

(A) Australia
(B) North America
(C) South America
(D) Western Europe

59. Which situation would result in a natural decrease in population?

(A) Birth rates exceed death rates.
(B) Death rates exceed birth rates.
(C) Emigration exceeds immigration.
(D) Immigration exceeds emigration.

60. Which term describes the population pyramid shown in Graphic 60?

(Refer to Graphic 60 in the booklet provided)

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

61. Which condition is an example of a push factor that may influence an individual's decision to migrate?

(A) employment opportunities in the area of destination
(B) family and friendship ties in area of origin
(C) famine in the area of origin
(D) travel costs to area of destination

62. According to the table below, which statement describes the relationship between the rate of population growth and a country's standard of living?

Selected Development Indicators (2002)		
Country	Rate of Natural Increase (%)	Per Capita GNP (USD)
Benin	2.9	980
Canada	0.3	27 170
France	0.4	24 420
Ghana	2.2	1 910
Philippines	2.2	4 220
Sweden	0.0	23 190
Uganda	3.0	1 210
Yemen	3.3	770

Source: Population Reference Bureau. Population data Sheet 2002

(A) Developing countries have high rates of natural increase in population.
(B) Developing countries have low rates of natural increase in population.
(C) Developed countries have moderate rates of natural increase in population.
(D) Developing and developed countries have similar rates of natural increase in population.

63. In which situation in the table below will actual change in population be greatest?

Population Dynamics				
Country	Births	Deaths	Immigrants	Emigrants
1	203 000	158 000	75 000	32 000
2	587 000	523 000	176 000	125 000
3	331 000	309 000	62 000	78 000
4	426 000	504 000	119 000	162 000

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

64. According to Graphic 64, how did the main source area for migrants to Canada change from pre-1981 to the mid-1990s?

(Refer to Graphic 64 in the booklet provided)

(A) Asia replaced Europe.
(B) Asia replaced the Western Hemisphere.
(C) Europe replaced Asia.
(D) Europe replaced the Western Hemisphere.

End of Unit 8

Unit 9 - Settlement and Urbanization

65. Which type of village is shown in Graphic 65?

(Refer to Graphic 65 in the booklet provided)

(A) compact
(B) composite
(C) linear
(D) loose-knit

66. Which type of settlement site is shown in Graphic 66?

(Refer to Graphic 66 in the booklet provided)

(A) confluence
(B) head-of-navigation
(C) river meander
(D) sheltered harbour

67. Which term is defined below?

> A settlement enjoys a locational advantage relative to the location of other settlements.

(A) linkage
(B) rank-size
(C) site
(D) situation

68. Which condition **best** describes a factor in the emergence of a metropolis?

(A) decentralization of services from a large city to smaller centres
(B) growth of a city as a transportation hub
(C) increased regional influence of a city as a financial and economic centre
(D) rapid expansion of a city as an attraction to migrants from rural areas

69. Which sequence describes the arrangement of land use zones from the centre of a city to its outskirts?

> **Urban Land Use Zones**
>
> 1 Central Business District
> 2 commercial: malls and industrial parks
> 3 light manufacturing
> 4 residential: old, low income, multi-housing
> 5 residential: sub-urban, high income single family
> 6 residential: sub-urban, medium income single family

(A) 1, 3, 4, 6, 5, 2
(B) 1, 6, 3, 5, 2, 4
(C) 2, 4, 6, 5, 1, 3
(D) 4, 3, 2, 6, 1, 5

70. Which scattergraph in Graphic 70 **best** depicts the relationship between the size of a settlement and the number of services available?

(Refer to Graphic 70 in the booklet provided)

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

71. Which type of settlement morphology would most likely evolve in a river valley?

(A) compact
(B) linear
(C) loose-knit
(D) T-shaped

72. According to the indicators shown in the table below, which city is most likely to be located in the least developed country?

The Quality of Life in Large Cities						
City	Population (millions)	Murders per 100,000	Persons per room	% of houses with water/electricity	Telephones (per 1000 people)	Infant Deaths (per 1000 live births)
1	27.7	1.3	1.0	98	44	8
2	14.2	6.0	1.1	100	38	17
3	10.8	17.7	1.9	88	17	22
4	12.8	77.6	3.0	62	5	43

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

End of Unit 9

PART II

NOTE: The questions at the end of each case study provide opportunities for students to include concepts from the World Geography 3202 course.

SECTION A
TOTAL VALUE: 32%

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

Unit 1 - Major Land and Water Forms
Unit 2 - Patterns in Weather and Climate
Unit 3 - Ecosystems

CASE STUDY 1: The Dying Aral Sea

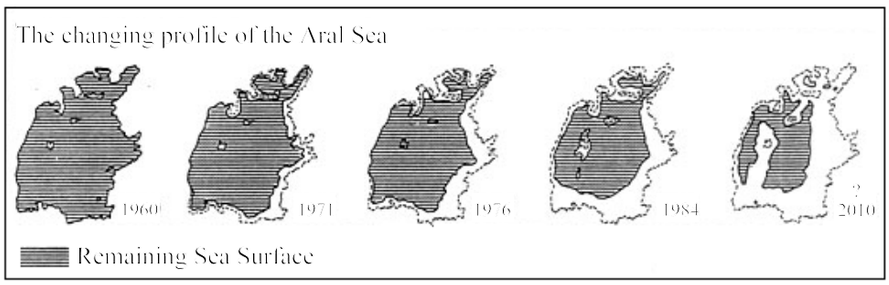
The Aral Sea is located between the former republics of Kazakhstan and Uzbekistan. This huge inland saltwater lake once had a stable and rich environment, with a fishery so immense that it was referred to as the fish basket of Central Asia. The Aral Sea has no outlets but is fed by two rivers, the AmuDarya and SyrDarya.

In the 1950s, the government of the Soviet Union developed a plan to grow enough cotton to meet the country's needs and to export the surplus. Unlike most of the country, where it is too cold to grow cotton, the area around the Aral Sea has the right temperatures but summer conditions are very dry. With irrigation, cotton would grow very well.

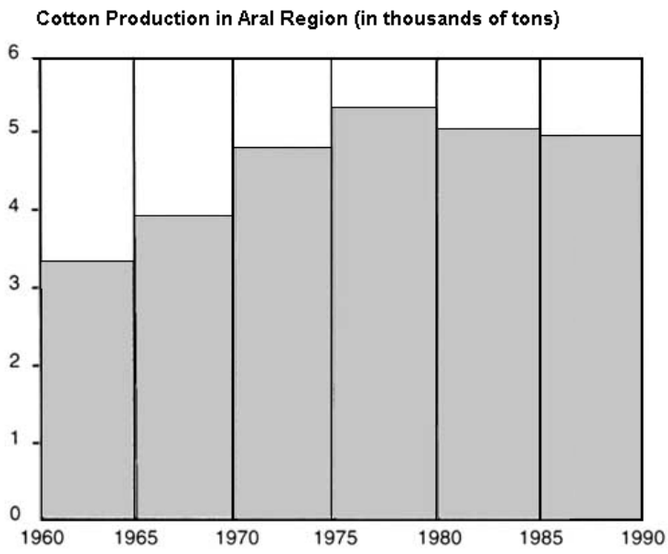
With appropriate temperatures and adequate fresh water, Soviet officials thought they could create the right set of conditions for growing cotton. Irrigation systems were developed along the two rivers flowing into the Aral Sea. To meet the ever-increasing quotas set by the government, farmers also had to use huge quantities of chemical fertilizers. As much as 800 kg had to be put on each hectare. On top of this, pesticides were sprayed onto the land to control insects; defoliants were used to strip the leaves off the cotton plants to make it easier to pick the cotton.

The high temperatures needed to grow cotton, however, would prove to be a problem. In such conditions, water evaporates rapidly. Salts and other minerals in the irrigation water were left behind in the soil to be added to the chemicals in the fertilizer and pesticides. About 65% of the sources of drinking water are unsafe to drink. As more and more water was used to wash the salts out of the soil, the water level in the Aral Sea itself was lowered 15m, which made it more difficult to find reliable water. Some communities that were near the edge of the sea are now 60 km inland. Settlements that depended upon the fishery had their economic foundation destroyed. The salts carried and then deposited by winds reduced the nutritional value of grass; this has severely reduced the availability of meat at reasonable prices.

By the 1980s, other problems began to emerge. Chemicals reached ground water supplies, poisoned drinking water, and contaminated the food chain. Currently, fierce hot winds common to the area pick up poisonous dust and reduce air quality. The 35 million inhabitants of the region suffer from breathing problems, throat cancer and severe anemia (a blood disorder). In some areas, nearly three-quarters of children have serious illnesses. About half of the population have been seriously stressed emotionally. Concerns about their health and their economic future have acted as strong push factors forcing people to migrate; it is estimated that 100 000 "environmental refugees" have come from the Aral Sea.

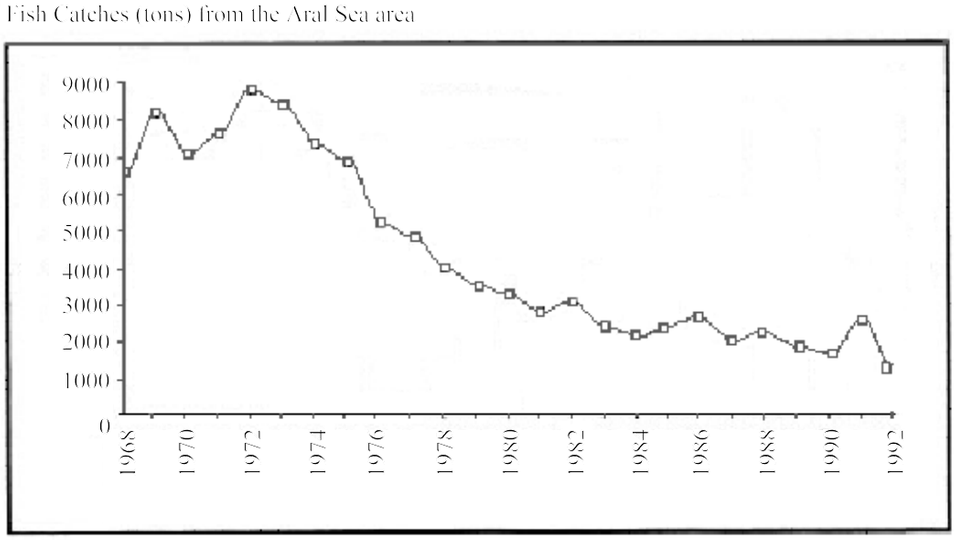


(From New Scientist, 18 February 1988)



Selected Environmental Impacts of Aral Sea Project			
	1976	1996	2000
Appearance of new salty land (km^2)	13 200	38 000	42 000
Amount of salt in the land (million tons)	500	2 300	3 300
Area where dust and salt were carried by wind (1000 km^2)	100 - 150	250 - 300	400 - 450

Fish Catches (tons) from the Aral Sea area



Comparison of Deaths of Infants (aged 1 year or less) per 1000 Births				
Country/Republic	1970	1980	1985	1986
USSR	24.7	27.3	26	25.4
Russia	23	22.1	20.7	19.3
Uzbekistan*	31	47	45.3	46.2
Kazakhstan*	25.9	32.7	30.1	29
Kirghizstan*	45.4	43.3	41.9	38.2
Tadzhikistan*	45.9	58.1	46.8	46.7
Turkmenistan*	46.1	53.6	52.4	58.2
Bulgaria	27.3	20.2	15.4	14.6
Poland	33.4	21.3	18.4	17.3
Czechoslovakia	22.1	18.4	14	13.9

*Republics bordering on or near Aral Sea area.
Source: Uzbekistan data (1988)

Observations of a journalist

That's the Aral Sea," said the major. "There it is."

Below, at the foot of the (cliffs), children had used rocks to write their names in the dirt. Beyond, the graveyard of rusted ships began. Most of them were skeletons now, picked apart for scrap metal. There were more than a dozen in this section of the seabed: barges, tugboats, cargo ships, all of them cast randomly about the sand as though they had been dropped there.

The major stood beside me, his hair blowing in the wind, and pointed up and down the old shoreline.

"There used to be summer camps for kids, resorts along the shore," he said. "It's all gone. Everything has been ruined."

Some have described Moynaq as a ghost town, but what we found was worse: dusty streets lined with fences made of tattered reeds, dusty houses where thin cows milled in the yards, an old movie house -- with a statue of a famous Uzbek poet out front -- that had been shut down for years.

Once, some 20 000 people lived here. Now there are only 6 000, many of them unemployed and too poor to move anywhere else.

The fishery is closed. The cannery is closed. The market is open, but its merchants have almost nothing to sell other than a few fish caught in the one small lake outside of town.

There are no trees, no grass, only dirt yards littered with bits of trash. Hanging over all of it -- and over the people who still live here -- is the memory of the water.

"When the sea was here, it was wonderful," a retired fisherman told us. "Now there is nothing."

The sense of depletion was everywhere. On the streets, men stood idle, rubbing their arms against the cold. Children huddled in doorways, staring at us as we drove by. A starving dog, its ribs showing through the skin, slinked down an alley.

- Thomas French, *St. Petersburg Times*, December 2, 2001

Value

2 73. What physical change occurred to the Aral Sea from 1976 to 2000? Give **one** piece of evidence from the case study to support your answer.

Value

4 74. Assume you are a fisherman in the Aral Sea region. You are invited to a town hall meeting organized by local authorities. Based on what you have learned this year related to economic development and information in this case study, develop an economic argument in favour of reversing the Aral Sea project?

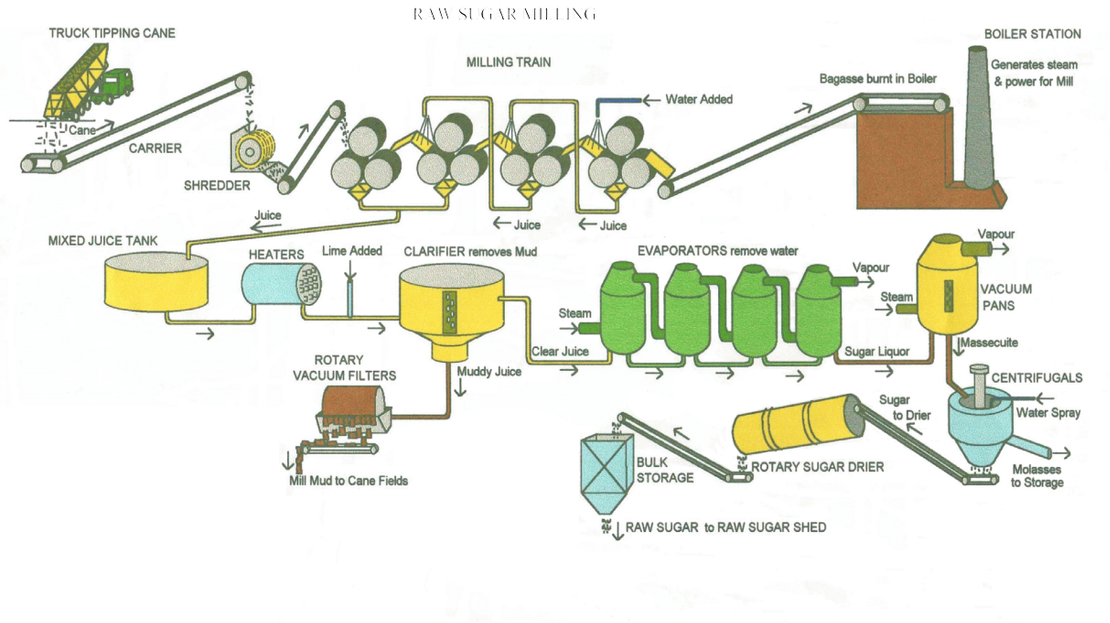
Value

6 75. In the 1950s, a Soviet government official said that the economic impact of this project will have a most positive effect on the quality of life of people in the Aral Sea area. According to this case study, and with reference to quality of life indicators studied in this course, how accurate was this statement? Explain.

Unit 6 - Manufacturing and Service Activities

CASE STUDY 2: Producing Raw Sugar

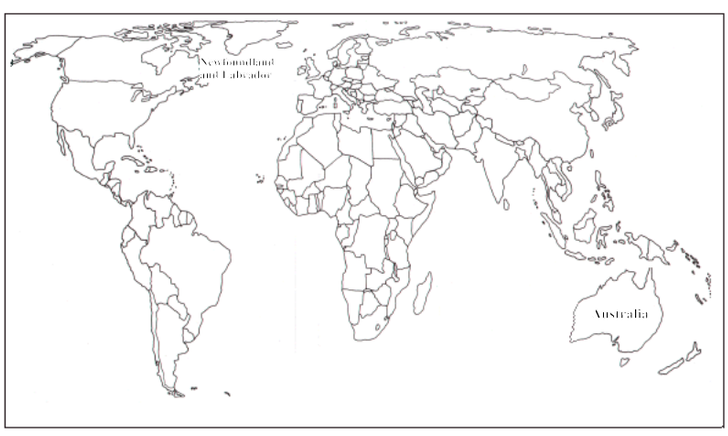
The production of raw sugar begins with the sugar cane, which is grown primarily in subtropical regions of Latin America, Africa, Asia, and Australia. As soon as the canes are cut, they are shipped to the processing mill to ensure a good product. The initial stage involves sampling, weighing and washing the sugarcane. From there the material passes to cane crushers and then into the mill. Soil and other impurities are removed from the juice extracted from the canes. The juice is then boiled to allow excess water to evaporate. The syrup that has formed is "seeded" with crystals and boiled again until crystallization takes place. This mixture of sugar crystals and syrup then goes to the centrifugals, where the sugar is separated from the syrup. The crystals are tumble dried and stored in large bins to await shipment to refineries.



http://www.sugar.com.au

Uses of By-Products from the Processing of Sugar Cane

- Bagasse, the cane fibre, is used as a fuel source for sugar cane mills, as pulp for paper mills, and as a mulch for gardens.
- Ash (from mill chimneys) and filter mud (left after sugar is clarified) are used as fertilizer on cane farms and gardens.
- Molasses is used in the food industry, in animal feed, and in the alcohol distilleries.



What a Sugar Cane Stalk Contains	
Sucrose*	14%
Fibre	16%
Water	67%
Other	3%

*Sugar comes from sucrose.

Value
2

76. Give **two** examples from the case study to show that the manufacturing of raw sugar is an analytic process.

Value
6

77. With reference to factors that affect the location of industry and information provided in the case study, would you set up a mill to produce raw sugar in Australia or in Newfoundland and Labrador? Defend your choice.

Unit 10 - Economic Disparities

Value

4 78. Describe **two** ways in which colonialism slowed the development of the manufacturing sector in the developing world. **(This question is not based on Case Study 3).**

CASE STUDY 3: Agriculture and Development

During the 1950s, world leaders began to focus on how to close the gap between food production and food consumption in the developing world. In their attempt to address the problem, they engaged the help of agricultural researchers who developed a series of improvements in agriculture, referred to as the Green Revolution. One strategy was the development of high yield varieties of seeds aimed at increasing food production. In the mid-1960s, new high-yield varieties of wheat, rice, maize, sorghum, and millet were introduced to parts of Latin America and Asia. The yields were two to four times greater than traditional varieties and the shorter growing season meant that an extra crop could be grown in some regions.

Looking back, shortcomings of the Green Revolution are now evident. The high yield seeds required expensive farming practices that replaced less expensive traditional approaches. Irrigation systems had to be installed and maintained, and expensive seeds, fertilizers, and pesticides bought. Some farmers could not afford the gasoline to operate some of the equipment. Yields were high for up to a decade, but then declined as soils were depleted, badly eroded, and became toxic from salts left by irrigation. The surplus food that did come from higher yields, however, could only benefit the farmer when it was transported to the buyer. In marketing the surplus, transportation costs became another expense. These factors put the benefits of the Green Revolution beyond the reach of many farmers in developing countries. The richer farmers, who did benefit, were usually the landowners; as their incomes rose, they bought more land and forced off farmers who were renting it.

As well, the benefits of the Green Revolution were not felt evenly throughout the developing world, particularly in Africa. For example, high yield wheat or rice seeds were planted on only 36% of the arable land in Asia; 22 % in Latin America; and a mere 1% in Africa. It may be said that food shortages exist in Africa because the Green Revolution did not make an impact there. In India and Asia, however, where surpluses provide food for export, up to one-third of the population are still poverty-stricken. The challenges that the Green Revolution was aimed at continue to exist. Poor farmers still can not afford to buy the fertilizer and other inputs in high volumes in order to get discounted prices; poor farmers can not hold out for high prices for their crops; poor farmers do not have the money up front to install deep wells; poor farmers can not borrow money at low interest rates.

Cuba has attempted to address these issues. When large state farms experienced declining yields in spite of the use of new scientific methods in the late 1980s, the Cuban government began a new agricultural program. It included distributing small plots of land to former employees of state-farms, promoting organic farming on vacant lots in cities, helping farmers establish farmers-markets where they could get better prices, and assisting farmers with techniques that were environmentally sensitive. The solution came from within the country and used local knowledge.

> Let me (beg) you to recognize the role of local farmers in the conservation of plant genetic resources. By conscious and continuous selection they have created the immense genetic variations on which agriculture depends. Not enough use has been made of farmer's knowledge acquired through long years of practical agricultural activities. It is time this knowledge is harnessed to save food security.
>
> *- Statement by M. Masilo, Lesotho's Permanent Secretary for Agriculture*

Value
2 79. What was the goal of the Green Revolution?

Value

6 80. How does appropriate technology help explain the failure of the Green Revolution in the developing world during the 1960s and the success of Cuba's experiment during the 1980s? Support your answer.

SECTION B

Do only ONE of the Units in Section B
Candidates are reminded that they must choose the same Unit as Part I Section B.

Either:	**Unit 4 - Resources on the Land**	**Value: 8%**
Or:	**Unit 5 - Resources in the Oceans**	**Value: 12%**

Unit 4 - Resources on the Land

CASE STUDY 4: Growing Bananas

Many of the world's banana plantations are found in Central America and northern South America. A typical banana plantation covers about 7 000 ha and employs up to 10 000 workers. Such a large labour force is needed to work in the fields on the growing of bananas, preparing them for export, repairing equipment, and conducting research for improved production. Most plantations operate as a community, with stores, a school, church, theatre, and hospital.

Bananas need deep, fertile, and well-drained soils so that the roots of the plant do not become water-logged. As well they need particular temperature and rainfall distribution (see climograph on next page).

The banana plant grows from a rhizome, an underground stem from another banana plant. Workers dig holes in the ground with spades, and plant pieces of rhizomes in rows. The first crop will be harvested in 10 to 12 months.

As the young sprouts grow, the fields have to be cleared of weeds. The workers also have to clear taller growth with machetes. Mechanical mowers keep the grass away. Each banana plant has to be checked every 2 days for disease. Some diseases can be controlled with chemical sprays, others by removal of diseased sprouts.

When the banana plant is 2 m to 3 m tall, it is pruned until only three suckers or shoots remain on the stem. This has to be done by hand with a machete. Every 4 to 6 weeks, workers put a circle of fertilizer around each plant to ensure it has enough nutrients to grow well. As bananas begin to form on the plant, some are removed and discarded to help the remaining fruit to grow larger.

Each cluster of ripening bananas will weigh about 50 kg. Poles and wires are used to support the main stem to keep it from snapping. When the clusters of fruit are large enough, they are covered with color-coded bags to protect them from insects, sun-burn, and from chafing against the banana leaves. The color code also tells the grower when the cluster is ready to be harvested.

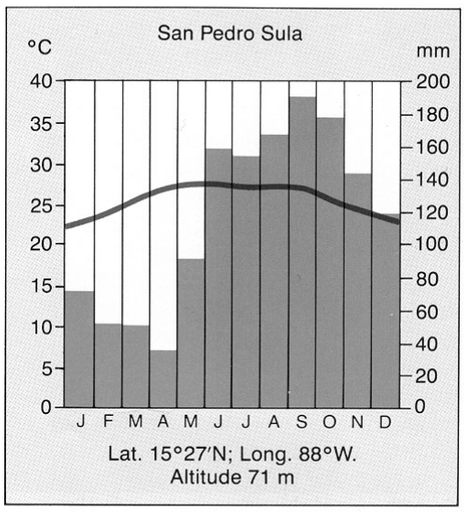
Harvesting can begin as early as 5:30 am and end as late as 8:30 pm. The harvesters work in pairs. One person slashes the stem with his machete, the other lets the bunch of bananas slip neatly onto his shoulders. Then the bunch is cut off and carried carefully, cushioned by a soft shoulder pad, to the hook on the cable conveyor line. Cable lines running through the plantation carry the green bunches to the packing station, where a thorough and careful preparation for the journey begins. First, the bananas are graded for shape, thickness and length. Bananas that do not measure up to the quality standards are rejected. These are sold on the local market, processed into banana puree, or used as animal feed.

After the thorough preliminary checks at the packing station, the smaller bunches are separated from the larger bunches and placed in a bath of water. Bananas contain a great deal of latex, which is needed for even ripening. The cold water is necessary to stop the latex from "bleeding" out of the bananas. After being laid out on trays, the fruit is weighed for shipment in boxes. A further disinfectant shower follows, the brand labels are affixed and the quality bananas packed in boxes.

The ripening process starts as soon as the bananas are severed from the plant. To ensure optimum quality and freshness when the bananas reach the consumer, speed is important. Within 36 hours at most, the exportable fruit, packed in the distinctive banana boxes, is loaded onto refrigerated vessels. In the holds of modern freighters, the bananas are first subjected to controlled cooling to interrupt the ripening process. The bananas are put into a "deep sleep".

This is done solely by controlling the temperature. The cold-storage chambers must be maintained at a temperature of exactly 13.2˚C in order to prevent the ripening process continuing. If this temperature were exceeded, even if only slightly, the bananas would start ripening too quickly and would already be spoiled by the end of their journey across the ocean. If they are kept too cold, the banana skin takes on a greyish colour.

2.3.4/2.8.1



Source: Crewe, R. James, Jenifer A. Ludbrook, and Donald Massey. Our World: Discovering Patterns in Human Geography. 1990. D.C. Heath Canada

Value

2 81. List **two** conditions that are suited to the growing of bananas.

Value

6

82. With reference to traditional and non-traditional farming systems, and information provided in the case study, is a banana plantation an example of subsistence farming or commercial farming? Explain.

Value

4 83. Briefly describe two risks associated with offshore oil recovery. **(This question is not related to Case Study 5).**

CASE STUDY 5: New Directions in the Fishery

Fish Catch Leveling Off

After decades of steady growth, the world's oceanic fish catch leveled off at 94.8 million tons in 2000 and since the late 1980s has ranged from 85 million to 95 million tons. Some three fourths of oceanic fisheries are fished at or beyond their sustainable yields. In the North Atlantic Ocean, catches of many popular fish species, including cod, tuna, haddock, flounder, and hake, have dropped by half within the past 50 years.

About 950 million people worldwide consume fish as their primary source of protein. In addition, ocean fisheries and fish-related industries sustain the livelihoods of some 200 million people. These are high numbers to sustain on a fishery that is in decline.

The problems in the offshore fishery are now a matter of record. The drop in the numbers of fish have been blamed on colder water temperatures, high numbers of seals that feed on cod, and over-fishing by both Canadian and foreign draggers. It will take many years for the fish stocks to regenerate, particularly since spawning and growth are hampered in the harsh North Atlantic. Fishers now find it difficult to get a steady supply of cod they need to make a living. The economic future is bleak for the fishers.

As fish harvests from the ocean are steady or declining, production of fish from farms (aquaculture) is booming. Since 1990, aquaculture production has grown by almost 10 percent each year to become the second fastest-growing source of animal protein. Now it accounts for a full 27 percent of the world fish market.

For a number of oceanic fisheries, a deliberate reduction of fishing activities, along with the development of "no-take" protected areas, is the only way for stocks to rebuild. Marine reserves have been shown to increase fish populations and diversity and to produce larger fish both within their boundaries as well as in commercially accessible waters. In a matter of a few years, a nearby off-limits area can revive a foundering fishery.

- Excerpted from Larson, Janet. 2002. “Fish Catch Leveling Off”. Earth Policy Institute.

http://www.earth-policy.org/

Cod Farming

Craig and Roger Penney are bringing in the cod, hand over fist. Big, swollen, beautiful cod, gleaming like gun metal. While it seems like a scene of decades past, it is present day and the Salvage-based Penney brothers are reaping a profit from a species that some people had given up for all but gone.

This is a different day, and the fishery has been (changed). The Penneys are engaged in cod farming - growing penned fish to better capitalize on markets and enhance value. Cod are known for their (keen) appetite and tend to gain weight very quickly if fed regularly.

In July of 2000, the Penneys put 5 994 pounds of fish to pen. With Father Winter extending his cold fingers in December, they harvested their catch - at approximately 12 000 pounds. The brothers benefited from a strong relationship with P. Janes and Sons Ltd., which has a processing facility in Salvage. The Penneys are both multi-species fishermen, so they could allocate 20 000 pounds of capelin and 5 000 pounds of herring to use as feed. P. Janes and sons froze the Penney's feed and were the buyer for the harvested cod.

"The fish is an excellent quality," the plant manager said. "The texture is really good. Overall, it produced a beautiful-looking product." In addition, farmed cod may be able to expand the operational season of the Salvage Plant.

"Right now, the only cod growers we have are here in Salvage," explained Ralph Pynn, aquaculturalist with P. Janes and Sons Ltd. "Salvage is the focus of our groundfish operation, so it makes sense to develop cod aquaculture nearby. We are looking at ways to expand the season of our processing facility and cod farming should help. We look forward to working with more cod growers next season and would like to position ourselves so that at some point we have wild cod, farmed cod and hatchery-raised cod to avail of at different times of the year."

100 days after putting the cod to pen, the stock has doubled its weight. If the Penneys had sold their catch in July, they would have gotten around 75 cents a pound. On this frigid day in December, they will earn $1.50 per pound on their catch, in addition to 300 pounds of (fish eggs), which will be sold to the Asian market for $1.25 per pound.

- Excerpted from Kittiwake Economic Development Corporation. 2001-02. “Cod Farming”.

Newfoundland and Labrador Aquaculture - Cod Facts 1999

- Export value of $335,000 in 1999
- Cod are caught in traps and placed in sea cages over the summer months
- Cod are fed and can double their weight in approximately 100 days
- Harvested in fall-winter months when prices are historically higher
- Currently 16 aquaculturalists with a collective starting stock of over 300,000 pounds
- Numerous coves and inlets along the coast offer significant expansion opportunities

World Fish Catch, Aquaculture and Beef Production 1950-2000

Year	Oceanic Fish Catch (million tons)	Aquaculture (million tons)	Beef Production (million tons)
1950	19.2	1.5	19.3
1955	26.4	2.1	24.3
1960	36.4	3	25.6
1965	49	3.7	31.9
1970	58.2	3.6	38.4
1975	62.4	4.1	43.7
1980	67	5.2	45.5
1985	79.1	7.7	49.2
1990	85.9	13.1	53.4
1995	91.9	24.5	54
2000	94.8	35.6	55.4

Source: FAO

Value

2 84. Refer to the table "*World Fish Catch, Aquaculture and Beef Production 1950-2000*." Provide information to show that aquaculture, compared to oceanic fishery and beef production, is growing in importance as a source of protein.

Value

6 85. With reference to the collapse of the cod fishery, and based on information in this case study, how does aquaculture help to address **two** challenges associated with the offshore fishery?

SECTION C

Do only ONE of the Units in Section C
Candidates are reminded that they must choose the same Unit as Part I Section C.

Either:	**Unit 7 - Linkages in Human Interaction**	**Value: 8%**
Or:	**Unit 8 - Population**	**Value: 8%**
Or:	**Unit 9 - Settlement and Urbanization**	**Value: 8%**

Unit 7 - Linkages in Human Interaction

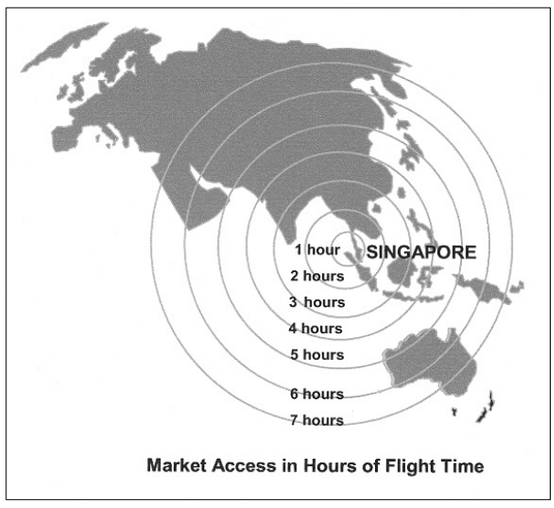
CASE STUDY 6: Singapore: Development as a Port City

Singapore, with an area of only 648 sq. km., is a small island city-state in South East Asia. Given its small size, it has little in the way of natural resources. In spite of this disadvantage, Singapore has transformed itself into one of the top trading nations in the world and one of the best places in which to do business. Its citizens enjoy a high quality of life; its per capita GNP of $24 700 places it in 19th position in the world, ahead of Canada, France, and the United Kingdom.

Ranking of Selected Countries in Terms of Economic Factors

Factors	Singapore	US	Mexico	Canada	Japan	China
Unemployment rate	3.5	4.2	2.6	7.6	4.7	3.1
Skilled Labour	8	13	29	11	23	44
University education	4	6	37	13	47	45
Economic literacy	1	14	41	15	9	45
Level of harassment and violence	4	37	36	11	26	35
Social characteristics (hard work and innovativeness)	1	5	33	13	15	15

Source: Government of Singapore



Economists would argue that no single factor explains why Singapore has a strong economy. Instead, several factors are acting together to help this small country to be so economically competitive.

Location

Singapore is located on the southern tip of the Malay Peninsula near where the South China Sea and the Indian Ocean meet. This location places Singapore on the major sea routes between India and China - two countries that make up nearly 40% of the world's total population. The country is linked to Malaysia and the Asian mainland by two causeways. These linkages make Singapore a key gateway for the world to gain access to much of southeast Asia.

Infrastructure

Although location is important in building a strong economy, infrastructure is also a strong factor. Infrastructure refers to the structures (e.g., port facilities, roads, telephone lines and equipment, and airport facilities) needed to build linkages within a country and with other countries.

Ranking of Selected Countries in Terms of Infrastructure						
Infrastructure	Singapore	US	Mexico	Canada	Japan	China
Port	1	9	41	7	16	46
Roads	1	13	38	14	12	43
Air Transport	1	3	33	10	27	52
Telephone Service	6	13	41	7	9	49

Source: Government of Singapore

Economic Planning

When Singapore gained independence from Malaysia in 1965, its government set out to vitalize its economy. Its main aim was to open the country to foreign investment and to introduce new technology to improve its communication linkages with the region and the rest of the world. At the same time, Singapore developed industrial land, utilities, transport, communications. Its educational system emphasized the teaching of technology and entrepreneurship. Manufacturing industries made a major shift toward the production of computer hardware, electronics, and petrochemicals.

Role as a Transshipment Hub

Let's suppose there were 25 major ports in Europe and 25 in Asia. If all of them wished to ship directly to each other, a set of 625 shipping services would be required. If one of the European ports (e.g., Rotterdam) and one of the Asian ports (e.g., Singapore) were to serve as a hub for their regions, then the number of shipping services would drop to 25. This is exactly the role that Singapore is playing. If a car dealer in Thailand, wishes to order car parts from Germany, it would be shipped on a large container ship from Germany, through Rotterdam, to Singapore. From there it would be transported on a smaller ship to Bangkok. This practice is called container throughput.

Singapore: Container Throughput	
Year	000s of TEUS*
1994	10 400
1998	15 136
1999	15945
2000	17 087

Source: Government of Singapore
* A TEU is equivalent to a 20-foot container unit

Responding to Market Demands

In response to increasing line-haul costs, shipping companies had to become more efficient. One strategy was to increase the size of their ships so that they could carry more containers and the other was to reduce the amount of time in a port. Both strategies had implications for sea ports. The Singapore Port Authority responded by building larger berths for ships and cranes that could lift larger and heavier loads. New computer hardware and software programs were installed to ensure smooth and rapid unloading of containers and their transhipment to the destination port in the region.

Value
2

86. Give **two** pieces of evidence from the case study to show that Singapore is a transportation node.

Value
6

87. "Singapore's location alone fully explains its growing importance as a transshipment hub." With reference to factors that give rise to transshipment centres, and information in the case study, how accurate is this statement? Explain.

CASE STUDY 7: Uncertain Demographics?

Europe is facing a population crisis.

The key factor in the natural decrease in population is the declining birth rate. Recent population trends show that birth rates for women in European Union countries, or Euroland, as the region is commonly called, are much too low. An average of only 1.38 children is being born to each Euroland woman in the course of her child-bearing years – far below the 2.1 children necessary to maintain a stable population level. European birth rates have been declining for more than 30 years. The total birth rate for Euroland is now 34 percent below the replacement rate. This means that the population is not sustaining itself - the number of people who die is greater than the number of babies born.

As Europe is experiencing a declining population, its people are living longer. Improved health services and living conditions have lengthened normal life spans by as much as 10 years or more compared to what they were 40 years ago. In France for example, the life expectancy for males increased by 10.9 years from 1950 to 1998; life expectancy for females increased by 8 years during the same period.

The combined effect of declining birth rates and longer life expectancies causes a country's population to age. This trend would be just an interesting question for intellectual debate, were it not for its social and economic impact. According to the United Nations, the world's ageing population is one of the most important demographic trends in our times. Let's examine the issue further.

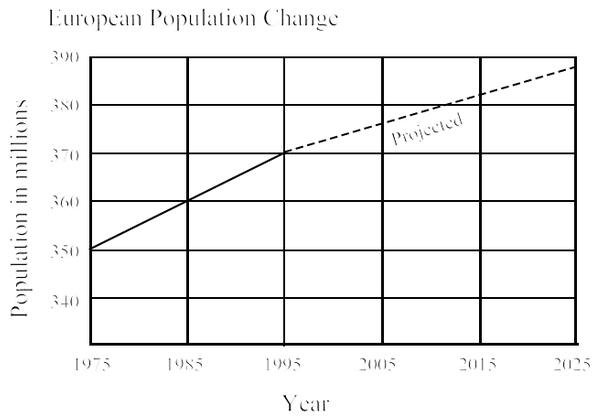
In 1995, the working-age population in Europe was 225 million. By 2025, this figure likely will not shrink by much - probably by several million. The problem, however, is that the percentage of the population over age 65 will increase from 15.4% in 1995 to 22.4% by 2025. This will place a tremendous burden on those who are working because more and more of their tax dollars will have to be used to provide for the social, emotional, physical and economic needs of the elderly.

First, when an individual dies, the responsibility of maintaining the support system falls to the survivor. The surviving person sometimes experiences mental and economic stress and has to rely upon government sponsored programs to get by.

As a population gets older, the amount the government pays out in the form of pensions increases. At the same time, the elderly require specialized health services to maintain their health. Some of these services are very specialized and expensive. Since the elderly pay very little income tax, the taxes collected from the younger working population will increase in order to support pension and health services.

European governments are now developing policies to help address these problems. One strategy under consideration is to allow more immigrants to enter their countries. In essence, this will expand the labour force and increase the numbers of people who pay taxes and help support the economy. In Britain, debate has centered around several other options: from reducing the size of government pensions, to raising taxes, to eliminating government pensions. The British health service is reducing costs by arranging for the elderly to be cared for in their homes rather than in government-run institutions.

Another strategy is to provide options for those nearing retirement age to continue employment. These individuals can be invited to continue working; retirees can be "re-employed"with another employer, or start a business. Many retirees have skills that can be put to good use in the volunteer sector. The point is that the elderly can still support society through the payment of taxes on wages or in the form of volunteer services.



Source: Eurostat

Europe's Ageing Population	
Year	% Aged 65 and Over
1950	8.7
1970	11.4
1990	13.4
2010 (estimated)	16.2

Source: UN Data

Value

2 88. "Europe is facing a population crisis." What is this crisis?

Value

6 89. "The relaxation of immigration rules is only part of the solution for the problem of an ageing population." With reference to immigration and population dynamics, and information in this case study, is this statement a valid one? Explain.

Unit 9 - Settlement and Urbanization

CASE STUDY 8: Mega-Cities with Mega-Problems

Cairo, Africa's mega-city, is located on the southern edge of the Nile Delta, 200 km inland from the Mediterranean Sea. It is home to 25% of the country's population, and is one of the 20 most populated metropolitan areas in the world. Cairo's population has tripled over the last 30 years. This record, however, has come with serious problems.

First, Cairo is experiencing a housing crisis. With 300 000 to 350 000 people migrating to the city each year, over 750 ha of farmland is lost each year to urbanization. Nevertheless, this is still not enough room for expansion. Higher blocks of poorly constructed apartments are erected, resulting in population densities of up to 100 000 per sq. km. It is estimated that as many as 1 million may be living on roof tops, some with their goats and chickens. Rents are unreasonably high, and most apartments are crowded.

A rapid population growth has put severe strain on public services. Construction projects are hurried and the materials used are often substandard. Electrical services are unreliable and water and sewer lines often break. Garbage piles up in many neighborhoods, adding to already unsanitary conditions. Schools and hospitals are overcrowded.

In Cairo, traffic congestion is a major problem, particularly in the city centre. There, trucks, taxis, buses, cars, horse- and human-drawn carts, and pedestrians compete with each other for room in the crowded streets. Roads are often grid locked and noise levels are continuously high. Exhaust fumes combined with fine wind-borne dust from the desert creates a permanent haze over the city. Smoke and dust from iron and steel, cement and brick, textile, fertilizer, and chemical industries add to the poor air quality; it is estimated that the amount of dust and chemicals in the air is 5 to 10 times higher than the safe level prescribed by the World Health Organization. In such an environment the land is heavily polluted. Waste dumps, where some of the cities inhabitants live and engage in recycling activities, are a breeding ground for infectious diseases.

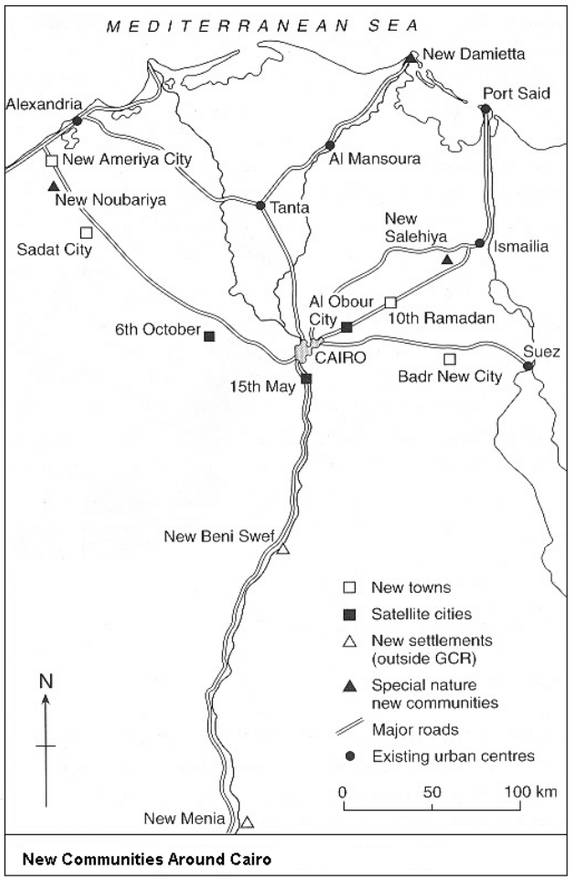
To address overcrowding and related problems in Cairo, the Egyptian government announced a plan in 1969 to establish "new towns" along major roads linking the capital city to other large urban centres. New towns were designed to be self-contained in terms of services and employment opportunities would be created by industries that would locate there. Although thousands of jobs were created, many workers opted to stay in Cairo and commute to the new centres. In 10th Ramadan, about 40% of the workers are commuters. In some new towns, public services and water and electricity still do not meet the demands of those who chose to live there. In 10th Ramadan water has to be brought in daily, but its needs are still going unmet. Although its housing standards are higher than those in much of Cairo, many flats in 10th Ramadan are unoccupied. Investors from Cairo have bought up many of the housing blocks and raised rents out of the reach of many workers.

Cairo's Population Growth

Year	Population (millions)
1960	4.5
1970	6
1980	9
1990	11.5
2000	16

Egyptian New Towns 1994: All Housing Is Not Occupied		
New Town	Occupancy (000s)	Capacity (000s)
6th October	93	1100
10th Ramadan	120	500
15th May	120	250
Al Obour City	1.25	362
Sadat City	25	500
Badr New City	1.5	280
New Salehiya	15	60
New Nabariya	2.1	140

Source: Rakodi, Carole (ed.). 1997. The Urban Challenge in Africa: Growth and Management of Its Large Cities. New York: United Nations University Press.



Source: Hill, Michael. 1999. Advanced Case Studies. London: Hodder and Stoughton.

Value

2 90. What did Egypt hope to achieve with the building of new towns around Cairo?

Value

6 91. With reference to urban problems, and information in the case study, explain whether or not you would recommend the "new towns" approach to the mayor of a large North American city.