**MODULE 1: CHAPTER 4**

SOLUTIONS

**Question 1 Examine Figure 4–6. Briefly**

**describe how any three of the innovations**

**mentioned depended on the creation of a**

**food surplus.**

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***Job specialization:***Since more food was

available, not everyone had to be a farmer.

People could perform other jobs for which they

had skills. Hierarchical social organization

developed as rich, powerful individuals took

over leadership positions and society became

stratified.

 ***Beginning of towns and cities:***Since more food

was available, there were people who did not

need to farm. They could live in communities

where they produced goods that they traded for

food products from farmers in the surrounding

countryside.

**Introduction of trade**:Surplus food was

exchanged for products made by artisans. This

exchange led to trade between regions. Trade

allowed the spread of manufactured products

and the introduction of new foods into the diet.

The transmission of new ideas, or “cultural

diffusion,” also accompanied trade.

 ***Beginning of writing:***The production of food

surpluses that could be traded and stored for

future use required the development of writing

for record-keeping. Since food surpluses also

gave rise to leisure time, writing took forms

other than record-keeping, for instance,

transcriptions of religious ideas, history, and

cultural practices.

**Question 3 a) Figure 4–10 lists some of the**

**things that can be learned from analyzing a**

**population pyramid. What can the shape of a**

**pyramid tell you about each of these things?**

**Use the two pyramids in Figure 4–9 as a guide.**

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A population pyramid has a triangular shape: wide at the base, narrow at the top. This shape results from the fact that, beginning with the age group 0–4, the number of people in each succeeding age group is usually slightly less than in the preceding age group because of deaths.

***Infant mortality rate:***If the base of the pyramid

(the base representing ages 0–4) is about as wide as that of the age group directly above it (i.e., ages 5–9), then the infant mortality rate is low (see pyramid 1). If the base is much wider than the age group above it, the infant mortality rate is high(see pyramid 2).

It is assumed that the number of births in each

age group is similar.

An examination of the age group 0–4 years

actually gives the child mortality rate. Infant

mortality is determined by a study of the age

group 0–1 year.

***Fertility rate:***If the base of the pyramid is narrow ,the fertility rate is low. If the fertility rate is lower in the first age group than it is in the age groups above it, the fertility rate may be declining (see pyramid 1). Similarly, if the pyramid’s base is wide ,the fertility rate is high and if the base is wider than the age groups above it, the fertility rate may be increasing (although the mortality rate of young children may be high) (see pyramid 2).

***Life expectancy:***If the top of the pyramid does not narrow gradually into a triangular point, but

instead appears chunky and wide, then life

expectancy is high because large numbers of

people are reaching old age (see pyramid 1). If the pyramid has the typical pyramid shape, that is, the top of the pyramid narrows gradually into a tapered point, then life expectancy is low. Few

people are reaching old age (see pyramid 2).

***Nature of dependency load:***The size and shape of the bottom and top of the pyramid indicate the percentage of the population 14 and under and 65 and older. In pyramid 1, a general triangular shape is not evident. The narrow base indicates that the percentage of young people is low; the non tapering top indicates that the percentage of old people is relatively high. In pyramid 2, the nature of the dependency load is reversed as evidenced by the triangular shape of the pyramid.

***Country group:***The shape of pyramid 1 is typical

of a country in the Old Core; pyramid 2 is typical of a country in the Far Periphery.

**Question 3 b) Examine the population pyramid shown in Figure 4–11. Give a brief overview of the population characteristics of this country.**

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***Infant mortality rate****:* The number of females in

the 5–9 age group is similar to the number in the

0–4 age group. This similarity indicates low child

mortality.

***Fertility rate:***The wide base of the pyramid

indicates a high fertility rate.

***Life expectancy****:* A high death rate is indicated by the concave sides of the pyramid. The narrowness of the pyramid in the top age categories indicates a low life expectancy.

***Nature of dependency load:***The wide base

compared to the relatively narrow top of the

pyramid indicates that the dependency load

consists primarily of young people.

***Country group:***Near Core or Far Periphery

**Question 4 a) Most experts would say that we**

**are now moving into a post-industrial age.**

**What is meant by this term?**

This term refers to an age (or society) that has the following characteristics:

* dominance of tertiary (services) sector of the economy
* primacy of professional and technical classes
* dominating influence of technology
* high level of urbanization

**Question 4 b) What influence do the attitudes**

**of people living in a post-industrial age have**

**on the world’s population size and structure?**

**Why?**

The advanced wealthy, urban-focused economies of the post-industrial age will likely lead to decreases in population size. Families are small because parents often delay having children while they take advantage of the many available economic opportunities. In affluent societies, children are not needed to support parents in old age. Moreover, they are expensive to raise because they usually

aspire to high levels of education.

The population will also have more elderly people because high standards of nutrition and health care prolong life.

**Question 5 Write a “word equation” for each**

**of the following terms. Example: Birth Rate =**

**Births / Population x 1000**

**Question 5 a) *death rate***

Death Rate = (Deaths / Total Population) x 1000

**Question 5 b) *natural increase rate***

Natural Increase Rate = Birth Rate – Death Rate

**Question 5 c) *immigration rate***

Immigration Rate =

(Immigrants / Total Population) x 1000

**Question 5 d) *emigration rate***

Emigration Rate = (Emigrants / Total Population) x 1000

**Question 5 e**) ***net migration rate***

Net Migration Rate = Immigration Rate – Emigration Rate

**Question 5 f) *population growth rate***

Population Growth Rate = [(Births – Deaths) +

(Immigration – Emigration) / Total Population] x

1000, or Population Growth Rate = Natural

Increase Rate + Net Migration Rate

**Question 5 g) *dependency load***

Dependency Load =

[(Population 14 and Under + Population 65 and Over) / Total Population] x 100

**Question 5 h) *age-dependency ratio***

[(Population 14 and Under + Population 65 and

Older) / Population 15 to 64] x 100

**Question 5 i) *infant mortality rate***

Infant Mortality Rate = (Infant Deaths / Total Live

Births) x 1000

**Question 7 Suppose a country had a**

**population of 31 850 000 at the beginning of**

**2001. During the year, the following changes**

**occurred in the population:**

* **1 038 000 babies were born**
* **594 000 people died**
* **86 000 people emigrated**
* **53 000 people immigrated**
* **93 000 babies died during the year**
* **9 159 000 women were aged from 15 to 45**

**Calculate the following values:**

**Question 7 a) the population at the end of**

**the year**

**Starting population** = 31 850 000

**Population added during the year**: 1 038 000

babies born + 53 000 immigrants = 1 091 000

**Population subtracted during the year:**

594 000 deaths (including 93 000 baby deaths) + 86 000 emigrants = 680 000

**The population at the end of the year:**

(31 850 000 + 1 091 000) – 680 000

= 32 261 000

**Question 7 b) the birth rate**

(Births / Total Population) x 1000

(1 038 000 / 31 850 000) x 1000 = 32.59 per 1000

**Question 7 c**) **the death rate**

(Deaths / Total Population) x 1000

(594 000 / 31 850 000) x 1000 = 18.65 per 1000

**Question 7 d) the emigration rate**

(Emigrants / Total Population) x 1000

(86 000 / 31 850 000) x 1000 = 2.70 per 1000

**Question 7 e) the immigration rate**

(Immigrants / Total Population) x 1000

(53 000 / 31 850 000) x 1000 = 1.66 per 1000

**Question 7 f) the natural increase rate**

[(Births – Deaths) / Total Population] x 1000

[(1 038 000 – 594 000) / 31 850 000] x 1000 =

13.9 per 1000 (This figure is equivalent to 1.39 %.)

**Question 7 g) the net migration rate**

[(Immigrants – Emigrants) / Total Population] x

1000

[(53 000 – 86 000) / 31 850 000] x 1000 =

–1.04 per 1000

**Question 7 h) the population growth rate**

{[(Births – Deaths) + (Immigration – Emigration)] / Total Population} x 1000

{[(1 038 000 – 594 000) + (53 000 – 86 000)] /

31 850 000} x 1000 = 12.9 per 1000

(This figure is equivalent to 1.29%.)

**Question 7 i) the infant mortality rate**

(Infant Deaths / Total Live Births) x 1000

(93 000 / 1 038 000) x 1000 = 89.6 per 1000

**Question 7 j) the total fertility rate**

(Number of Live Births / Number of Women Aged 15 to 45) x 30 (which is the number of fertile years)

(1 038 000 / 9 159 999) x 30 = 3.4 children per

Woman

**Question 9 Explain how a declining**

**population might affect Canada’s economy**

**and lifestyles. Consider such areas as**

**government priorities, consumer spending, the role played by economic growth in our society, and environmental demands.**

***Government priorities:*** Governments may try to increase the population through pro-natalist

policies such as tax breaks for parents, and

through active recruitment of immigrants from

other parts of the world. Governments may also

have to reduce spending as the tax base

decreases in size. This action could have negative repercussions throughout the economy as spending on both social programs and the

infrastructure decreases.

***Consumer spending:***Consumer spending will

likely decline because there are fewer people to

purchase products. Moreover, a decreasing

population can consume only so much of a

particular type of product (how many television

sets does a person need?). When people do

not buy products, the economy contracts,

unemployment increases, and the quality of

life declines.

***Role played by economic growth in our society*:**

Economic growth is based on two factors:

1) demand by those people who already enjoy a

certain level of goods and services for additional

goods and services;

2) demand of a growing population that has not as yet enjoyed certain goods and services. With a declining population, the first demand has limited growth potential, and the second demand will disappear. Methods other than economic growth will have to be found to maintain economic prosperity and a high standard of living.

***Environmental demands****:* A declining population consumes less. Reduced consumption relieves demands on the environment because the need for raw materials declines as fewer goods are produced. The production of fewer goods results in less waste by the manufacturing sector. There will also be less post-consumer waste (garbage) because there will be fewer people producing the waste.

**Question 10 a) Being dependent is defined by the government as being under the age of 15,or 65 and over. Is this definition realistic in modern Canadian terms? Why or why not?**

This definition is not realistic for Canada. A large

proportion of young people continue to be

dependent after the age of 15. They attend postsecondary educational institutions and are not employed full-time until well into their 20s. Many people do not retire until well past the age of 65, while others take early retirement in their 50s.

**Question 10 b) If it is not realistic, why is this**

**definition used? What ages do you think would be realistic and why?**

This definition is used because it is still applicable for developing countries. In developing countries, most young people finish school and begin work by age 15. Retirement before age 65 is rare. Most people work until at least age 65 and upon retirement become dependent upon younger members of the family because there are no state pension plans. Consistent values are used for all

countries so that comparisons can be made.

**Question 11 Examine Figure 4–12.**

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**Question 11 a) i) Which areas were**

**experiencing the fastest growth?**

The fastest growth was taking place in many

countries in the Middle East, Africa, and some

countries in South America, South Asia, and

Southeast Asia.

**Question 11 a) ii) What do these areas have in common?**

These areas contain countries of the Near Core

and Far Periphery.

**Question 11 b) i) Which areas were**

**experiencing the slowest growth?**

The slowest growth was taking place in Eurasia,

Western Europe, North America, and China.

**Question b) ii) What do these areas have in**

**common?**

These areas contain countries of the Old Core and New Core.