

## Unit 4 Take Home Test

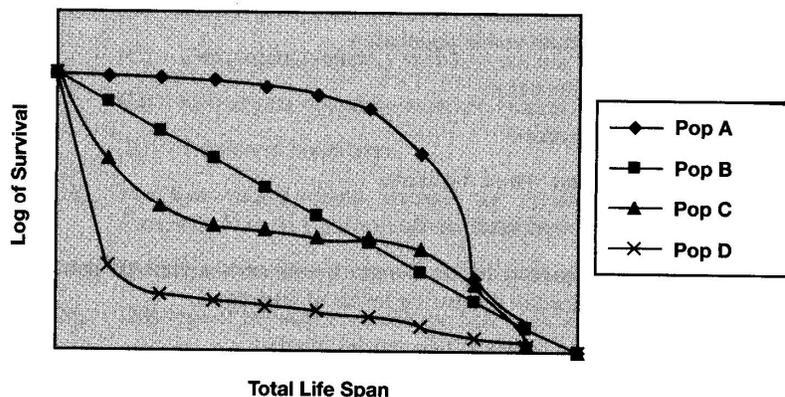
Questions 1-5 refer to the following answers. Select the one lettered choice that best fits each statement.

- (A) Fertility
- (B) Fecundity
- (C) Demographic transition
- (D) Birth rate
- (E) Total fertility rate

1. The number of children born to an average woman during her entire reproductive life.
  2. The number of births in a year per thousand people
  3. Represents a drop in both death and birth rates
  4. The ability of an individual to reproduce
5. If a city with a population of 100,000 experiences 4000 births, 3000 deaths, 500 immigrants, and 200 emigrants within the course of one year, what is the net annual percentage growth rate?
- a. 0.3%
  - b. 1.3%
  - c. 13%
  - d. 101.3%
  - e. 130%
6. The world's population in 2000 was approximately 6 billion. If the growth rate were 2%, in what year would the world's population be 12 billion?
- a. 2035
  - b. 2050
  - c. 2010
  - d. 2100
  - e. 4000
7. India's family planning program has yielding disappointing results for all of the following reasons EXCEPT
- a. poor planning and bureaucratic inefficiency
  - b. failure to employ sterilization
  - c. extreme poverty
  - d. a cultural preference for female children
  - e. too little administrative and financial support
8. All of the following are characteristics of K-strategists EXCEPT
- a. mature slowly
  - b. low juvenile mortality rate
  - c. niche generalists
  - d. Type I or II survivorship curve
  - e. intraspecific competition due to density-dependent limiting factors
9. The population of a country in 1994 was 200 million. Its rate of growth was 1.2%. Assuming that the rate of growth remains unchanged and all other factors remain constant, in what year will the population of the country reach 400 million?
- a. 2004
  - b. 2024
  - c. 2040
  - d. 2054
  - e. 2104

10. Which of the following is the best example of an r-selected species?
- dog
  - whale
  - condor
  - tree
  - mouse
11. All of the following are correct statements about the regulation of populations EXCEPT
- a logistic equation reflects the effect of density-dependent factors, which can ultimately stabilize a population around the carrying capacity
  - density-independent factors have a greater effect as a population's density increases
  - high densities in a population may cause physiological changes that inhibit reproduction
  - because of the overlapping nature of population-regulating factors, it is often difficult to determine their cause-and-effect relationships precisely
  - the occurrence of population cycles in some populations may be the result of crowding or lag times in the response to density-dependent factors
12. A population takes about seven years to double in size. This population's annual percentage growth is approximately
- 2%
  - 7%
  - 10%
  - 15%
  - 22%
13. Which of the following is an initial step in accomplishing a demographic transition?
- decrease in death rates
  - decrease in birth rates
  - increase in birth rates
  - increase in death rates
  - lack of change in either birth or death rates

Questions 14-20 refer to the following chart. Select the one lettered choice that best fits each statement?



- Which population demonstrates a culture that has undergone a demographic transition?
- Which population demonstrates a constant rate of death throughout the life span of members of the population?
- Which population shows the highest infant mortality?
- Which population demonstrates the lowest infant mortality?
- Which population demonstrates a species in which each age group experiences potentially lethal environmental hazards?
- Which population represents a culture with a well-developed health care system?
- Which population most likely represents an undeveloped country?

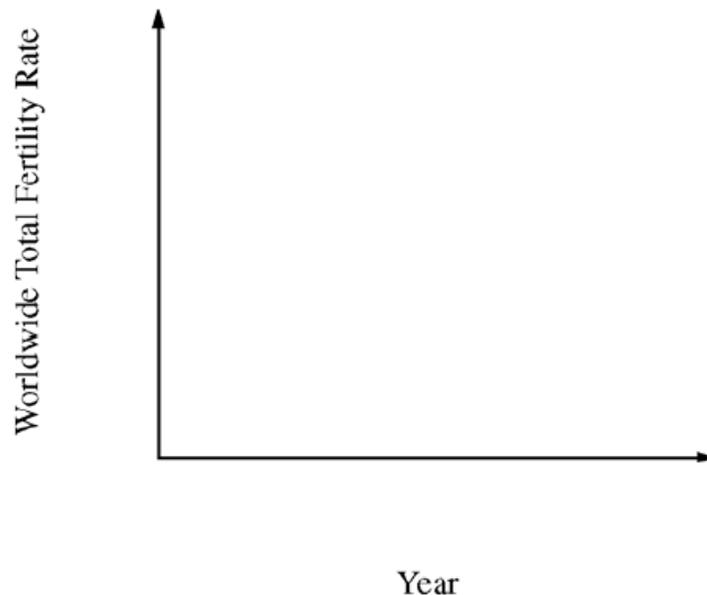
21. Factors contributing to the rise in world hunger include all of the following EXCEPT
- unequal distribution of available food supplies
  - loss of or decline in arable land
  - increasing rate of population growth
  - increasing poverty in developing countries
  - increasing consumption of vegetable protein in place of meat protein
22. The current global human population is about 6.1 billion and is growing at an annual rate of 1.35 percent. If world population were to grow at this rate for the next year, approximately how many people would be added?
- $8 \times 10^5$
  - $8 \times 10^6$
  - $8 \times 10^7$
  - $8 \times 10^8$
  - $8 \times 10^9$
23. The increase in the size of Earth's human population in the last century has been dramatic. Which of the following identifies two major contributors to this increase?
- New methods of agriculture and the identification of new food crops
  - The Industrial Revolution and modern medicine
  - Increased immigration/emigration and decreased warfare
  - New methods of birth control and decreased warfare
  - Increased education for women and the development of new pesticides
24. Which of the following is a true statement about replacement-level fertility?
- It equals the average number of children a woman will give birth to during her childbearing years.
  - It equals the annual number of live births per 1000 people in a population.
  - It equals the natural increase of a population in one year.
  - It is found by subtracting the number of emigrants from the number of immigrants in one year.
  - It is greater in countries with high infant-mortality rates than in countries with low infant-mortality rates.
25. By year 2050, world population is expected to approach 10 billion. If the current population trends continue, which region of the world will most likely experience the majority of the growth?
- North and Central America
  - Central and South America
  - Eastern and Western Europe
  - Africa and Asia
  - Australia and New Zealand
26. Which of the following best exemplifies population momentum?
- Continued growth of a population after fertility drops to replacement level
  - Continued growth of a population due to emigration
  - Decreased population due to increase in the death rate
  - Decreased population due to a reduced death rate and increased fertility rate
  - Growth of a population after the fertility rate doubles
27. Which two main factors would best indicate the quality of life of a country's population?
- The total fertility rate and the death rate
  - The crude birth rate and crude death rate
  - The birth rate and the infant mortality rate
  - The replacement-level fertility rate and the total fertility rate
  - The life expectancy and the infant mortality

28. At the current rate of growth, Earth's human population will double in about 50 years. Which of the following is the LEAST viable strategy for ensuring adequate nutrition for a population of this size?
- Increasing the number of new crops from the great diversity of plant species
  - Doubling the area of arable land on a global basis
  - Developing systems for making the global distribution of food more equitable
  - Increasing the area of land that is currently dedicated to grain production by reducing the area dedicated to meat production
  - Assisting developing countries in using highly efficient crop irrigation systems
29. The most populous countries in the world are China, India, and
- Indonesia
  - Russia
  - the United States
  - Japan
  - Mexico
30. Although the fertility rate for women in the United States has declined in recent years to a value below replacement level, the United States population is still increasing because of
- lower average age at first marriage
  - lower infant death rates
  - increased longevity
  - improved health care
  - immigration

31. Answer the following regarding world human population.
- Create a graph of the data from table 1 below on the axes provided.

Table 1:  
Worldwide  
Total Fertility  
Rate (TFR)

| Year | TFR |
|------|-----|
| 1950 | 5.0 |
| 1960 | 4.9 |
| 1970 | 4.7 |
| 1980 | 3.7 |
| 1990 | 3.4 |
| 2000 | 3.0 |



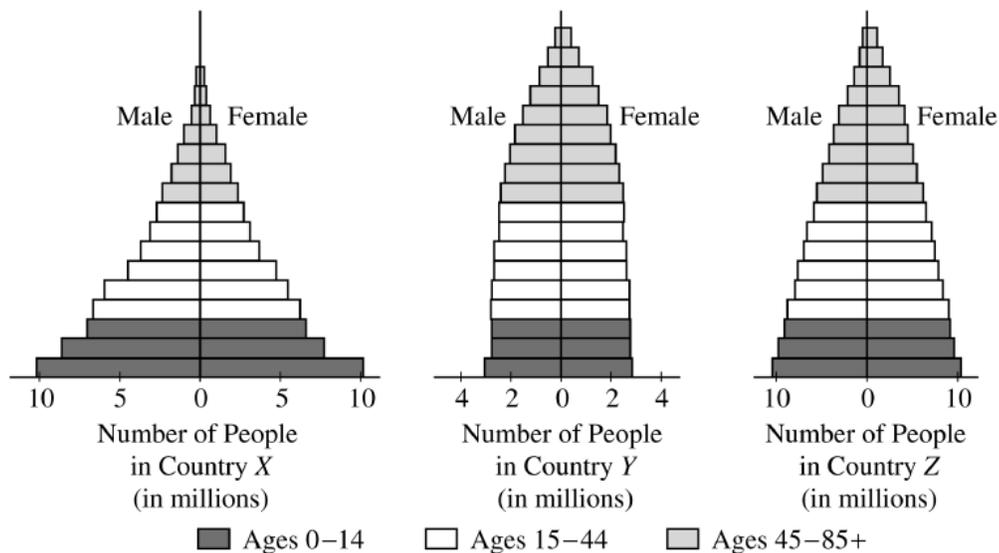
- Identify** and **discuss** two of the causes for the trend in the worldwide TFR that you graphed in part a.
- Consider the data in table 2 on the next page. **Identify** and **discuss** two economic and societal factors that account for the difference between the TFR of Kenya and the United States.

Table 2: Population Data for Selected Nations (2005)

| Country       | TFR | Crude Birth Rate* | Crude Death Rate* | Infant Mortality Rate* | Per Capita Income (U.S. dollars) |
|---------------|-----|-------------------|-------------------|------------------------|----------------------------------|
| China         | 1.6 | 12                | 7                 | 27                     | 6,500                            |
| Japan         | 1.3 | 9                 | 8                 | 2.8                    | 31,400                           |
| Kenya         | 5.9 | 43                | 19                | 100                    | 1,000                            |
| United States | 2.0 | 14                | 8                 | 6.7                    | 42,000                           |

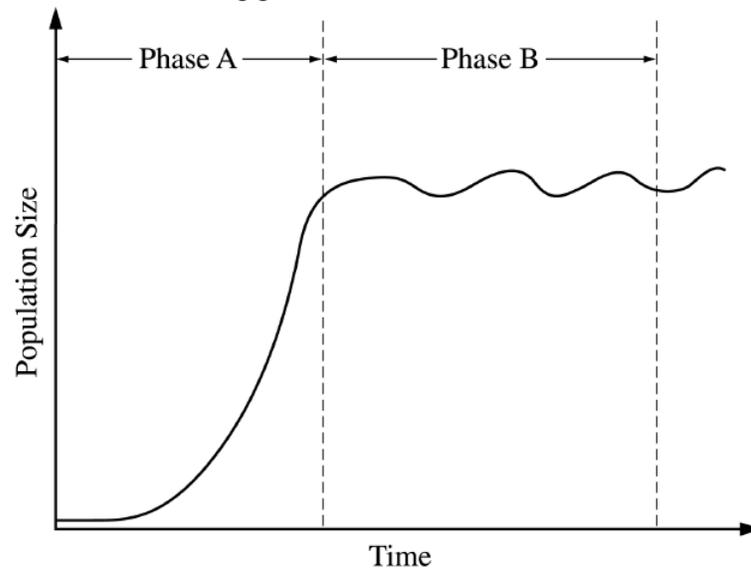
\* rates are per thousand per year

- d. **Describe** two human activities related to the rapidly growing world population that are having an impact on Earth's biodiversity.



32. The figures above show the age structures of human populations in three countries: X, Y, and Z.
- Which of the three countries has the largest rate of population growth? Which has the smallest rate? **Explain**.
  - Compare** the infant mortality rates that are likely in Countries X and Y. **Explain** your reasoning.
  - Describe** the changes in both the birth rate and the death rate for a country making the transition from a preindustrial society to an industrial society.
  - Describe** one incentive that the government of a country could offer its citizens that would favor a reduction in the growth rate of its population. **Explain** how this incentive would work, and **describe** one possible drawback.

33. Many populations exhibit the following growth curve:



- Describe** what is occurring in the population during phase A.
- Discuss** three factors that might cause the fluctuations shown in phase B.
- Organisms demonstrate exponential or logistic reproductive strategies. **Explain** these two strategies and **discuss** how they affect population size over time.