Name: _____ **Populations Exam P**

Answer all of the following questions to the best of your ability. Be sure to record all answers on the answer sheet, as it will be the only sheet that is graded.

1. During which time period did the world's population more than double?

A. 1750–1800
B. 1800–1850
C. 1850–1900
D. 1900–1950
E. 1950–2000

2. Rapid growth in nonhuman populations occurs in which phase?

A. Lag phase
B. Stable phase
C. Carrying capacity
D. Oscillating phase
E. Log phase

3. The U.N. Population Division has the following information on the populations of five countries for last year. The data are shown below:

	Birth Rate (No./1,000/year)	Death Rate (No./1,000/year)	Immigration Rate (No./1,000/year)	Emigration Rate (No./1,000/year)
Albania	20	20	10	5
Belize	10	5	20	10
Croatia	65	50	10	10
Denmark	30	20	5	15
Ecuador	10	5	10	10

Which country has zero population growth for last year?

A. Albania
B. Belize
C. Croatia
D. Denmark
E. Ecuador

4. All of the following factors are density-independent factors EXCEPT which one?

A. Competition
B. Climate
C. the pH level
D. Water supply
E. Food supply

5. Which of the following organisms would be an example of an *r*-strategist?

A. Whale
B. Cockroach
C. Eagle
D. Alligator
E. Dog

6. You seed two flasks containing nutrient media with the same amount of the algae, *Chlorella*. Flask B contains twice the concentration of phosphate, a vital nutrient, than Flask A. Both flasks are incubated under the same conditions. Which of the following statements will be TRUE?

A. Flask A will grow faster than Flask B because the intrinsic growth rate is greater.
B. Both flasks will grow at the same rate and reach the same carrying capacity.
C. While the intrinsic growth rates are the same, Flask B will grow at a faster rate and reach a greater carrying capacity than Flask A.
D. While the intrinsic growth rates are the same, Flask A will grow at a faster rate and reach a greater carrying capacity than Flask B.
E. Flask B will grow faster than Flask A because the intrinsic growth rate is greater.

7. Which of the following countries currently has the lowest population?

A. China
B. Indonesia
C. India
D. United States
E. Canada

8. Which of the following choices best describes the distribution of the human population worldwide?

A. Randomly distributed across the globe and within countries.
B. Randomly distributed across the globe, but uniformly distributed within countries.
C. Uniformly distributed across the globe, but clustered within countries.
D. Clustered across the globe and clustered within countries.
E. Clustered across the globe and uniform within countries.

9. A United Nations Foreign Aid group introduces agricultural technology into a developing country to increase food productivity. What is a likely consequence?

A. A decrease in the environmental degradation in that country.
B. A decrease in the carrying capacity of that country.
C. Increase in the carrying capacity of that country.
D. No effect on the carrying capacity of that country.
E. Reduction in that country's birth rate.

10. Which of the following is NOT a difficulty in defining the carrying capacity for the human population?

A. Humans live within geopolitical not environmental borders.
B. Humans can change the carrying capacity through technology.
C. When humans exceed the carrying capacity of an environment, they merely die off.
D. There is no logistical model that scientists can agree on to estimate the carrying capacity of human population.
E. When humans exceed the carrying capacity of an environment, others can supply aid and maintain the population despite environmental degradation.

11. The human population on Earth was 2.5 billion in 1950 and 6.4 billion in 2004. This is an example of what kind of growth?

A. Arithmetic
B. Dramatic
C. Geometric
D. Logistic
E. Exponential

12. The United States has a slowly growing population. What is the major factor that accounts for its population growth?

A. Rapidly increasing birth rates
B. Rapidly increasing death rates
C. Rapidly decreasing immigrating rates
D. Rapidly increasing emigration rates
E. Rapidly decreasing death rates

13. What country currently has the highest population?

A. United States
B. France
C. South Africa
D. China
E. Mexico

14. Which pair of words BEST completes the following sentence: Countries with a _____ standard of living tend to have _____ population growth.

A. low, decreasing
B. low, stable
C. high, high
D. high, low
E. high, increasing

15. In a human population undergoing the demographic transition, which of the following generally decreases first?

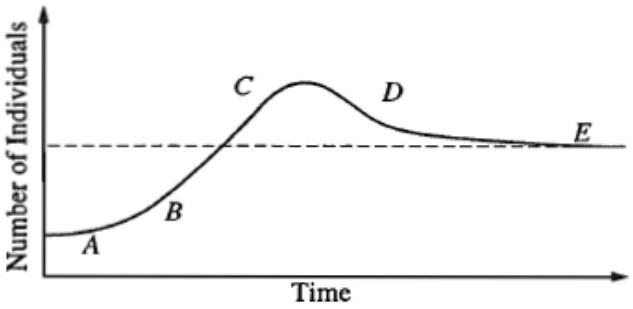
A. Birth rate
B. Death rate
C. Average family size
D. Life expectancy
E. Level of education

16. In June 2013, 1,690,000 people inhabited Manhattan. During the time period from 2012 to 2013, 12,000 births were recorded. During the same period of time 2,000 deaths occurred. Calculate the annual rate of population change (in %) for Manhattan.

A. 0.001 %
B. 0.01 %
C. 1.0 %
D. 10.0 %
E. 10.1 %

17. The simplest and least controversial means of slowing population growth is:

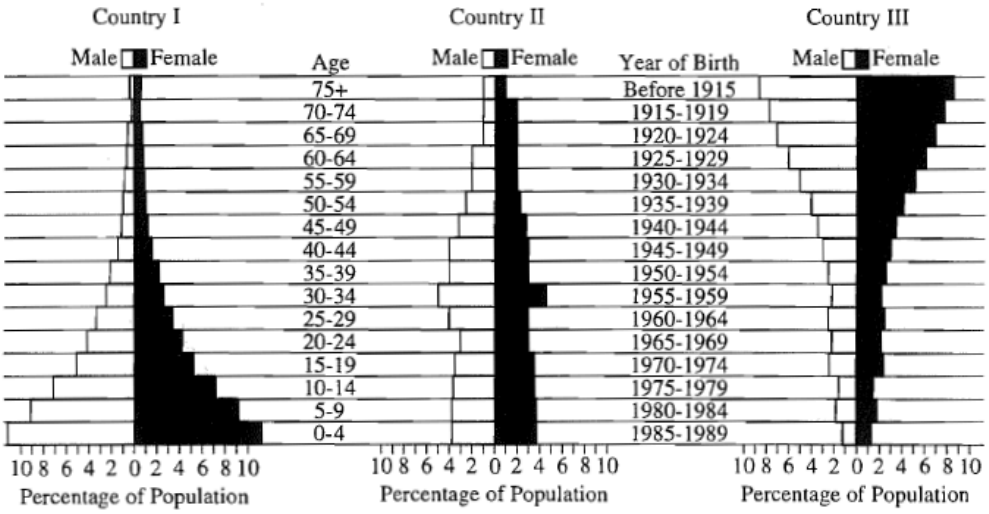
A. abortion.
B. birth control.
C. delaying first childbearing.
D. no sexual activity before marriage.
E. sterilization.



18. The diagram above illustrates how the number of individuals in a population changed with time as a result of external stresses and resource limitations. Which lettered portion of the curve most likely corresponds to the carrying capacity of the ecosystem?

A. A
B. B
C. C
D. D
E. E

Questions 19-23 are based upon the diagram below.



19. Countries undergoing rapid population growth include which of the following?

A. I only
B. II only
C. III only
D. II and III only
E. I, II, and III

20. Approximately what percent of the population in Country II is under age 15?

A. 1%
B. 5%
C. 10%
D. 25%
E. 50%

21. Which of the following scenarios is most likely for Country III over the course of the next 30 years?

A. rapid population growth
B. slow population growth
C. no change in population size
D. negative population growth
E. a baby boom

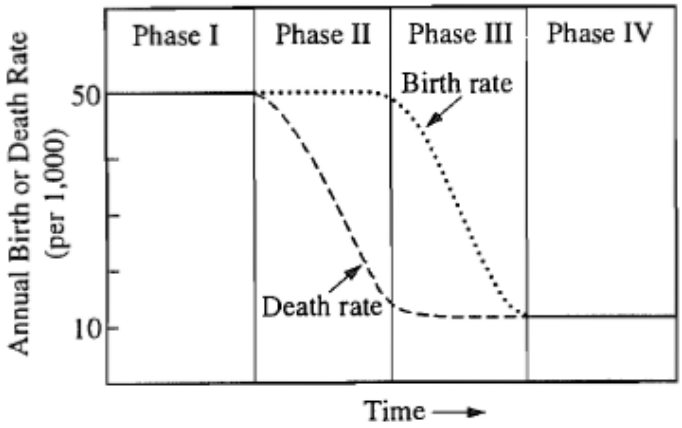
22. According to the diagrams above, which inference is mostly likely true about Country I?

A. It has a declining population.
B. It has a higher death rate among children under the age of 5 than Country II or III.
C. Its citizens have a greater than average annual income than Country II or III.
D. Its citizens have a long life expectancy (compared to world averages).
E. Its citizens have very healthy diets.

23. Which of the following explains the increased numbers of 30-34 year-olds in Country II?

A. an epidemic
B. a baby boom
C. increased education access for women
D. negative population growth
E. a war

Questions 24-26 are based upon the diagram below.



24. Zero population growth is associated with

A. phase I only.
B. phase II only.
C. phase III only.
D. phase IV only.
E. phases I and IV.

25. The rate of population growth starts to slow down at which point?

A. The end of phase I.
B. The middle of phase II.
C. The beginning of phase III.
D. The end of phase III.
E. The middle of phase III.

26. Which of the following is most likely the primary cause of high death rates in phase I?

A. Loss of breeding-age males due to warfare.
B. Loss of breeding-age females due to disease.
C. Large percentage of elderly individuals in the population.
D. Infant and childhood mortality.
E. General starvation due to famine.

27. The current population of Demographica Island is 10 million inhabitants, and the population is doubling every 10 years. Current agriculture on Demographica could feed 20 million people, and technological improvement is expanding that capacity by 1 million every year. Given only this information, when will there be a food shortage on the island?

A. never
B. in 5 years
C. in 10 years
D. in 20 years
E. in 30 years

28. The human population of the United States has increased over the last few hundred years due to all of the following reasons except:

A. improvements in health care
B. immigration
C. improvements in agriculture
D. the death rate has decreased
E. the age of first childbirth has increased

29. According to Thomas Malthus' theory of human population, the ultimate fate of humankind is said to be:

A. a technological utopia.
B. a return to rural, agrarian society.
C. plague, pestilence, and famine.
D. a crowded Earth, population in a delicate balance with food supply.
E. urban society, with all food supplied by industrial processes ("hydroponics") or by fully-automated agriculture.

30. The demographic transition leads to:

A. an increase in population growth rate.
B. a decline in population growth rate.
C. an increase in the birth rate.
D. a decline in the death rate.
E. all of the above.

31. The demographic transition occurs in three stages. Under which circumstance is a nation unable to make the transition from stage II to stage III:

A. when value is put on small families
B. when parents don't see the benefit from having only a few children
C. when medical advances are used to decrease the death rate
D. when abundant food provides plenty of resources to survive
E. none of the above

32. Which of the following gives an example of an acute and a chronic disease?

A. measles and cholera
B. influenza and heart disease
C. stroke and measles
D. cancer and stroke
E. plague and tooth decay

33. Human demography suggests that an improving economy in a country correlates with:

A. decreased birth rate, increased population growth rate.
B. decreased death rate, increased population growth rate.
C. decreased birth rate, decreased population growth rate.
D. increased birth rate, decreased population growth rate.
E. increased birth rate, increased population growth rate.

34. In developing nations, breastfeeding slows population growth because:

A. it increases the average number of years between births
B. it is healthy and decreases infant mortality
C. it keeps the children from being hungry
D. it increases the age at which women will bear their first child
E. it decreases the frequency of sexual activity

35. A group of individuals of the same species that live and interbreed in the same area are called a:

A. tribe
B. population
C. dynamic group
D. demographic group
E. logistic group

36. Which of the following examples describes the S-shaped curve, exhibiting a population that grows rapidly but eventually reaches a constant population?

A. demographic transition
B. replacement fertility curve
C. logistic growth curve
D. sustainability
E. carrying capacity

37. What eventually happens to K-strategists after logistic population growth?

A. The population continues to demonstrate linear growth.
B. Numbers in the population plummet due to disease and predation.
C. The population continues to demonstrate exponential growth.
D. Once the carrying capacity is reached, growth drops to zero.
E. The population's growth passes an inflection point and increases.

38. Limiting factors

A. prevent growth of an organism.
B. may be phosphates or nitrates.
C. may be sunlight.
D. may be space.
E. may be all of the above.

39. In 1798, Thomas Malthus wrote the Principle of Population, an influential text that proposed that populations:

A. evolved from the mainland to islands, thus explaining why the species found on islands closely resemble that of the mainland.
B. increased geometrically in numbers while the food supply available only increased arithmetically.
C. decreased arithmetically in numbers while the food supply available increased geometrically.
D. increased arithmetically in numbers while the nutrients available only increased geometrically.
E. increased geometrically in numbers while the nutrients available decreased arithmetically.

40. If China's crude birth rate is 12 births per 1,000 people and its annual crude death rate is 7 deaths per 1,000 people, then in how many years from now can its population be expected to double?

A. 14 years
B. 58 years
C. 70 years
D. 96 years
E. 140 years

41. The current annual rate of increase for the human population is about

A. 0 percent
B. 1.2 percent
C. 3 percent
D. 5 percent
E. 9 percent

42. At current, the doubling time for the world's human population is closest to

A. 150 years
B. 100 years
C. 50 years
D. 25 years
E. 5 years

43. What is the current estimate of the size of the human population?

A. 7 million
B. 7 trillion
C. 7 billion
D. 9 billion
E. 9 million

44. Which of the following methods is best suited to for estimating the size of a mobile population?

A. the quadrat method
B. a boxplot
C. a census
D. a direct count
E. the capture-recapture method

45. Which of the following is generally true of K-strategist species as compared to r-strategist species?

A. They reach sexual maturity earlier.
B. They have more young.
C. They are more likely to be invasive species.
D. They have longer life spans.
E. Their population cycles are more rapid.

46. Which of the following would you expect to have the greatest portion of its population still alive late in its lifespan?

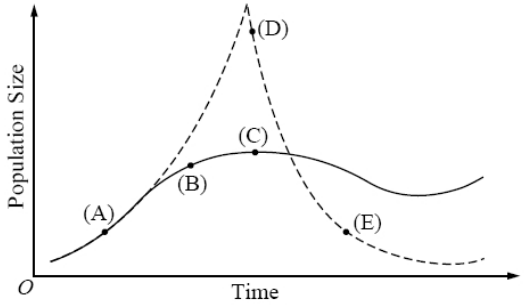
I. Birds
II. Algae
III. Insects

A. I only
B. II only
C. I and II
D. I and III
E. None of the above

47. Which of the following is a true statement about the total fertility rate of a society?

A. The total fertility rate of a society is the difference between the crude birth rate and the crude death rate.
B. The total fertility rate of a society is the number of children necessary for a couple to replace themselves in the next generation.
C. The total fertility rate of a society is positively correlated with the average education of women.
D. The total fertility rate of a society is negatively correlated with the number of women of childbearing age.
E. The total fertility rate of a society is decreases as the society progresses through demographic transition.

Questions 48-50 are based upon the diagram below.



48. Which of the following shows a population growing exponentially?

A. point A
B. point B
C. point C
D. point D
E. point E

49. Which of the following shows a population decreasing at the greatest rate?

A. point A
B. point B
C. point C
D. point D
E. point E

50. Which of the following shows a population growing at a decreasing rate?

A. point A
B. point B
C. point C
D. point D
E. point E