

PART A: MULTIPLE CHOICE (10 MARKS)

Choose the best response in each case and place your answer in the appropriate space on your answer sheet.

- A non-native species that is introduced into an ecosystem is said to be:
 - accidental.
 - exotic.
 - alien.
 - competing.
- A city park:
 - has more natural soil nutrients from soil litter than a natural meadow.
 - would lose more water through evaporation than a natural meadow.
 - would have lower daytime summer temperatures than a natural meadow.
 - would not require the addition of nutrients.
- Which set of abiotic conditions describes the microclimate beneath a fallen log compared to the microclimate on top of a fallen log?
 - Sunlight is more intense; drier; warmer?
 - Sunlight is more intense; wetter; warmer?
 - Sunlight is less intense; wetter; cooler?
 - Sunlight is less intense; drier; cooler?
- The mathematical equation that best describes the population growth of Canada is:
 - (births + deaths) - (immigration + emigration).
 - (births + emigration) - (deaths + immigration).
 - (immigration + emigration) - (births + deaths).
 - (births + immigration) - (deaths + emigration).
- A natural ecosystem has a population that can best be described as:
 - open.
 - closed.
 - variable.
 - unstable.
- The carrying capacity of a population is defined as:
 - the maximum number of individuals that can be supported indefinitely in an ecosystem.
 - the maximum number of offspring a species could produce if resources are unlimited.
 - the nutrient that is in the least supply and limits the population size.
 - the limited range of abiotic factors range within which an organism can survive.
- Which of the following factors does not help determine biotic potential?
 - Maximum number of offspring per birth.
 - Number of times that a species reproduces each year.
 - Favourable light and temperature conditions
 - Number of offspring that reach reproductive age.
- Which Canadian biome covers the greatest amount of area in Canada?
 - tundra
 - boreal forest
 - temperate deciduous forest
 - grasslands
- Using the same options as question 8 above, which Canadian biome has the least amount of naturally-occurring ecosystems remaining?
- Using the same options as question 8 above, which Canadian biome has the greatest amount of precipitation on an annual basis?

PART B: MATCH (5 MARKS)

Match the definition from the 1st column to the best term in the 2nd column and place the matching letter in the appropriate space on your answer sheet.

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|---|-------------------------|
| 1. The movement of individuals of a species out of an existing population. | A) artificial ecosystem |
| 2. Population in which immigration and emigration do not act. | B) biotic potential |
| 3. Maximum number of offspring that a species could produce, if resources were unlimited. | C) carrying capacity |
| 4. Ecosystem that is planned and maintained by humans. | D) closed population |
| 5. The number of individuals of a species born in an ecosystem in one year. | E) emigration |
| | F) immigration |
| | G) mortality |
| | H) natality |
| | I) natural ecosystem |
| | J) open population |

PART A: MULTIPLE CHOICE (10 MARKS)

1	2	3	4	5	6	7	8	9	10
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PART B: MATCH (5 MARKS)

1	2	3	4	5
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PART C: SHORT ANSWER (25 MARKS)

Answer questions 1 to 4 in the space provided. Answer question 5 on the back of this sheet.

- {5} 1. Categorize the following species as ① extinct, ② endangered, ③ extirpated, ④ threatened, or ⑤ vulnerable.
- | | | | |
|-------|----------------|---|---|
| _____ | Grizzly bear | ☞ | no longer found in Manitoba, but still found in the mountains of British Columbia |
| _____ | Grey fox | ☞ | is beginning to return to southern Ontario, but needs woodlands |
| _____ | Wood bison | ☞ | their number is small, and recently tuberculosis has become a problem |
| _____ | Blue walleye | ☞ | the last fish of this species was taken from Lake Erie in 1965 |
| _____ | Eastern cougar | ☞ | sightings of this large cat are very rare |

- {4} 2. Classify the biotic potential information below in the table to the right. (The first one is done for you.)

- ① Larger mammals generally live longer than smaller ones.
- ② Pregnant female elephants carry their young for nearly 18 months.
- ③ Elephants reach sexual maturity at 15 years.
- ④ Elephants usually produce one offspring each birth.
- ⑤ Most elephants wait more than 5 years between births.

Biotic potential	Elephant
birth potential	
capacity for survival	①
procreation	
length of reproductive life	

- {6} 3. Which biome is the greatest (#1) and which biome is the least (#4) for each of the abiotic factors given?

	Tundra	Boreal Forest	Temperate Deciduous Forest	Grasslands
biomass				
biodiversity				
amount of precipitation				

4. In January, 1999, the population of varying hares in a mixed woodland ecosystem was 60. During 1999, the following data on the hare population were obtained:

- ▶ births = 20
- ▶ deaths = 25
- ▶ immigration = 3
- ▶ emigration = 7

- {2} (a) Calculate the population of hares in January, 2000. (Show your work!) {2} (b) Calculate the population growth as a % of the original population. (Show your work!)

- {6} 5. Make a chart listing (in point form) three positive and three negative effects of the introduction of the zebra mussel to the Great Lakes.