

# Practice Midterm Key

## Part A: Dynamics of Ecosystems

### Multiple Choice

- 1.) a
- 2.) c
- 3.) b
- 4.) a
- 5.) c
- 6.) a
- 7.) c
- 8.) —
- 9.) d
- 10.) c
- 11.) d
- 12.) b
- 13.) c
- 14.) d
- 15.) a
- 16.) c
- 17.) a
- 18.) d
- 19.) c
- 20.) d.

### Short Answer

- 1.) Comment on how carbon can be stored and released from the main carbon pools.  
Ex.) Consumption (Plants → Animals)  
Photosynthesis (Atmosphere → Plants).
- 2.) Density-Dependent Factors  
Ex.) Predation, stress, Disease  
or Density-Independent Factors  
Ex.) Human Activities, natural disasters
- 3.) a. Plants need nitrogen to produce proteins  
b. Nitrogen gas ( $N_2$ ) is a bad investment because plants cannot directly convert it in this form. Also, high concentrations can be deadly to plants.
- 4.) a. Corn → Worms → Sparrows → Flies  
b. Worms may die because of the pesticides which may in turn, affect the sparrows.  
or The sparrows may die by bioaccumulation, eating worms that have ingested the pesticide.
- 5.) Biodiversity refers to the variety of species within an ecosystem. The biodiversity of an ecosystem is an indicator of its stability, health, and sustainability.
- 6.) a. They are interdependent. An increase in the deer population will lead to an increase in the wolf population.  
b. The deer population decreased every year because of the high number of wolves. As well, harsh winters, parasites, or disease may have affected the herd.

# Part B: Chemistry

## Multiple Choice

- 1.) c
- 2.) c
- 3.) a
- 4.) a
- 5.) d
- 6.) b
- 7.) c
- 8.) a
- 9.) d
- 10.) a
- 11.) b
- 12.) c
- 13.) b
- 14.) d
- 15.) d
- 16.) b
- 17.) c
- 18.) -
- 19.) -
- 20.) b
- 21.) a
- 22.) b
- 23.) a
- 24.) -
- 25.) -

## Short Answer

- 1.) -
- 2.) -
- 3.) a.  $\text{BaF}_2 + 2\text{LiBr} \rightarrow \text{BaBr}_2 + 2\text{LiF}$   
Double Replacement Reaction.  
b.  $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$   
Decomposition Reaction.  
c.  $2\text{K} + \text{Cl}_2 \rightarrow 2\text{KCl}$   
Synthesis Reaction.
- 4.) a. Barium and oxygen gas react to form barium oxide.  
b. Aluminum chloride decomposes into aluminum and chlorine gas  
c. Methane gas (or carbon tetrahydride) and oxygen gas react to produce carbon dioxide and water.
- 5.) Sulfuric Acid - Producing fertilizer, cleaning metals, powering car batteries, producing dyes.  
Nitric Acid - Producing fertilizers, explosives, nylon manufacturing, dissolving metals  
Hydrochloric Acid - Found in stomach + chemistry labs  
Sodium Bicarbonate - Baking Powder  
Citric Acid - Found in fruits (citrus fruit)  
Ammonium Hydroxide - Window Cleaner, Cleaners.  
Sodium Hydroxide - Drain Cleaner  
Aluminum Hydroxide - antacids