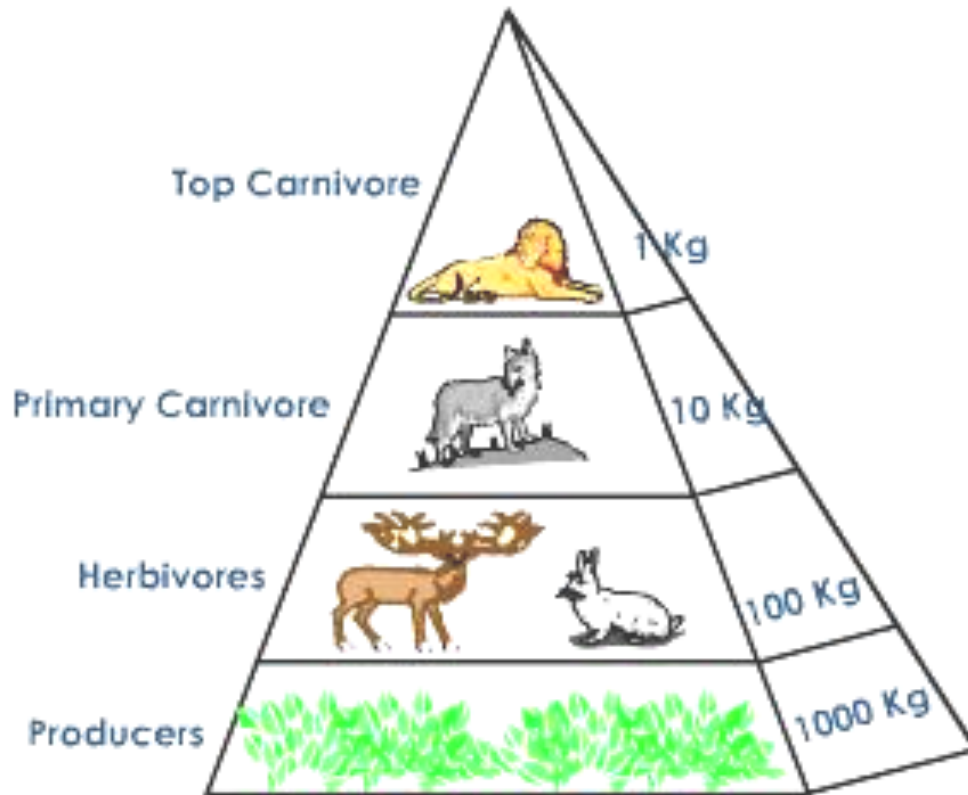


Science 20F Exam Review

Sample Extended Answer Questions

I: Dynamics of Ecosystems

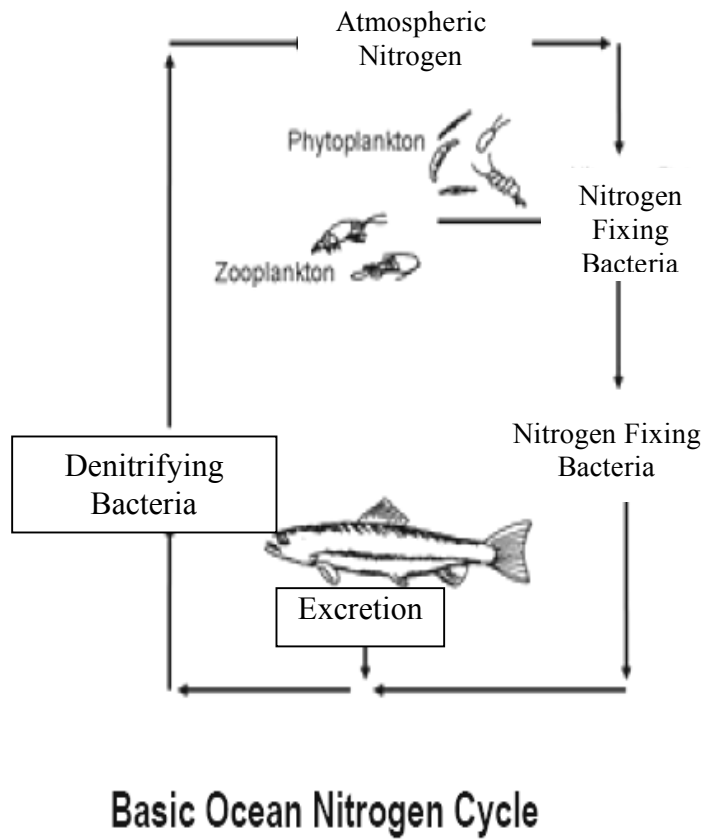
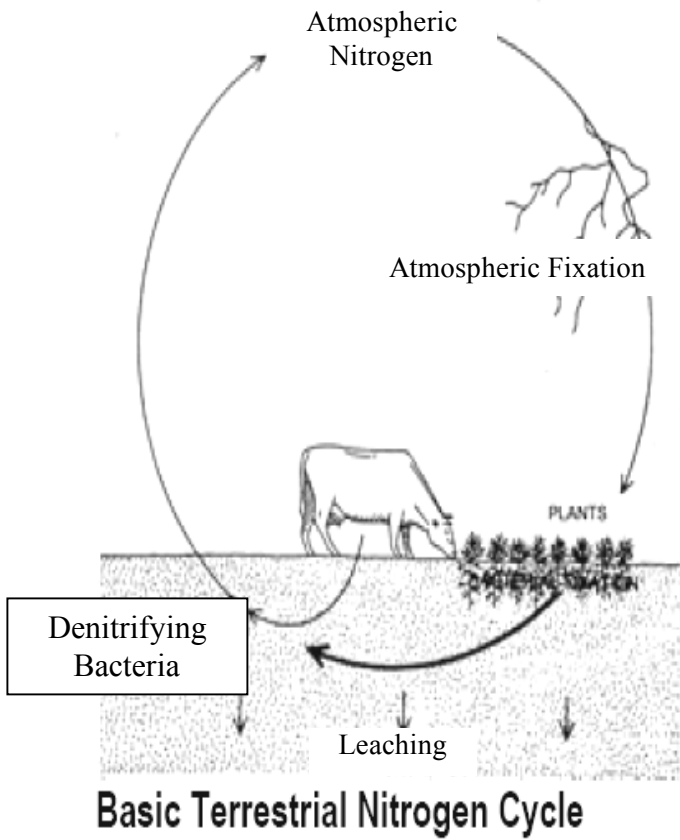
1. Pictured below is an ecological pyramid for a forest ecosystem.



Upright Pyramid of biomass in a Terrestrial Ecosystem

- Explain why there is a greater population at the bottom than at the top of the pyramid?
- What happens to the amount of energy available to each trophic level as you go higher up the pyramid?

2. Compare the diagrams of the terrestrial and ocean nitrogen cycle.



a) Describe how the terrestrial and ocean nitrogen cycles are similar.

b) Predict the effect on the environment if the nitrogen fixing bacteria in the ocean were all eliminated due to pollution.

c) List two other nutrients that cycle through the environment in a manner similar to nitrogen.

II: Chemistry in Action

1. Read the list of terms below. For each list, explain the relationship between all three terms.

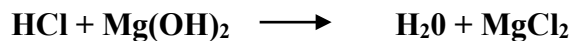
a) CO_2 , SF_4 , CO

b) neutralization, synthesis, combustion

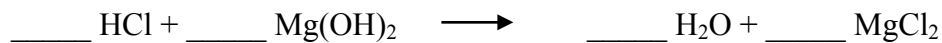
c) pH of 7.5-14, OH^- , blue litmus paper remains blue

d) magnesium chloride, lithium fluoride, zinc nitride

2. Consider the following reaction:



b) Write a balanced chemical equation for the reaction.



c) What type of chemical reaction is this an example of?

2. Fill in the chart below based on identifying ionic and covalent compounds

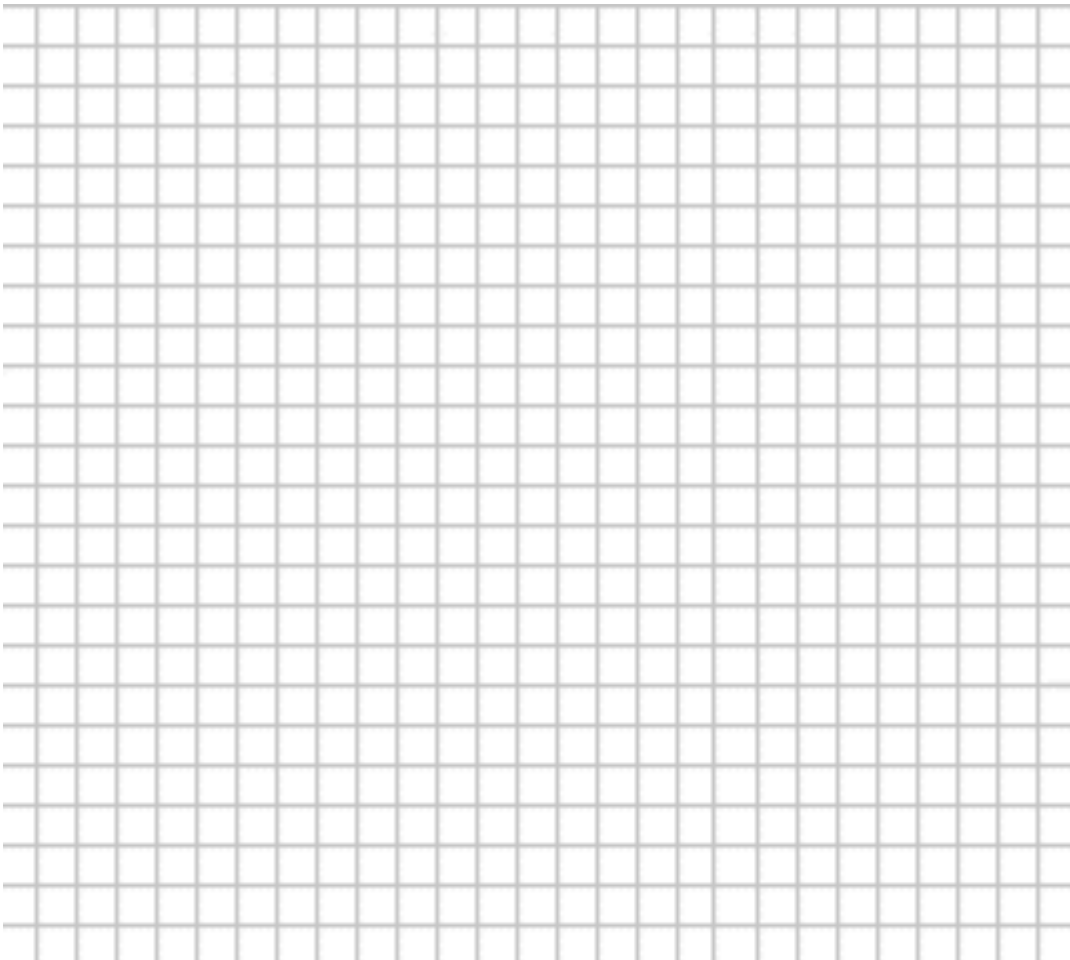
Name	Formula	Ionic or Covalent?
Dinitrogen Trisulphide		
	ZnCl ₂	
Lithium Oxide		

III: In Motion

1. Jesse is a 15 year old high school student who is riding his skateboard to school one morning. Below is the position and time data for the first 45 seconds of his ride to school:

Position (m)	Time (seconds)
0 (home)	0
+15	5
+ 30	10
+45	15
+45	20
+ 45	25
+30	30
+15	35
+ 45	40
+65	45

- a) In the space provided, draw a position-time graph for Jesse's journey to school. Remember to give the graph an appropriate title and label all axes.



b) Explain Jesse's motion at the following time intervals:

i) 0-15 seconds _____

ii) 15-25 seconds _____

iii) 25-35 seconds _____

iv) 35-45 seconds _____

c) Calculate Jesse's average velocity from 0-45 seconds in m/s.

d) Calculate Jesse's average velocity from 0-45 seconds in km/hr.

e) Jesse's skateboard trip to school takes 5 minutes in total. As he rolled up to the front of the school, his skateboard hit the curb and he went flying onto the grass boulevard in front of all his friends! Use Newton's First Law of Motion to describe why this unfortunate accident happened to Jesse.

f) Due to what he learned in his Gr. 10 Science class in the fall, Jesse decided not to ride his skateboard to school in the winter months. What did Jesse learn in his Science class to allow him to reach this decision?

g) Jesse was explaining his decision to his family before he left for school one morning in January. He began by describing the distance that will be required from him to come to a stop on an icy sidewalk ($k = 1.5$) if he was travelling 4 m/s. What distance did he tell his family that he required?

IV: Weather Dynamics

1. Answer the following questions concerning global climate change.

a) How are humans contributing to global climate change?

b) Describe a socio-economic consequence of global climate change?

2. Choose any extreme weather phenomenon and describe it in the following 2 ways.

a. How is it formed?

b. How can you protect yourself against it?
