

# BIOLOGY REVIEW

NAME:

- 1) Define ECOLOGY: *study of ecosystems,*
- 2) ~~What is the "Greek" translation for the word ECOLOGY?~~
- 3) ~~What is the first and simplest level of organization that ecologists study?~~ *Organism species*
- 4) ~~What 3 things do Ecologists study about organisms?~~
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  - 
  -
- 5) What is a HABITAT? *where organism lives,*
- 6) What is the second level of organization an Ecologist studies?
- 7) All of the organisms of the same species that share a habitat are called: *population*
- 8) All the different populations in a particular area that interact is called a: *population*
- 9) What is the fourth and most complex level of organization of organisms? *community*
- 10) Explain the difference between an ECOSYSTEM and a BIOSPHERE. *ecosystem*
- 11) What is a LIMITING FACTOR for an ecosystem?
- 12) Compare and contrast the terms BIOTIC factors and ABIOTIC factors
  - living* ↓
  - not living*
- 13) Draw a flow chart showing the 5 different levels of organization when studying ecology.

- 14) From the illustration identify:

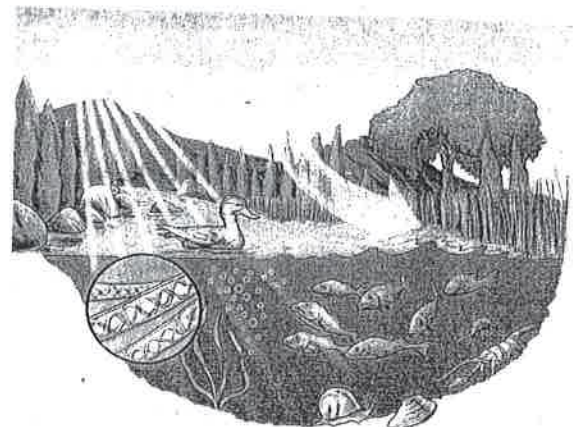
a) two biotic factors

*Nutrients, algae,*

b) two abiotic factors

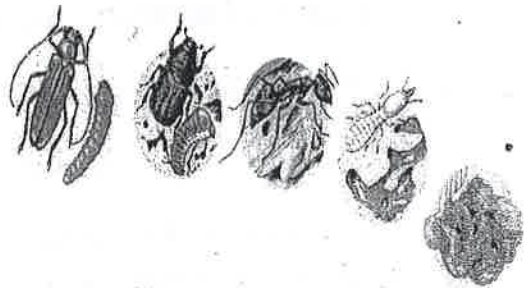
*H<sub>2</sub>O, soil, light*

c) a limiting factor



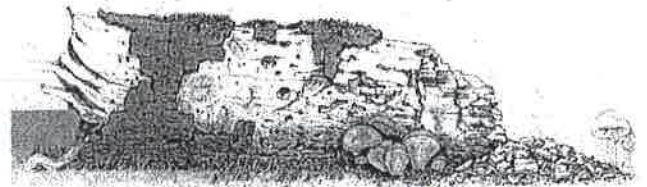
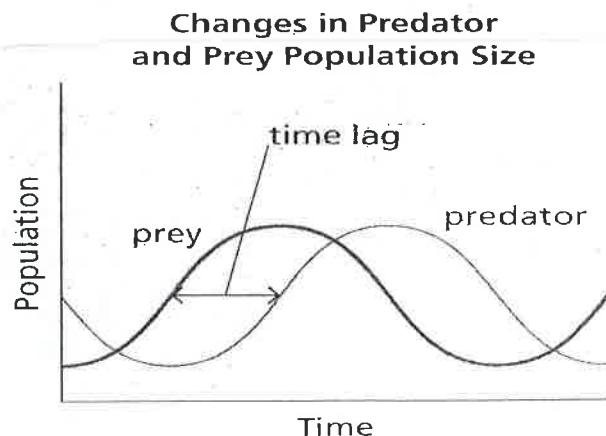
- 15) List 4 basic essential life functions all organisms need to carry out to survive.
- 16) Explain what nutrients are.  
*molecules needed for life.*
- 17) Organisms that can make their own food are called:
- 18) What is another term for these organisms?  
*Producers, Plants.*
- 19) What is CHEMOSYNTHESIS?  
*Use chemicals for energy instead of light.*
- 20) What are organisms that consume (eat) other organisms or biotic waste in order to survive called? *Decomposers.*
- 21) What is a PRIMARY CONSUMER?  
*eat producers. (herbivores)*
- 22) What is the term for organisms that eat other consumers?
- 23) What is an OMNIVORE?  
*Carnivores, eat both plants and animals*
- 24) What is the term for consumers that feed on the waste material in an ecosystem? *Detritivore*
- 25) List two examples for the above question.  
*Fungus and earthworms.*
- 26) What are DECOMPOSERS?  
*Break down dead organic waste*
- 27) List two examples of a decomposer.  
*Fungus and Bacteria*
- 28) Label the illustration to the right.

29) Explain the term BIODEGRADATION.



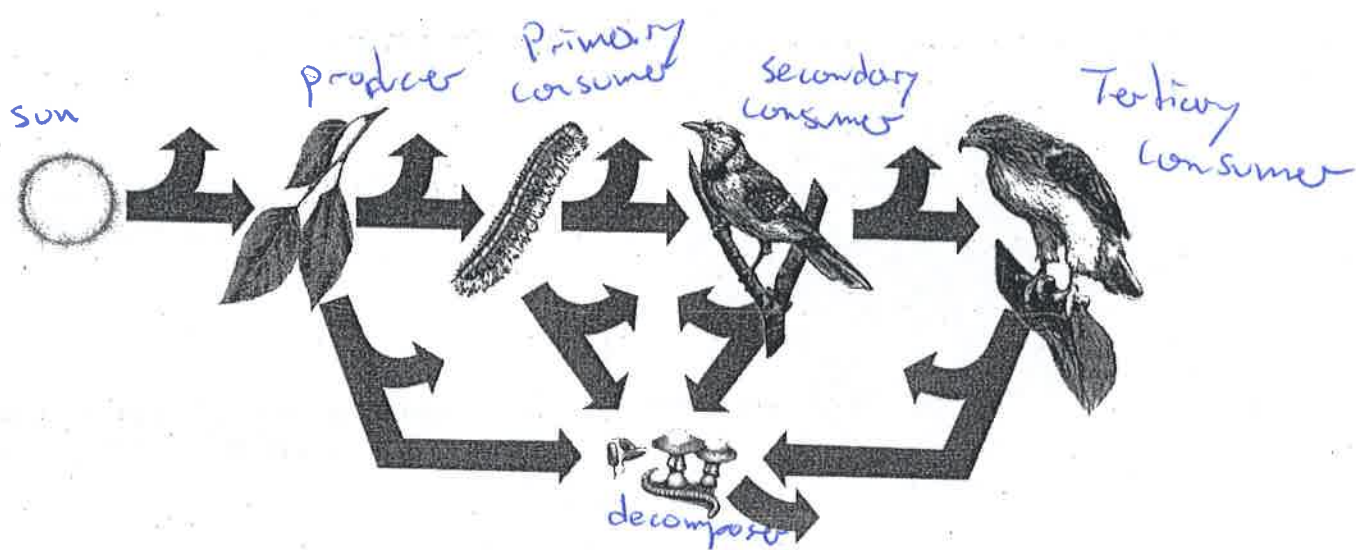
30) What is the term when a consumer captures and eats another organism?  
*Predator*

31) Explain the graph below in regards to the PREDATOR-PREY CYCLE.

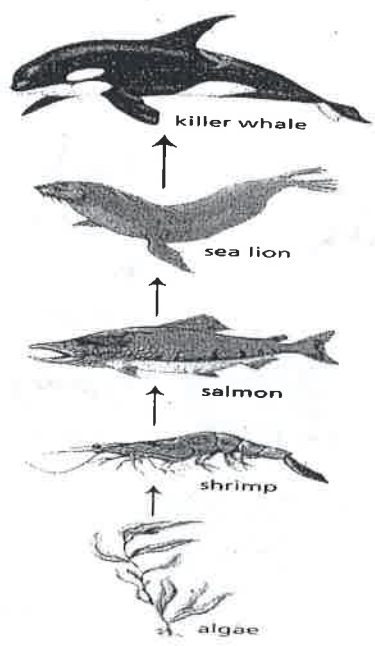


*When prey die off the predators die off.*

- 32) What term refers to the close relationship between two different species? *Symbiosis*
- 33) Explain and give one example of MUTUALISM. *Both organisms benefit. Bacteria in roots of plants.*
- 34) Explain and give one example of COMMENSALISM. *One organism benefits and the other organism is neither helped nor harmed - Ex Barnacles on whales*
- 35) Explain and give an example of PARASITISM. *One species benefits and the other is harmed. Ex. Hookworms*
- 36) Classify the relationship Mistletoe has with Douglas fir trees.
- 37) Explain what a TROPHIC LEVEL is. *Position on a food chain*
- 38) Label the illustration below.



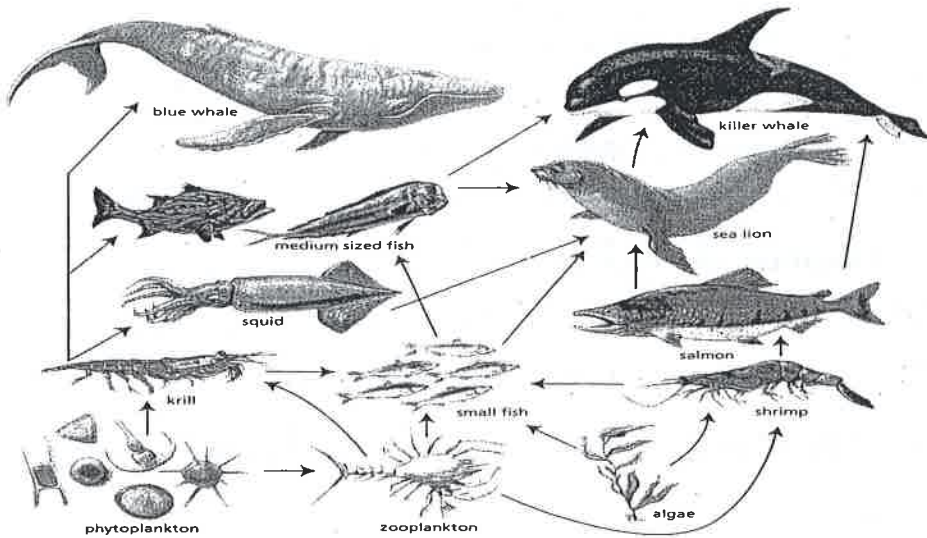
39) What does the diagram below illustrate (show)?



*Food chain*

- 40) The arrows represent the FLOW of what two things? *Food \* Energy*
- 41) Which type of consumer is not included in food chains? *Decomposer  
Detritivores.*
- 42) Why is sunlight essential for most food chains? *producers need sunlight*

43) What does the illustration below show?



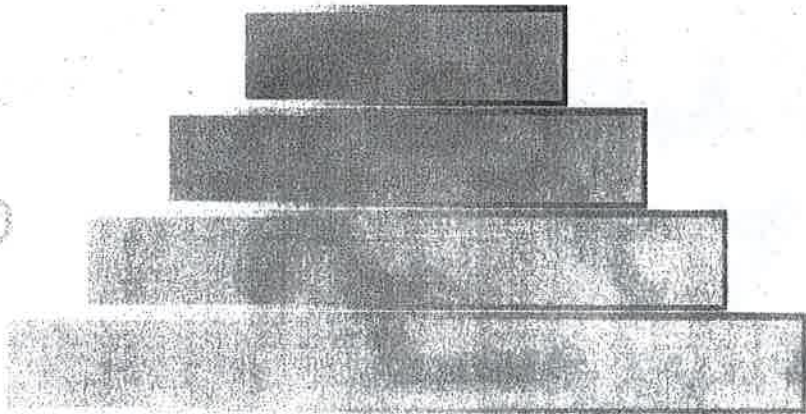
44) How is a food web different from a food chain?

*contains multiple food chains,*

45) Explain why "nutrients cycle" BUT "energy flows".

*nutrients is put back into soil by decomposers,*

46) Label the diagram below of an ENERGY PYRAMID.



47) What is the first law of THERMODYNAMICS?

48) What is the second law of THERMODYNAMICS?

49) What do the LENGTHS of the different blocks represent?

*Amount of Energy*

50) How much ENERGY is typically passed from one trophic level to the next?

*10%*

51) Where does the missing energy go?

*used in being alive.*

52) Why do most ecosystems only have FOUR trophic levels?

*Not enough Energy to support higher levels,*

53) Label the Diagram to the right.

54) What does the diagram represent?

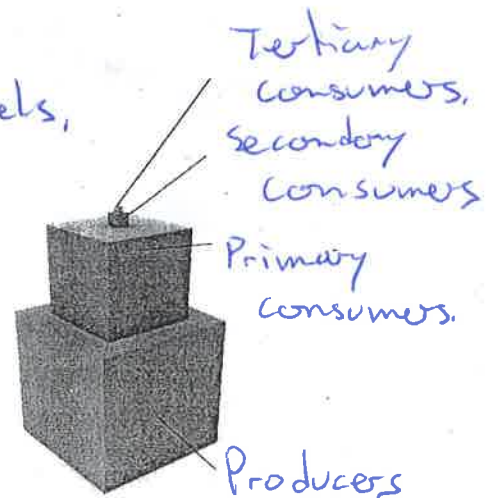
*Pyramid of Biomass*

55) What determines the SHAPE of the pyramid?

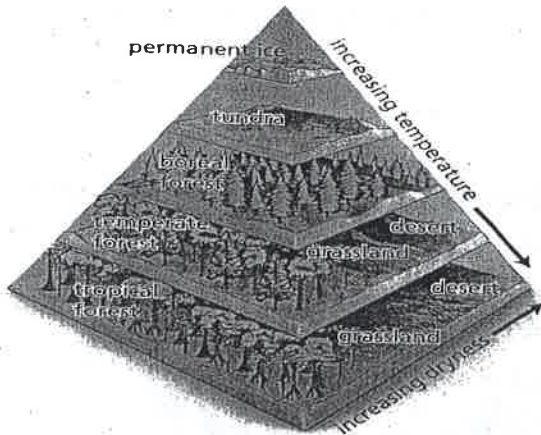
*Number of animals*

56) What is a PYRAMID of BIOMASS?

*total mass of living things at each trophic level*



- 57) What TWO factors determine the distribution of life in a biosphere?  
*Temperature and Precipitation*
- 58) What does the diagram below show?



- 59) What is CLIMATE?

*long term pattern of temperature and precipitation*

- 60) What TWO factors affect climate?

*Latitude  
 Elevation*

- 61) What is responsible for determining average temperature at various locations on Earth? *Latitude, elevation, solar radiation*
- 62) How does the TILT of the Earth cause the different seasons?  
*Tilt effects the amount of solar radiation (sunlight + heat)*
- 63) How does WIND and OCEAN CURRENTS affect climate?
- 64) Label the diagram below:



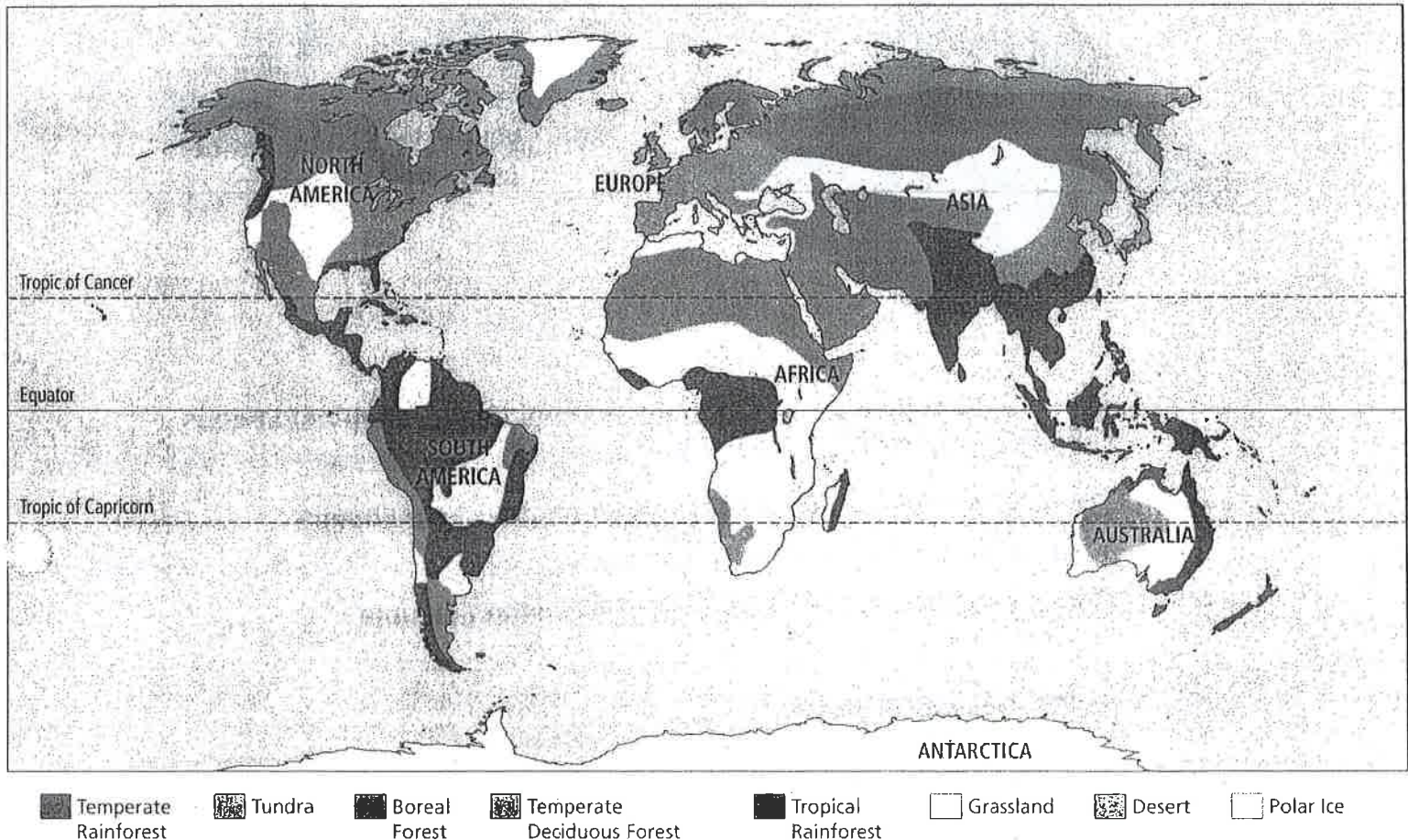
- 65) How do rainfall patterns affect the type of vegetation that will grow?

*Lots of rain create forests  
 less rain create grasslands and deserts,*

- 66) What other factor affects the plant and animal communities within an ecosystem?

*Natural disasters  
 - flooding  
 - volcanoes*

- 67) What do CLIMATOGRAPHS show?  
*Average Temperature and precipitation*
- 68) What are WORLD BIOMES?  
*Large ecosystems that have similar characteristics,*
- 69) How can similar ecosystems exist in different geological locations?  
*Same Temperature and precipitation*
- 70) Using the DATA BOOKLET color the worlds' BIOMES in the illustration below.



- 71) What does the term ADAPTION mean?  
*- genetic trait that improves an organism's chances of*
- 72) Explain the process of NATURAL SELECTION.  
*surviving and reproducing - favours the survival of organisms that are better adapted to the environment.*
- 73) What is it called when some prey species resemble another poisonous, dangerous or distasteful species?  
*Mimicry*
- 74) Explain COEVOLUTION.  
*when one species evolution depends on the evolution of another species. Ex predator and prey*
- 75) The variety and variation among organisms within a given ecosystem is called:  
*Biodiversity*

76) What is the difference between EXTINCTION and EXTIRPATION?

77) What is the term for organisms whose presence plays an IMPORTANT ecological role in determining the types and numbers in a particular community?  
*Keystone species.*

78) Explain what a NICHE is.

*Role an organism play in an ecosystem*

79) What is it called when two species make use of the same resources so their niches OVERLAP?

*Competition*

80) What is INTERSPECIFIC COMPETITION?

*Compete within the same species*

81) What is INTRASPECIFIC COMPETITION?

*Compete with other species.*

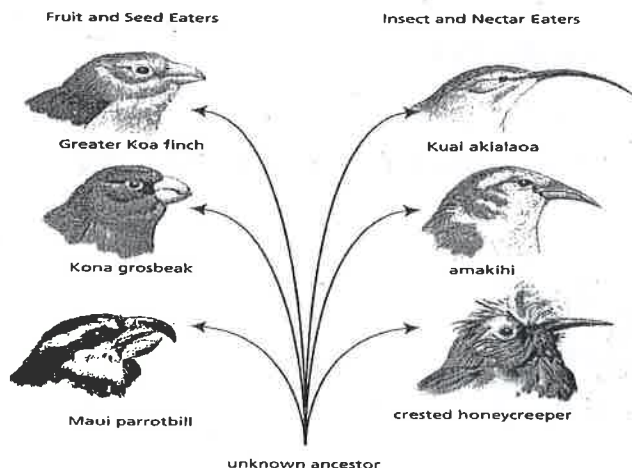
82) What is it called when some species develop adaptations that allow them to reduce or avoid competition with other species?

*Adaptive Radiation*

83) Give an example of the phenomenon above.

*Darwin's Finches*

84) Using the diagram below explain ADAPTIVE RADIATION.



*different beaks  
eat different food  
therefore don't  
compete.*

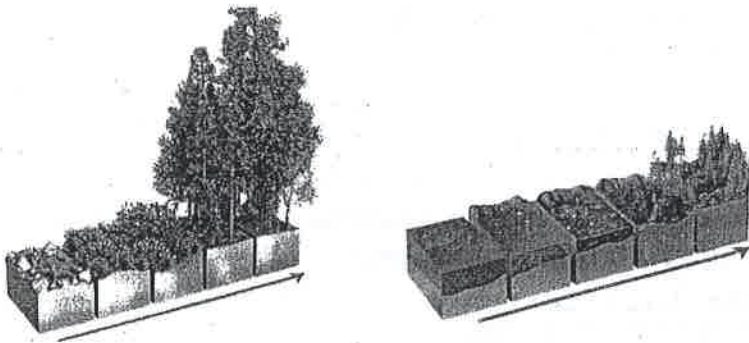
85) In what ways do FOREIGN SPECIES impact an ecosystem?

*Push out Native species, Alter habitats,*

86) Give two examples of foreign species that have affected ecosystems in British Columbia.

- *Scotch broom*
- *Englis Ivy*
- *Bullfrog*

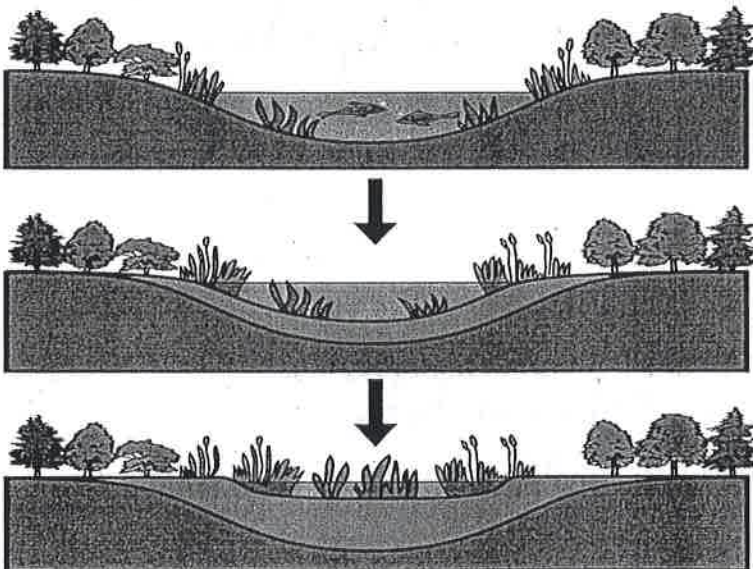
- 87) The gradual change in the types of plants that represent the structure of a community is called.
- 88) What is a PIONEER SPECIES? *First species to grow on rocks*  
*Ex Lichens, Bacteria.*
- 89) Using the illustrations below explain PRIMARY SUCCESSION.



- 90) Explain the term CLIMAX COMMUNITY.

*mature community*

- 91) Using the diagram below explain SECONDARY SUCCESSION.



- 92) Suggest two HUMAN activities that could lead to secondary succession.

*- Clear cut*  
*- Fire*



- 92) Define ORGANIC matter.  
matter of carbon made by living things,
- 93) Define INORGANIC matter.  
does not contain carbon.
- 94) Compare and contrast PHOTOSYNTHESIS and CELLULAR RESPIRATION.  
Photosynthesis  $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$   
Cellular Respiration  $6\text{O}_2 + \text{C}_6\text{H}_{12}\text{O}_6 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$
- 95) What ELEMENT is important in ecosystems because it is the key element in all living organisms?  
Carbon
- 96) What is a CARBON RESERVOIR?  
Store and release carbon slowly
- 97) What is a CARBON SINK?  
absorbs carbon and stores it for a long time
- 98) What is the most ABUNDANT gas in the atmosphere?  
Nitrogen
- 99) In order for nitrogen to be useful to organisms what must first happen?  
must first be converted to Nitrates and ammonium
- 100) Explain the process of NITROGEN FIXATION.  
 $\text{N}_2$  gas converted to Nitrates and ammonium by bacteria in roots of plants.
- 101) What organism is responsible for most of the nitrogen fixation in water and soil?  
Bacteria
- 102) What is NITRIFICATION?  
Ammonium converted to Nitrate.
- 103) Where does NITRIFICATION occur?  
bacteria
- 104) How do animals obtain nitrogen?  
Eat plants
- 105) What is it called when NITRATES and AMMONIA are converted back into nitrogen?  
Denitrification
- 106) How is the PHOSPHORUS CYCLE different from the carbon and nitrogen cycles?  
Not in atmosphere
- 107) Where does all the phosphorus originate from?  
Rocks
- 108) What form of phosphorus is soluble in water and can be dissolved out of soil?  
Phosphates ( $\text{PO}_4^{3-}$ )
- 109) Explain how "Mycorrhizae" is part of the phosphorus cycle.  
Break down rocks and release phosphates
- 110) How do humans add phosphorus to an ecosystem?  
Fertilizers,

- 111) Draw a simple diagram of the phosphorus cycle using the following term: weathering, decomposers, ocean sediment and geological uplift.

## CHAPTER 5:

- 112) Name the two main categories of NATURAL EVENTS that can affect ecosystems:

- Flooding
- Volcano

- 113) For each of the following natural disasters, give one detrimental impact on ecosystems:

- flood: Wash away soil
- fire: Burn down habitat
- hurricane: destroy habitat.

- 114) For each of the following natural disasters, give one beneficial impact on ecosystems:

- drought: things die and put nutrients in soil.
- tsunamis: create secondary succession
- infestations: biodiversity

- 115) Some geological events can lead to "PROLIFERATION" of a species. Explain.

- 116) Why are volcanoes called "SUCCESSION LABORATORIES"?

- 117) What are POLLUTANTS?

- 118) How does ACID PRECIPITATION form?

- 119) What is the pH SCALE?

- 120) Explain the meaning of BIODEGRADATION as it applies to pollutants.

nutrients made from decaying matter

- 121) What is BIOACCUMULATION? build up of a substance within the tissues of organisms over time

- 122) What is BIOMAGNIFICATION?

increase in concentration of a substance at higher levels

- 123) Explain how PESTICIDES like DDT and HEAVY METALS like mercury can impact ecosystems.

can kill off keystone species,

in the Food chain