UNIT BIOLOGI

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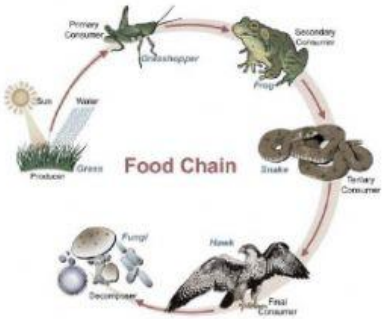
SB025

TOPIC 2: ECOLOGY

Q1. Explain how energy is transferred along the food chain in an ecosystem.

(7 marks)



- Food chain reflect the transfer of _____ in an ecosystem
- Solar energy is the _____ source of energy
- _____ trap (1-5% of) light energy & convert it to _____ energy
- By _____ for biomass production
- When primary consumers feed on _____
- Energy is transferred from ____ trophic level to the _____ trophic level
- _____ consumers feeds on _____ consumer
- Then, _____ consumer feeds on _____ consumer
- During each feeding, only _____ of the energy is transferred from one _____ level to the next as _____ of the energy is lost to the _____
- Energy is lost as _____, _____ & _____
- large amount of energy is _____ during each transfer
- Each trophic level receives _____ energy than the level below it
- At the fourth or fifth level, only a _____ amount of energy is left so it _____ to support further trophic level
- _____ the numbers of trophic levels

Q2. Explain how the density dependent limiting factors affect the population size.
(7 marks)

Competition for resources

- When the population density is _____, resources are _____
- Competition occur between individuals of the _____ species (_____) competition or _____ species (_____) competition

Territorial behavior

- When the population density is _____, there is little _____ between neighboring territories of the _____ species
- Organism without territories often die from _____

Predation/predator-prey relationship

- An increased in the prey population support an _____ in predator population
- As predator population increase, it leads to a drastic _____ in the number of prey

Overcrowding/limited space

- Occur at ____ population density, when space becomes _____
- Cause excessive stress leading to _____ behavior / _____ in health

Diseases / parasitism

- As population size _____, _____ spread more easily, mortality rate _____

Accumulation of toxic waste

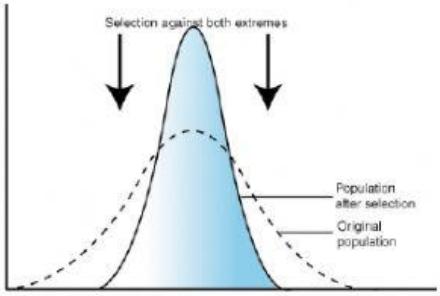
- As population _____, waste products from metabolic reactions _____
- And become _____ to the member of the population

TOPIC 3: SELECTION & SPECIATION

Q1. Describe the types of natural selections. **(6 marks)**

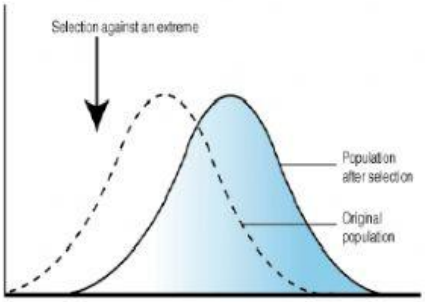
Stabilizing selection

- Favours individuals having _____ phenotype
- Act against _____ extreme phenotypes
- Occurs in _____ condition
- Selection shifts the frequency curve towards the _____ phenotypes
- _____ genetic variation



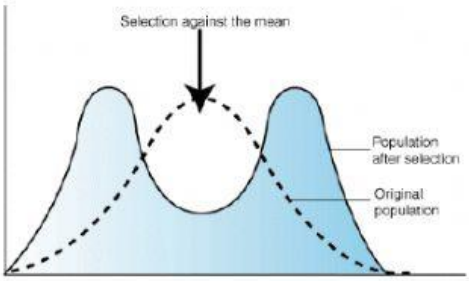
Directional selection

- Favours individuals on _____ phenotypes
- Act against individuals on the _____ phenotypes
- Occurs when environment condition gradually _____ over time
- Selection shifts the frequency curve towards the _____ phenotype
- This type of selection _____ genetic variability

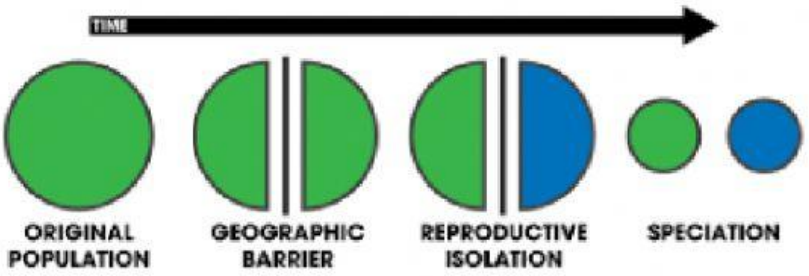


Disruptive selection

- Favours individuals on _____ phenotypes
- Act against _____ phenotypes
- Occurs when environment condition are _____
- Selection causes the formation of two _____ phenotype groups
- _____ genetic variability



Q2. What is speciation? Discuss how allopatric speciation could lead to a formation of a new species. (6 marks)

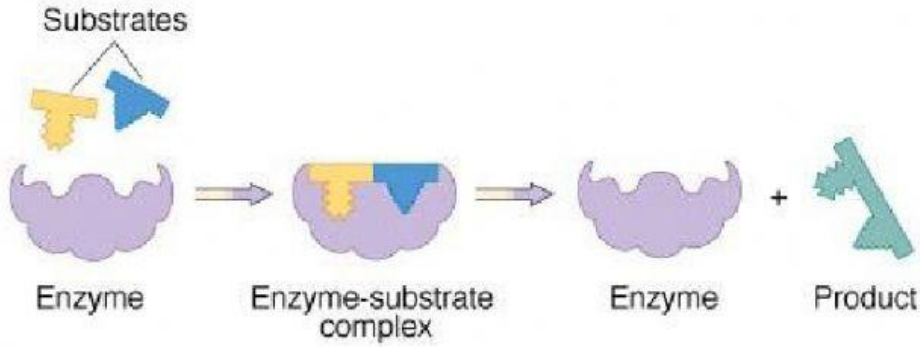


- Formation of new _____ through _____
- A population splits into two _____ populations
- Due to the presence of _____ barrier
- Over a long period of _____
- Gene flow from one population to another is _____
- Isolated population undergoes _____ divergence or _____ divergence
- Due to _____ pressure
- They undergo _____ drift / _____ / _____ selection which alters the allele frequency
- _____ isolation is establish
- When the two populations come in _____ again, they are no longer capable of _____

TOPIC 4: BIOCATALYSIS

Q1. Explain the mechanism of enzyme action using 'induced fit' hypothesis.

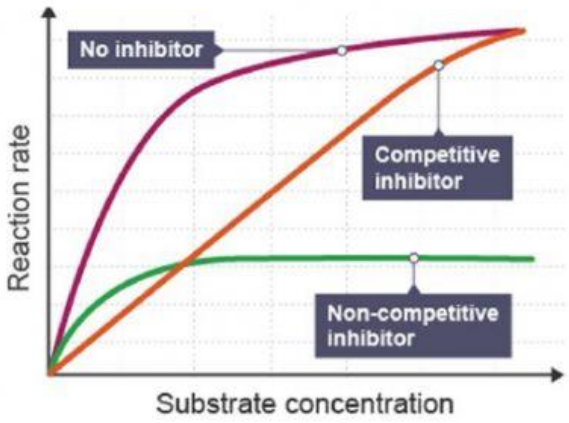
(6 marks)



- Induced fit hypothesis suggest that the _____ is not exactly _____ to the _____ of the substrate
- The active site is _____ and can _____ its shape
- When _____ occur between enzyme and substrates, substrate can _____ to the active site of the enzyme
- The binding of substrate _____ the enzyme to change its shape slightly
- To enable the substrate to ____ precisely to the active site
- An _____ complex is formed
- Enzyme stretched the _____ to facilitate the reaction to occur
- _____ is formed and _____ from the active site
- Enzyme changes back to _____ conformation

Q2. Analyse graph related to competitive & non-competitive inhibitors.

(6 marks)



Competitive inhibitors

- By _____ the concentration of substrate, _____ will have more chance to bind with the active sites compared to _____
- The effect of competitive inhibitors can be _____.
- The rate of reaction between competitive inhibition and without inhibition becoming the _____

Non-Competitive inhibitors

- As the inhibitors do not _____ for the _____ active site with the substrate, increasing the substrate concentration will not _____ the rate of reaction
- Therefore, the effect of non-competitive inhibitors could not be _____
- The rate of reaction with non-competitive inhibition remain _____ than the rate of reaction without inhibition.