BLG 1501 (BIOLOGY)

COMPARNG PROKARYOTIC AND EUKARYOTIC CELLS

PROKARYOTIC CELL	EUKARYOTIC CELL
DNA is concentrated in the nucleoid has no membrane	DNA is in the nucleus, which is bounded by a double membrane

COMPARE THE ANIMAL CELL AND PLANT CELL

PLANT CELL	ANIMAL CELL
Has a cell wall	No cell wall
Has a regular fixed shape	Irregular shape
Large central vacuole and tonoplast	If present small vacuole
Chloroplast present	No chloroplast
No lysosomes	Lysosomes
No centrosomes	Centrosomes

COMPARE BETWEEN MITOSES AND MEIOSIS

MITOSIS	MEIOSIS
Takes place in to Somatic cells	Takes place in the sex cells
One division	Two division
2 daughter cells	4 daughter cells
Effects growth and repair	Produces gametes
No synopsis	Synopsis occurs during prophase

COMPARE CELLULAR RESPIRATION AND FERMENTATION

CELLULAR RESPIRATION	FERMENTATION
Final electron acceptor is oxygen	Final electron preceptor is organic molecule pyruvate
Harvests more energy	Harvests less energy
Yields 38 ATPs	Yields 2 ATPs
Aerobic conditions	Anaerobic conditions

COPMARE ALCHOHOL FERMINTATION AND LACTIC ACID FERMINTATION

ALCHOHOL FERMINTATION	LACTIC ACID FERMINTATION
Pyruvate is converted to ethanol in 2 steps	Pyruvate reduced to form lactate
Carbon dioxide is released forms acetaldehyde	No release of carbon dioxide
Acetaldehyde reduced to ethanol	

HETERETROPH AND AUTOTROPHS

HETEROTROPHS	AUTOTROPH
Use organic compounds as a source of carbon	Use CO2 as a source of light and energy to manufacture their own food
Depend on other organisms for food	Are also known as the primary producers in the ecosystem

ASEXUAL AND SEXUAL REPRODUCTION

ASEXUAL REPRODUCTION	SEXUAL REPRODUCTION
Generation of new individuals without the fusion of egg and sperm	Generation of new individuals with the fusion of the egg and sperm
Reproduction entirely relies on mitotic cell division	Gametes are produced through meiosis

DEFINE THE FOLLOWING

- **Diploid:** they are 2 sets of chromosomes per nucleus
- **Primosome:** assembly of protein concerned with initiation of RNA prime formation in DNA replication
- **Climax community:** ecological community that has reached a stage of balance, its final stage of succession remains unchanged until damaged by humans or fire
- **Ecotone:** where 2 ecosystems overlap and which supports species from both ecosystems as well as species found only in this zone
- **Enthalpy:** describing the energy lost as heat to the environment in a living organism
- **Acid:** substance that increases the hydrogen ion concentration of a solution
- **Base:** substance that reduces the hydrogen ion concentration of a solution
- **Kinetic energy:** its moving energy
- **Potential energy:** energy that matter possess because of its location or structure
- **Predation:** interaction between species where the predator eats the other the pray
- **Herbivory:** an act of a plant eating animal eating a plant a herbivore
- **Parasitism:** a non- mutual symbiotic relationship between species where one benefits at the cost of the other
- **Mutualism:** a symbiotic relationship between two organisms where both benefit without harming each other

- **Commensalisms:** a symbiotic relationship between 2 organisms where one benefits without harming the other
- **Phagocytosis:** cells engulfing protein
- **Pinocytosis:** cell ingests extracellular fluid and its dissolved solution
- **Isomers:** two or more chemical compound with the same chemical formula but different structural formula

DOMAINS OF LIFE

- Bacteria
- Respiration
- Reproduction
- Excretion
- Nutrition

HOW DO EDGES AND CORRODORES INFLUENCE LAND SCAPE BIODIVERSITY

Edges within ecosystem have unique sets of physical conditions and communities of species, they become wider as fragmentation increases

Movement corridors may promote dispersal and help sustain populations or they may promote harmful conditions such as diseases

BUFFER AND EXAMPLES

A substance that minimises changes in the concentration of H and OH in a solution.in a living system

Example: human blood buffering capacity of the blood prevents the swing in pH. Normal pH of blood is 7.4, if it increases buffering works by accepting H+ from the solution

GREENHOUSE EFFECTS

- Warming of the earth due to accumulation of carbon dioxide in the atmosphere absorbed and reflected back to earth
- Absent earth temperature sub-zero effects the temperature and weather
- Burning of fossil fuels, deforestation, urbanisation affects the ecosystem
- May lead to extinction of some plants
- Greenhouse gasses is believed to be the cause of global warming
- Carbon

POLISACHARIDE STRUCTURE AND FUNCTION

- **STARCH**

Formed by glucose monomers. When starch breaks down glucose serves as nutrients for animal cells

- **GLYCOGEN**

Formed by polymers of glucose. When hydrolysed the glycogen releases glucose when sugar demand increases

- **CELLULOSE**

Polymers formed by glucose in the β configuration makes every glucose upside down. It's building material for plant cell wall

- **CHITIN**

Similar to cellulose but it has nitrogen in its glucose monomers. It is used as building material for cell walls in fungi

RIBOSOMES STRUCTURE AND FUNCION

- **Made up of 2 subunits small and large**
- **Has protein and RNA (Ribosomal RNA)**
- **Subunits are made in the nucleolus**
- **Subunits are then transported by the nuclear to the cytoplasm**
- **Two-thirds of the ribosomes are RNA**
- **Play a role in forming polypeptides**
- **And also play an important role in growth**

SUMMARISED EQUATION OF CELLULAR RESPIRATION

Organic compound + oxygen - carbon dioxide + water + energy

ENZYME ACTIVITY

- **Velocity enzyme reaction increases with temperature**
- **Beyond optimum temperature the enzyme speed drops rapidly**
- **The same holds true of ph.**
- **Cofactors can be organic or inorganic (co-enzymes)bound to assist in active site**
- **Inhibitors are usually chemicals that inhibit enzyme reaction by bonding to the active site**
- **If inhibitors bond covalently it may not be reversible unless the bond is weak**

TEST CROSSING

Breading an organism of unknown genotype with a recessive homozygote. It can reveal the genotype of that organism

EXAMPLEE

A purple flower with an unknown genotype is crossed with a white flower. Determine the genotype of the purple flower if (P) is dominant and (p) is recessive.

ANSWER

Parents: homozygote × homozygote

Purple **White**

PP **pp**

	p	**p**
	Pp	**Pp**
	Pp	**Pp**

All plants are purple

If the parent flower is Pp

	p	**p**
p	**Pp**	**Pp**
p	**pp**	**pp**

half the plants are purple and the other half white

BIODIVERSITY DANGERS AND EXAMPLES

HABITAT LOSS:

- **98% of the dry forest of Central America and Mexico have been cut down**

INTRODUCED SPECIES

- **Moving of the brown tree snake from the South Pacific to the Guam Islands, this led to the extension of 12 bird species and 6 lizard species**

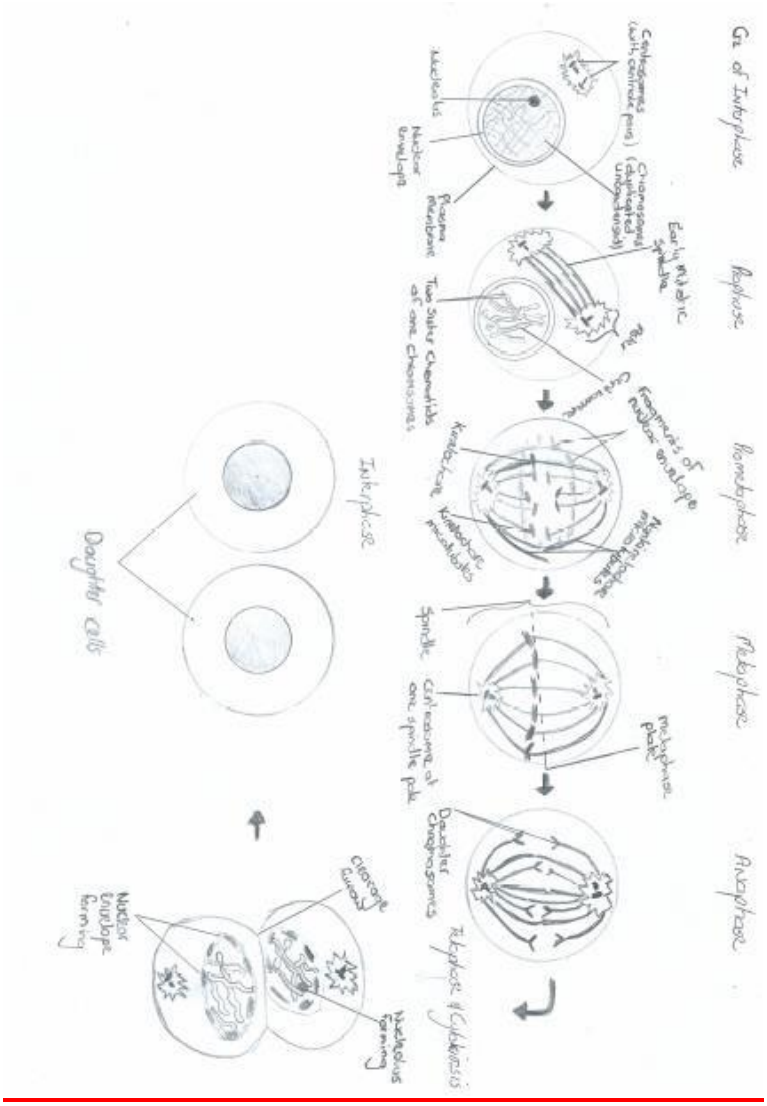
OVERHARVESTING

- **The great Auk bird that was hunted for its feathers, eggs and meat was extent by the 1840's**

GLOBAL CHANGE

- **Unpredictable weather changes caused by global warming that is believed to be caused by greenhouse gasses in the atmosphere, that causes abnormal weather changes and temperature changes**

MITOSIS


G1 of Interphase
Prophase
Prometaphase
Metaphase
Anaphase
Telophase & Cytokinesis
Interphase
Daughter cells