BIOLOGY 1 2010 - NECTA FORM FOUR

Solutions from: Maktaba by TETEA

By Yohana Lazaro

1

i	ii	iii	iv	v	vi	vii	viii	ix	x
A	A	C	C	E	D	D	B	B	B

2

i	ii	iii	iv	v	vi	vii	viii	ix	x
P	Q	I	T	J	H	L	O	R	D

3.(a)

Process	**raw material**	**products**	**by product.**	**Site**
photosynthesis	carbondioxide,water and sunlight and chlorophyll	Glucose	Oxygen	Plant leaf in chlorophyll.
Respiration.	oxygen	Energy	Excess water	Mitochondria

(b)It is because:-

- Filter out foreign particles. Nasal hair filters out dust, allergens, and pollen, which helps prevent them from entering your lungs.

-Humidify inhaled air. Your nose warms and moisturizes the air you breathe in. This brings the air you inhale to body temperature, making it easier for your lungs to use.

-Produce nitric oxide. During nasal breathing, your nose releases nitric oxide (NO). NO is a vasodilator, which means it helps to widen blood vessels. This can help improve oxygen circulation in your body.

4.(a)-Heterotrophic nutrition is a mode of nutrition where organisms directly or indirectly depend on autotrophs for food. They are called as Heterotrophs. They cannot prepare their own food. Protoctists and prokaryotes are examples of heterotrophic nutrition.

-Autotrophic nutrition means that simple inorganic substances are taken in and used to synthesise organic molecules. For example the process of photosynthesis.

(b)A veins

B lamina

C petiole

(ii) distribute foods throughout the leaf.

(iii) lamina

5.(a)insects are useful because:-

-helps pollination,eg bees.

-helps to make honey.

-used as source of food.eg grasshopper.

Insects are hamful because:-

-can destroy crops.eg grasshopper

-can sting people.

(b)-The earthworms improve the fertility of soil in different ways and, therefore, they are of utmost importance in agriculture.

-These are used as bait and food.

-Many people earn their livelihood by catching these worms and supplying to scientific laboratories.

-They are also said to help soil erosion. Some earthworms act as secondary hosts for the completion of life stages of some parasites which are directly or indirectly harmful to mankind.

6(a)(i)Tropism is the directional movement of plants due to stimulate.

(ii) Importances of hydrotropism is to provide the water to plants from the ground

and phototropism helps the availability of light that is used for photosynthesis.

(b)-Accommodation is the process by which the vertebrate eye changes optical power to maintain a clear image or focus on an object as its distance varies.

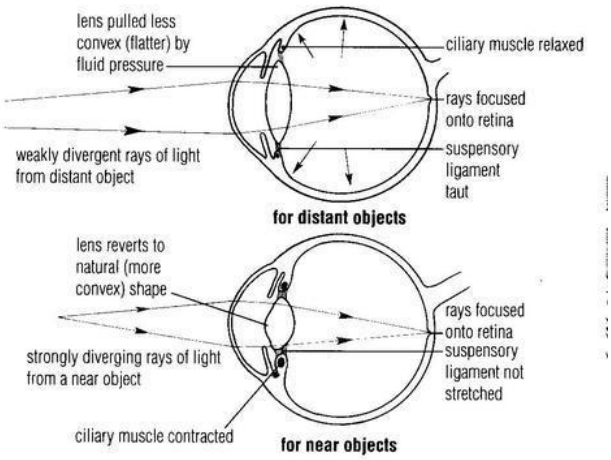


image from,

http://caleblookeye.wikispaces.com/Accommodation.

7(a)(i)Eyepiece: the lens at the top that you look through, usually 10x or 15x power.

(ii)Stage with Stage Clips: The flat platform where you place your slides. Stage clips hold the slides in place.

(b)diseases by viruses.

-HIV/AIDS

-covid-19

-smallpox.

-chickenpox

8.(a)(i) Adrenaline hormone

(ii) impulse were sent to the adrenal gland so that can secret the hormone into blood stream which finally increased the blood circulation, hence power to climb the tree.

9(a)(i) Ecology is the study of the relationships between living organisms, including humans, and their physical environment.

(ii)The environment is the sum total of all conditions and influences that affect the development and life of all organisms on earth.

(iii) community is an interacting group of various species in a common location. For example, a forest of trees and undergrowth plants, inhabited by animals and rooted in soil containing bacteria and fungi, constitutes a biological community.

(iv)Ecosystem is the integrated study of living (biotic) and non-living (abiotic) components of ecosystems and their interactions within an ecosystem framework.

(b)	Natural Ecosystem	Artificial System
1)	As the name suggests it is created by nature.	1) As the name suggests it is a man-made system.
2)	It constitutes different types of flora and fauna.	2) It includes selected species.
3)	Genetic diversity is very high.	3) Genetic diversity is low as other species are removed from the system.
4)	Food chains are long and complex.	4) Food chains are mostly incomplete or small as few species are present.
5)	For example, a crop-field.	5) For example, a pond

(ii). A food chain is always at a risk of being damaged with a major effect on the ecosystem as well. Suppose tiger population increases. Its prey population of say deer will decrease rapidly resulting in the nonavailability of food to tigers, their starvation and hence death. However, in a food web, each predator has a choice to feed on different types of preys. Reduction in population of one type of prey will not affect the predator because it can switch over to postulate on some other animals. Meanwhile, the population of preferred prey recovers.

10.(a)(i)these are changes occur in non reproductive tissues,and cannot be passed into DNA of the germ cells, hence cannot be inherited.

(ii) ecological pyramid tapers because there is a loose of energy up to the decomposer.

(iii)ventrical muscles pump blood from the heart to other body parts that why has thicker muscles than auricles which pump blood to the heart.

(iv)it is due to adrenaline hormones being secreated to overcome danger.

(b) meiosis vs Mitosis.

- Mitosis produces two diploid (2n) somatic cells that are genetically identical to each other and the original parent cell, whereas meiosis produces four haploid (n) gametes that are genetically unique from each other and the original parent (germ) cell.

-Mitosis involves one cell division, whereas meiosis involves two cell divisions.

-meiosis occurs to reproductive cells only, while Mitosis occurs to other body cells than reproductive cells.

11.APPLICATIONS OF GENETICS.

Genetics is a field of science that includes the study of inheritance and genetic variations by investigating the DNA, genes, genome, chromosome and other components of it.

Applications of genetic studies:

Disease diagnosis and characterization

Identification of pathogenic mutations

Preserving biodiversity

Identification and characterization of microbes

Studying inheritance pattern

Creating advanced plant species

Creating genetically modified organisms

DNA fingerprinting

Antibiotic resistance study and drug discovery

Genetic/DNA medicines

Genetic engineering

Crop improvement

Animal and Plant Breeding program

Infectious disease diagnosis

Screening, prognosis, and diagnosis of cancer.

12.THE BRAIN.

Brain, the mass of nerve tissue in the anterior end of an organism. The brain integrates sensory information and directs motor responses; in higher vertebrates it is also the centre of learning. The human brain weighs approximately 1.4 kg (3 pounds) and is made up of billions of cells called neurons. Junctions between neurons, known as synapses, enable electrical and chemical messages to be transmitted from one neuron to the next in the brain, a process that underlies basic sensory functions and that is critical to learning, memory and thought formation, and other cognitive activities.

Cerebrum

The cerebrum (front of brain) comprises gray matter (the cerebral cortex) and white matter at its center. The largest part of the brain, the cerebrum initiates and coordinates movement and regulates temperature. Other areas of the cerebrum enable speech, judgment, thinking and reasoning, problem-solving, emotions and learning. Other functions relate to vision, hearing, touch and other senses.

Midbrain.

The midbrain (or mesencephalon) is a very complex structure with a range of different neuron clusters (nuclei and colliculi), neural pathways and other structures. These features facilitate various functions, from hearing and movement to calculating responses and environmental changes.

Medulla.

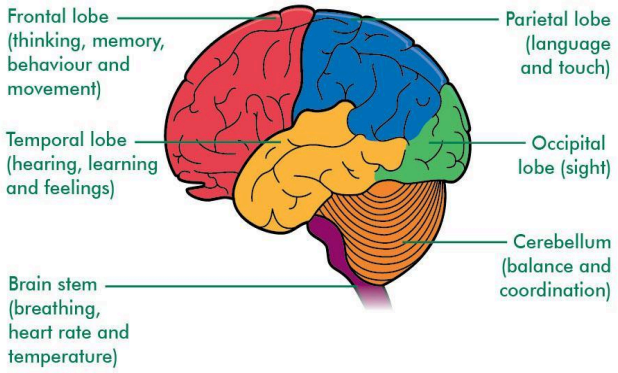
At the bottom of the brainstem, the medulla is where the brain meets the spinal cord. The medulla is essential to survival, with functions that regulate many bodily activities, including heart rhythm, breathing, blood flow, and oxygen and carbon dioxide levels. The medulla produces reflexive activities such as sneezing, vomiting, coughing and swallowing.

Cerebellum.

Its function is to coordinate voluntary muscle movements and to maintain posture, balance and equilibrium. New studies are exploring the cerebellum’s roles in thought, emotions and social behavior, as well as its possible involvement in addiction, autism and schizophrenia.

Hypothalamus

The hypothalamus is located above the pituitary gland and sends it chemical messages that control its function. It regulates body temperature, synchronizes sleep patterns, controls hunger and thirst and also plays a role in some aspects of memory and emotion.



http://www.macmillan.org.uk/_images/Brain-lobes-functions-labelled_tcm9-155258jpg.

13.

methods that prevent the formation of gametes

-contraceptive pills

-implant

- Injection or “shot”—Women get shots of the hormone progestin in the buttocks or arm every three months from their doctor.

-Patch—This skin patch is worn on the lower abdomen, buttocks, or upper body (but not on the breasts). This method is prescribed by a doctor. It releases hormones progestin and estrogen into the bloodstream

methods which prevents the union of gametes

-Diaphragm or cervical cap—Each of these barrier methods are placed inside the vagina to cover the cervix to block sperm. The diaphragm is shaped like a shallow cup. The cervical cap is a thimble-shaped cup. Before sexual intercourse, you insert them with spermicide to block or kill sperm.

-Sponge—The contraceptive sponge contains spermicide and is placed in the vagina where it fits over the cervix. The sponge works for up to 24 hours, and must be left in the vagina for at least 6 hours after the last act of intercourse, at which time it is removed and discarded.

-Male condom—Worn by the man, a male condom keeps sperm from getting into a woman’s body. Latex condoms, the most common type, help prevent pregnancy, and HIV and other STDs, as do the newer synthetic condoms.

-Spermicides—These products work by killing sperm and come in several forms—foam, gel, cream, film, suppository, or tablet. They are placed in the vagina no more than one hour before intercourse.

Methods used to prevent implantation.

-Copper T intrauterine device (IUD)—This IUD is a small device that is shaped in the form of a “T.” Your doctor places it inside the uterus to prevent pregnancy. It can stay in your uterus for up to 10 years

-Levonorgestrel intrauterine system (LNG IUD)—The LNG IUD is a small T-shaped device like the Copper T IUD. It is placed inside the uterus by a doctor. It releases a small amount of progestin each day to keep you from getting pregnant.