BIOLOGY 1 2008 - NECTA FORM FOUR

Solutions from: Maktaba by TETEA

By Yohana Lazaro

1

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

2.

i	ii	iii	iv	v	vi	vii	viii	ix	x
R	A	D	E	T	O	J	P	B	H

3.(a)(i)Pranatal care is the Pregnancy care which prevents potential health problems throughout the course of the pregnancy and promotes the mother and child's health alike.

-Postnatal care (PNC) is the care given to the mother and her newborn baby immediately after the birth and for the first six weeks of life.

(ii)-female genital multilation,FGM

-forced marriage

-early marriage

-nutritional taboos.

(b)proper ways of waste disposal

-pit latrine

-burying

-burning

-incinerating

4.(a)(i) Classification is the process of grouping organisms basing on their similarities and their Differences.

(ii)Advantages of natural system are given below :

(i) Only related organisms are kept in a group.

(ii) Unrelated organisms are kept in separate groups.

(iii) It shows natural relatioships among the organisms.

(iv) It shows possible origin of different taxa.

Disadvantages of natural system are given below :

(i) There is more emphasis given on natural character.

(ii) In this system several related families are separate and unrelated families are put together.

(iii) Evolutionary basis is neglected.

(b)Leaves adapt the environmental conditions to increase the rate of photosynthesis.

The adaptations are as follows:

-Large surface area: To increase the light harvesting.

-Leaf arrangement: To increase the absorption of sunlight.

-Cuticle and upper epidermis: The presence of cuticle prevents the loss of water. Upper epidermis does not possess chloroplast so that light passes through them easily.

-Numerous stomata: They allows more carbon dioxide to diffuse for photosynthesis. The lower epidermis possesses numerous stomata to prevent excess transpiration.

-The thinness of leaves: It allows gases to reach easily and to ensure light penetrates into the middle of the leaf.

-Chloroplast: Mesophyll cells and guard cells contain a large amount of chloroplast for photosynthesis.

-Extensive Vein system: Veins contain xylem for transportation of water and mineral toward leaves and phloem for the transportation of sugar away from the leaves. It helps in rapid transportation to and from mesophyll cells.

5(a)(i)A mycelium, B sporangium, C hypha, D spores.

(ii)A has a function to develops from the fungal hyphae. While mycelia plays an important role in reproduction (vegetative parts of fungi), they are also involved in the decomposition of organic matter, which makes them very important in nature.

B is used to store spores.

(b)it means that they feed on dead organic matters.

6.(a)(i) Epigeal germination is a type of germination whereby the seed leaves or the cotyledons are brought on to the surface or above the soil along with the shoot during germination. This is usually due to rapid elongation and curved-like shape of the hypocotyl. This change in the shape or curvature of the hypocotyl allows the seed leaves or the cotyledons to come above the surface of the soil.

Hypogeal germination is a type of germination whereby the seed leaves or the cotyledons remain below the soil surface during germination. This is due to the rapid development and growth in length of the epicotyl.

(ii) conditions necessary for seed germination.

-moisture

-optimum temperature

-oxygen.

(b)changes occurs during seed germination,

(1) Imbibition (2) Respiration (3) Effect of Light on Seed Germination(4) Mobilization of Reserves during Seed Germination and Role of Growth Regulators and (5) Development of Embryo Axis into Seedling.

7.(a)A root hair cell, B sperm cell, C motor neurone cell

(b)(i)A absorbs water and minerals from the ground

B help in human fertilization

C transfers impulses from brain back to the body.

(ii)A has large vacuole.

B are numerous in number

Cit has the nucleus that control the whole process.

(iii)an ovam.

(iv)by fission process.

8(a)Natural selection is the idea that species that acquire adaptations favorable for their environment will pass those adaptations to their offspring.That isn't always the case. Individuals that survive aren't always the strongest, fastest, or smartest. By that definition, then, survival of the fittest might not be the best way to describe natural selection as it applies to evolution. Darwin didn't mean it in those terms

when he used it in his republished book. He intended "fittest" to mean the members of the species best suited for the immediate environment, the basis of the idea of natural selection.

(b) weakness of lamarckism,

1.There is no experimental proof of the lamarckism

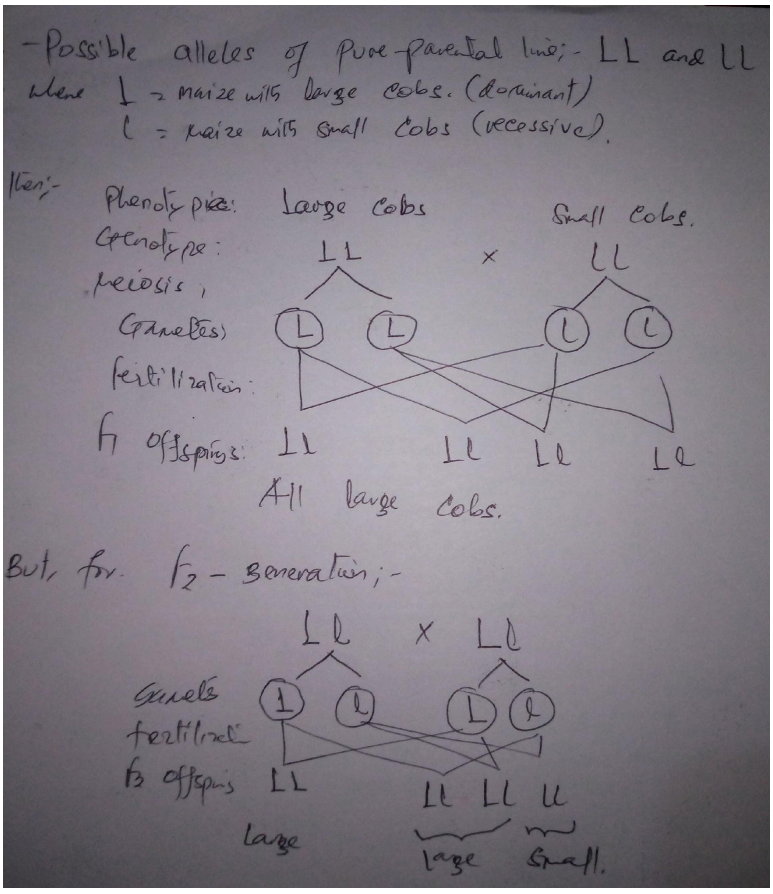
2.New organs are not formed in organisms by their wish or requirement

3.It is not necessary that an the acquired characters transmit into new generation

9.(a)A test cross is a way to explore the genotpye of an organism. Early use of the test cross was as an experimental mating test used to determine what alleles are present in the genotype. An organism's genetic makeup is called its genotype, and it reflects all of the alleles, or forms of the gene, that are carried by the organism. Consequently, a test cross can help determine whether a dominant phenotype is homozygous or heterozygous for a specific allele.

Backcross, the mating of a hybrid organism (offspring of genetically unlike parents) with one of its parents or with an organism genetically similar to the parent. The backcross is useful in genetics studies for isolating (separating out) certain characteristics in a related group of animals or plants.

(b)(i)



(ii)agents of pollination

-rainfall

-wind

-insects

-animals

10.when temperature rises, the body increases the flow of blood on the skin surface,taking heat from the bodyto the skin surface.this reduce or make the heat to ratain it's optimum condition.

12.

photosynthesis, the process by which green plants and certain other organisms transform light energy into chemical energy. During photosynthesis in green plants, light energy is captured and used to convert water, carbon dioxide, and minerals into oxygen and energy-rich organic compounds.

$$CO_2 + 2H_2O \xrightarrow[\text{green plants}]{\text{light}} (CH_2O) + O_2 + H_2O.$$

This equation is merely a summary statement, for the process of photosynthesis actually involves numerous reactions catalyzed by enzymes (organic catalysts). These reactions occur in two stages: the “light” stage, consisting of photochemical (i.e., light-capturing) reactions; and the “dark” stage, comprising chemical reactions controlled by enzymes. During the first stage, the energy of light is absorbed and used to drive a series of electron transfers, resulting in the synthesis of ATP and the electron-donor-reduced nicotine adenine dinucleotide phosphate (NADPH). During the dark stage, the ATP and NADPH formed in the light-capturing reactions are used to reduce carbon dioxide to organic carbon compounds. This assimilation of inorganic carbon into organic compounds is called carbon fixation.

Requirements of photosynthesis process are carbon dioxide,water and sunlight.

Importances of photosynthesis

oxygen in the atmosphere.

It contributes to the carbon cycle between the earth, the oceans, plants and animals.

It contributes to the symbiotic relationship between plants, humans and animals.

It directly or indirectly affects most life on Earth.

It serves as the primary energy process for most trees and plants.

13.

The kidneys filter unwanted substances from the blood and produce urine to excrete them. There are three main steps of urine formation: glomerular filtration, reabsorption, and secretion. These processes ensure that only waste and excess water are removed from the body.

1. The Glomerulus Filters Water and Other Substances from the Bloodstream.

Each kidney contains over 1 million tiny structures called nephrons. Each nephron has a glomerulus, the site of blood filtration. The glomerulus is a network of capillaries surrounded by a cuplike structure, the glomerular capsule (or Bowman's capsule). As blood flows through the glomerulus, blood pressure pushes water and solutes from the capillaries into the capsule through a filtration membrane. This glomerular filtration begins the urine formation process.

2. The Filtration Membrane Keeps Blood Cells and Large Proteins in the Bloodstream

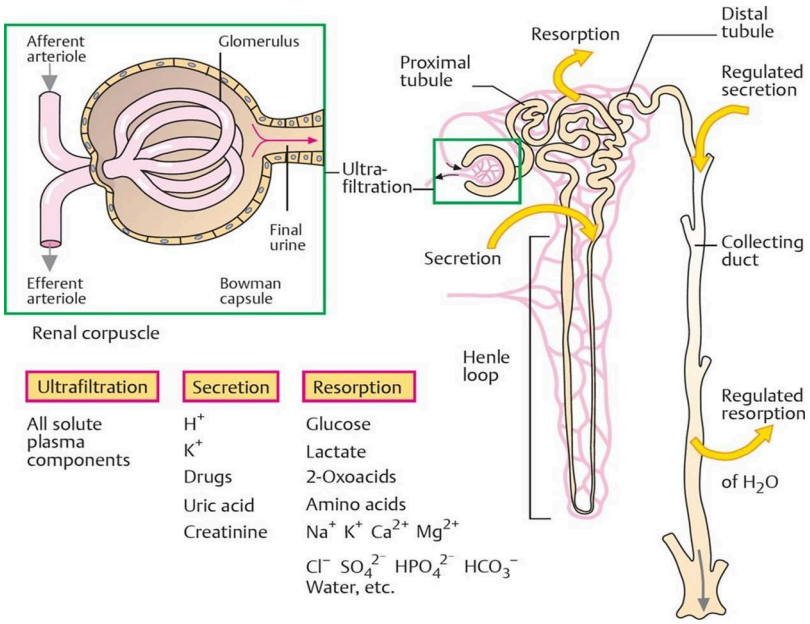
Inside the glomerulus, blood pressure pushes fluid from capillaries into the glomerular capsule through a specialized layer of cells. This layer, the filtration membrane, allows water and small solutes to pass but blocks blood cells and large proteins. Those components remain in the bloodstream. The filtrate (the fluid that has passed through the membrane) flows from the glomerular capsule further into the nephron.

3. Reabsorption Moves Nutrients and Water Back into the Bloodstream.

The glomerulus filters water and small solutes out of the bloodstream. The resulting filtrate contains waste, but also other substances the body needs: essential ions, glucose, amino acids, and smaller proteins. When the filtrate exits the glomerulus, it flows into a duct in the nephron called the renal tubule. As it moves, the needed substances and some water are reabsorbed through the tube wall into adjacent capillaries. This reabsorption of vital nutrients from the filtrate is the second step in urine creation.

4. Waste Ions and Hydrogen Ions Secreted from the Blood Complete the Formation of Urine.

The filtrate absorbed in the glomerulus flows through the renal tubule, where nutrients and water are reabsorbed into capillaries. At the same time, waste ions and hydrogen ions pass from the capillaries into the renal tubule. This process is called secretion. The secreted ions combine with the remaining filtrate and become urine. The urine flows out of the nephron tubule into a collecting duct. It passes out of the kidney through the renal pelvis, into the ureter, and down to the bladde.



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