BIOLOGY 1 1999 November - NECTA FORM FOUR

Solutions from: Maktaba by TETEA

By Yohana Lazaro

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

2.

i	ii	iii	iv	v	vi	vii	viii	ix	x
F	J	P	M	K	C	G	S	A	Q

3.(a) As a field of science, biology helps us understand the living world and the ways its many species (including humans) function, evolve, and interact. Advances in medicine, agriculture, biotechnology, and many other areas of biology have brought improvements in the quality of life.

(b)(i)bean plant

KINGDOM. Plantae

DIVISION.spermatophyta

CLASS. DICOTYLEDONAE.

(ii)toad

KINGDOM. FUNGIE

PHYLUM. chord at a

CLASS .amphibia

4. (a)(i)features of vill.

-Villi are single cell thick. Thus nutrients don't have to travel longer distance in order to diffuse into bloodstream. This increase the rate of diffusion. Hence absorption rate is also increased.

-Villi have rich network of blood capillaries . Thus a steep concentration gradient is maintained between inside of small intestine and blood.

Most important is: Apical membranes of Villi further form many finger-like projections called microvilli or brush borders. Villi together with it's microvilli tremendously increase surface area of absorption. And hence supports effective absorption of nutrients into blood.

-Villi have permeable membranes . Thus, nutrients can easily get their way through them.

(b)(i)-Diabetes insipidus will occur. Which is caused by a lack of antidiuretic hormone (ADH), also called vasopressin, which prevents dehydration, or the kidney's inability to respond to ADH. ADH enables the kidneys to retain water in the body.

(ii)Hemoglobin, the substance that gives color to red blood cells, is the substance that allows for the transport of oxygen throughout the body. Low hemoglobin levels lead to anemia, which causes symptoms like fatigue and trouble breathing.

5.(a)-Some legumes have the capability to solubilize in any other case unavailable phosphate by excreting organic acids from their roots, in addition to improving soil fertility.

- Legumes also assist to restoration of soil natural matter and limit pest and disease issues when used in rotation with nonleguminous crops.

-deep rooted plants helps to hold together the soil particles, hence prevent soil erosion.

(b)(i)Between A and B the mass decreased rapidy as time increased.

(ii) Between B and C the mass decrased gradually and finally was remained constant as time increased.

6. (a)-An endoskeleton is a skeleton that is found on the inside of the body of an animal. An endoskeleton occurs in chordates (including all the vertebrates). The vertebrate endoskeleton is made of cartilage and bone tissue.

-An exoskeleton is a skeleton that develops on the outside of the body of an animal.Arthropods, crustaceans and molluscs all have an exoskeleton. The minerals making up the exoskeleton can vary among different animals, with insects and crustaceans having chitin present, and molluscs having calcium carbonate present.

(b)(i)helps then to move in water.

(ii)helps to deriver oxygen directly to the insect's body tissues.

(iii)provides the smooth surface to the aquatic bodies by reducing the resistance in water by reducing friction and makes movement easy.

(iv)Sunken means hidden stomata or stomata those which are not directly exposed to surface. It is in a small pit, which protects the escaping water vapour from air currents, decreasing water loss from the

leaf. This sunken stomata condition found in leaves of succulent xerophytes (hot desert plants) facing high temperature condition and gymnosperms.

7. (a)(i)funicle is the stalk that attaches an ovule or seed to the wall of the ovary.

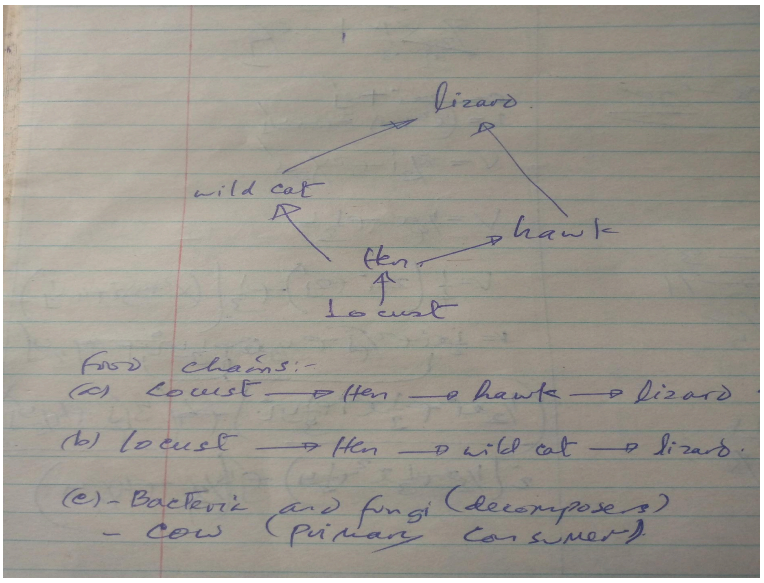
(ii)male urethra helps to transfer semen during sexual intercourse.

(iii)cerebrum itself contains the major lobes of the brain and is responsible for receiving and giving meaning to information from the sense organs, as well as controlling the body.

(b)due to high concentration of salt in fish than in water they absorbed much water in their bodies that why they died.

8. (a)food chain, in ecology, the sequence of transfers of matter and energy in the form of food from organism to organism.

(b)



9. (a)(i)Guttation serves as a measure of injurious elements in plants and also carries the biological significance of elimination of unwanted products with it Therefore, one way in which plants are able to dispose of such compounds is via the mechanism of guttation.

(ii)Grafting is a technique that joins two plants into one. In general, a wound is created on one of the plants, and the other is inserted into that wound so each plant's tissues can grow together.

(iii)Parthenogenesis is the spontaneous development of an embryo from an unfertilized egg cell. It naturally occurs in a variety of plant and animal species.

(b)-fermentation is used for preservation in a process that produces lactic acid found in such sour foods as pickled cucumbers, kombucha, kimchi, and yogurt, as well as for producing alcoholic beverages such as wine and bee.

-can also increase the availability of vitamins and minerals for our bodies to absorb.

10.(a)(i) meristem found in plants

-fins found on fishes

-diaphram found in animals.

(b)Pollution is the introduction of harmful materials into the environment. These harmful materials are called pollutants.

-When sulfur dioxide combines with water and air, it forms sulfuric acid, which is the main component of acid rain.

-High levels of nitrogen dioxide are also harmful to vegetation—damaging foliage, decreasing growth or reducing crop yields.

Nitrogen dioxide can fade and discolour furnishings and fabrics, reduce visibility, and react with surfaces.

11. (a) disease is a particular abnormal condition, a disorder of a structure or function, that affects part or all of an organism.

It is often construed as a medical condition associated with specific symptoms and signs.

It may be caused by external factors, such as pathogens, or it may be caused by internal dysfunctions, such as autoimmune diseases. Diseases usually affect people not only physically, but also emotionally, as contracting and living with a disease can alter one's perspective on life as well as one's personality.

A diseased organism commonly exhibits signs or symptoms that are indicative of its abnormal state. Thus, the normal condition of an organism must be understood in order to recognize the hallmarks of disease. Nevertheless, a sharp demarcation between disease and health is not always apparent.

There are four main types of disease:

- infectious disease

- deficiency disease

- genetic disease

- physiological disease.

Diseases can also be classified as communicable and noncommunicable.

In many cases, terms such as disease, disorder, morbidity, and illness are used interchangeably

Infectious diseases are transmitted from person to person by direct or indirect contact. Certain types of viruses, bacteria, parasites, and fungi can all cause infectious disease. Malaria, measles, and respiratory illnesses are examples of infectious diseases.

Simple preventative measures, such as frequent hand washing, can cut down on disease transmission.

Direct contact

Infectious diseases are often spread through direct contact. Types of direct contact include:

1. Person-to-person contact

Infectious diseases are commonly transmitted through direct person-to-person contact. Transmission occurs when an infected person touches or exchanges body fluids with someone else. This can happen before an infected person is aware of the illness. Sexually transmitted diseases (STDs) can be transmitted this way.

Pregnant women can also transmit infectious diseases to their unborn children via the placenta. Some STDs, including gonorrhea, can be passed from mother to baby during childbirth.

2. Droplet spread

The spray of droplets during coughing and sneezing can spread an infectious disease. You can even infect another person through droplets created when you speak. Since droplets fall to the ground within a few feet, this type of transmission requires close proximity.

Indirect contact

Infectious diseases can also be spread indirectly through the air and other mechanisms. For example:

1. Airborne transmission

Some infectious agents can travel long distances and remain suspended in the air for an extended period of time. You can catch a disease like measles by entering a room after someone with measles has departed.

2. Contaminated objects

Some organisms can live on objects for a short time. If you touch an object, such as a doorknob, soon after an infected person, you might be exposed to infection. Transmission occurs when you touch your mouth, nose, or eyes before thoroughly washing your hands.

Germs can also be spread through contaminated blood products and medical supplies.

3. Food and drinking water

Infectious diseases can be transmitted via contaminated food and water. E. coli is often transmitted through improperly handled produce or undercooked meat. Improperly canned foods can create an environment ripe for Clostridium botulinum, which can lead to botulism.

4. Animal-to-person contact

Some infectious diseases can be transmitted from an animal to a person. This can happen when an infected animal bites or scratches you or when you handle animal waste. The Toxoplasma gondii parasite can be found in cat feces. Pregnant women and people with compromised immune systems should take extra care (disposable gloves and good hand washing) when changing cat litter, or avoid it altogether.

5. Animal reservoirs

Animal-to-animal disease transmission can sometimes transfer to humans. Zoonosis occurs when diseases are transferred from animals to people. Zoonotic diseases include:

anthrax (from sheep)

rabies (from rodents and other mammals)

West Nile virus (from birds)

plague (from rodents)

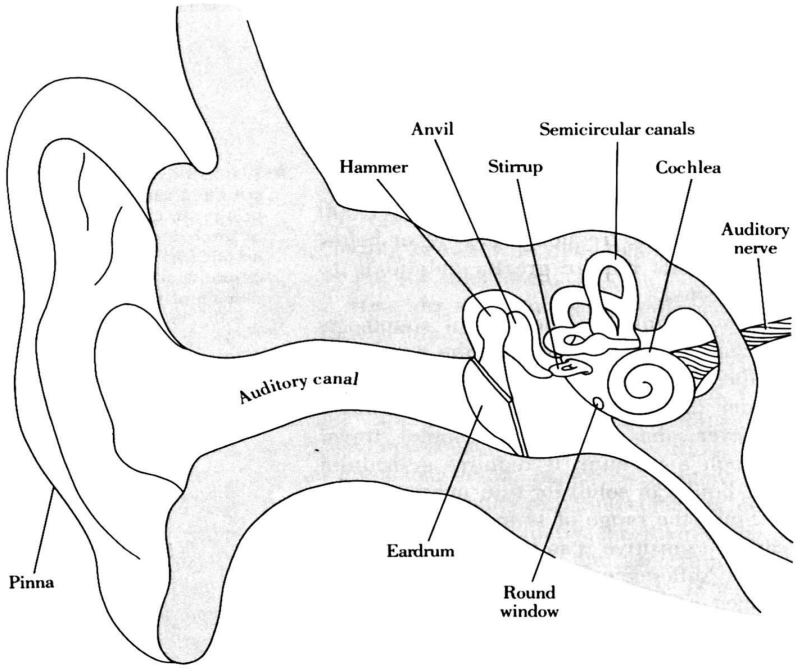
6. Insect bites (vector-borne disease)

Some zoonotic infectious agents are transmitted by insects, especially those that suck blood. These include mosquitos, fleas, and ticks. The insects become infected when they feed on infected hosts, such as birds, animals, and humans. The disease is then transmitted when the insect bites a new host. Malaria, West Nile virus, and Lyme disease are all spread this way.

7. Environmental reservoirs

Soil, water, and vegetation containing infectious organisms can also be transferred to people. Hookworm, for example, is transmitted through contaminated soil. Legionnaires' disease is an example of a disease that can be spread by water that supplies cooling towers and evaporative condensers.

12.MAMMALIAN EAR.



www.pinterest.com

Mechanism of hearing,

. Sound waves enter the outer ear and travel through the external auditory canal until they reach the tympanic membrane, causing the membrane and the attached chain of auditory ossicles to vibrate. The motion of the stapes against the oval window sets up waves in the fluids of the cochlea, causing the basilar membrane to vibrate. This stimulates the sensory cells of the organ of Corti, atop the basilar membrane, to send nerve impulses to the brain.

13.(a)natural methods of adding mineral nutrients to the soil,

-planting leguminous plants

-by crop rotation

-by decaying the leaves falling down during shading.

-by adding manual fertilizer.

Artifcial methods of adding mineral nutrients to the soil,

main is the use of fertilizers from industries like NPK.

(b)Ways our soil losses its fertility:

Soil fertility refers to the ability of a soil to sustain agricultural plant growth, that is, to provide plant habitat and result in sustained and consistent yields of high quality. It is important to safeguard the soil fertility to ensure profitable agribusiness ventures. Below are ways the soil losses fertility and the solutions to curb this losses.

Leaching:plant nutrients are moved in solution form to deeper soil horizon by percolation(movement of water downwards through soil spaces)

Solution- Apply Humipower in Fertilizer and manure. Only unavoidable leaching will occur.

Soil erosion: soil containing plant nutrients is transported away by water or wind..

Solution- use terracing, contour farming, plant cover crops, wind shielders, practice conservation agriculture.

Crop removal: in harvested farm produce.The nutrients essential for growth (N, P, K, Ca, S, Mg, B, Cl, Mn, Fe, Zn, Cu, Mo, Ni) are unavoidably lost when plants are harvested and removed.

Solution- apply Humipower in Fertilizer and organic manure. Inclusion of Organic manure is important. Practice crop rotation.

Volatilization: Gaseous escape of Nitrogen from the soil.

Solution- Apply Humipower. It will help hold the Nitrogen in plant available form and minimize the losses. Also Plant cover crop.

Denitrification: Biochemical reduction of nitrates to gaseous forms of Nitrogen.

Solution- when Nitrogen is converted to plant available form(Nitrates), Humipower will help hold it and avail them to the plants.

Loss of organic matter – Organic matter is responsible for imparting many benefits to topsoil, including increasing water-holding capacity, maintaining soil structure, ability to hold nutrients until needed by plants, and increasing permeability to rainfall. Organic matter is lost mainly through environmental factors like wind, erosion and over cultivation, poor agricultural practices.

Solution- To make sure that organic matter doesn’t decay faster than it’s replenished, return crop residues to the soil and use cover crops to generate additional plant matter