BIOLOGY 1 2000 - NECTA FORM FOUR

Solutions from: Maktaba by TETEA

By Yohana Lazaro

1

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

2.

i	ii	iii	iv	v	vi	vii	viii	ix	x
N	Q	A	P	B	D	F	J	K	H

3.(a)(i) A light microscope is a biology laboratory instrument or tool, that uses visible light to detect and magnify very small objects, and enlarging them.

(ii)parts and their functions of ;light microscope

Eyepiece lens; the lens at the top that you look through, usually 10x or 15x power.

Tube: Connects the eyepiece to the objective lenses.

Arm: Supports the tube and connects it to the base.

Base: The bottom of the microscope, used for support.

Stage with stage clips: The flat platform where you place your slides. Stage clips hold the slides in place. If your microscope has a mechanical stage, you will be able to move the slide around by turning two knobs. One moves it left and right, the other moves it up and down.

Revolving Nosepiece or Turret: This is the part of the microscope that holds two or more objective lenses and can be rotated to easily change power.

(b) Microscope Safety

-Clean the microscope after each use. ...

-Handle glass slides carefully. ...

-Turn off the light source when the microscope is not in use. ...

-Be aware if your microscope has a mercury lamp. ...

-When carrying the microscope, always use two hands with one hand supporting the base and theother hand holding the arm.

4.(a)(i)

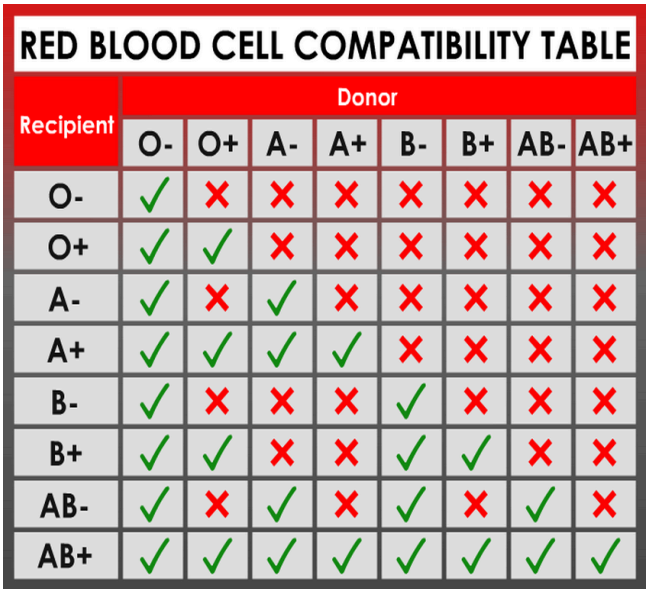
5(a) Excretion is a general term referring to the separation and throwing off of waste materials or toxic substances from the cells and tissues of a plant or animal. Osmoregulation refers to the

physiological processes that maintain a fixed concentration of cell membrane-impermeable molecules and ions in the fluid that surrounds cells.

(b(i) , insulin and glucagon help maintain a state called homeostasis in which conditions inside the body remain steady. When blood sugar is too high, the pancreas secretes more insulin. When blood sugar levels drop, the pancreas releases glucagon to raise them.

(ii) When the body is low in water, the pituitary gland secretes vasopressin (also called antidiuretic hormone) into the bloodstream. Vasopressin stimulates the kidneys to conserve water and excrete less urine.

6(a)(i)



www.chegg.com

(ii)Cardiac muscle of left ventricle is thicker because it pumps blood to other body parts.

(b)(i) During exercise there is an increase in physical activity and muscle cells respire more than they do when the body is at rest. The heart rate increases during exercise. The rate and depth of breathing increases - this makes sure that more oxygen is absorbed into the blood, and more carbon dioxide is removed from it.

(ii) At altitude, the reduced oxygen content of the blood induces breathing instability, with periods of deep and rapid breathing alternating with central apnea. This breathing pattern is called high-altitude periodic breathing (PB)

7(a)(i)-sunlight

-carbon dioxide

-chlorophyll

-water

(ii) Aim: To show that carbon dioxide is necessary for photosynthesis

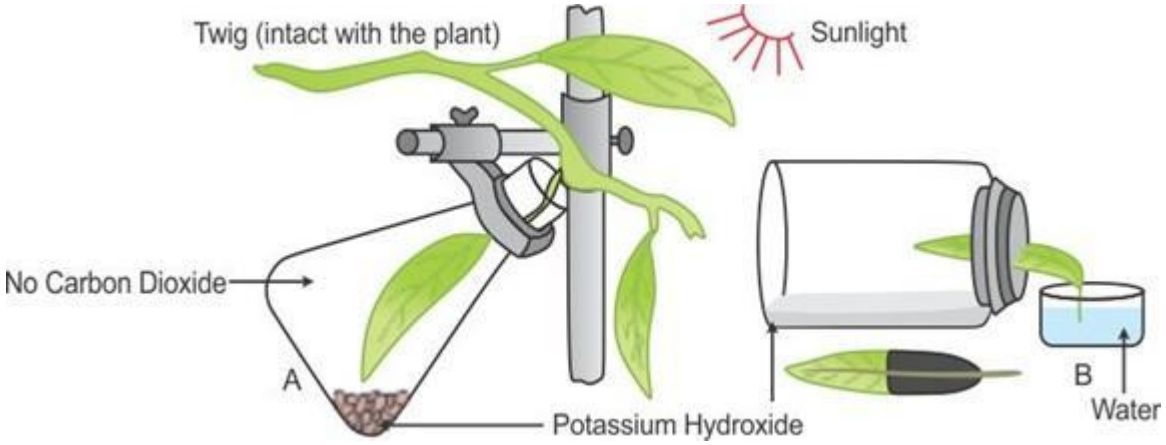
Procedure:

Take a plant with destarched leaves.

Insert one of its leaves in a conical flask containing potassium hydroxide.

Leave the plant in sunlight.

After a few hours, test the particular leaf and some other leaf of the same plant for the presence of starch.



Observation:

The leaf which was inserted in the conical flask stains brown, and the other leaf which is exposed to sunlight turns blue-black.

Inference:

Potassium hydroxide in the flask absorbs carbon dioxide; thus, due to the absence of CO_2, the leaf fails to produce starch which proves that carbon dioxide is necessary for photosynthesis.

(b) -Amylase is essential for the digestion of carbohydrates. It breaks down starches into sugars. Amylase is secreted by both the salivary glands and the pancreas.

-maltase is secreted in small intestine which breaks down maltose to glucose.

8(a)(i) wind

(ii) The main adaptations of wind pollinated plants are:

- The **flowers are small inconspicuous,**

- lacks fragrance

-lack nectar

-long feathery stigmas.

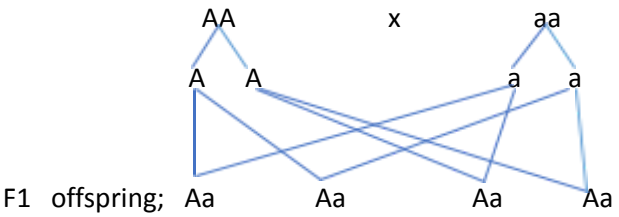
- anthers shedding oodles of pollen onto the wind

(b) because it's protected by amniotic fluid found in amniotic cavity in the uterus wall and supply nutrition by uterus vessels through umbilical cord.

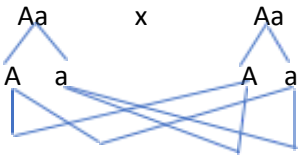
9.(a)(i)-people suffering the disease genotype is ***aa***

-people who do not suffer has a genotype of ***Aa***

(ii) F1 generation,



To get F2, self-cross F1



F2 offspring AA Aa Aa aa

Ratio required is 1:2

(b) The main difference between test cross and the backcross is that **test cross is used to discriminate the genotype of an individual** which is phenotypically dominant whereas a backcross is used to recover an elite genotype from a parent which bears an elite genotype.

10(a)(i)-phototropism

-geotropism

(ii)-light

-gravity

(b)the plants will grow to follow the light as response to light, also will grow roots down in response to gravity.

-the orientation of the plant does not affect the growing responses of the plant.

(c)-helps to form carbohydrates to plant

-helps to hold firmly the plant on the soil

11.INSECTS

-Biological control

is the use of predators and parasitoids to reduce the population of pests. When pests are threatening a crop, these beneficial insects can be released to eat the pest and prevent further damage. In some cases, insects that eat certain weeds can be released to keep the weed from spreading.

-food for human

insects have served as a food source for peopl

-medicinal use

Insects, or chemicals extracted from them have been used for thousands of years to help us with medical issue

-pollination

Over 75% of all flowering plants, and 75% of our crops rely on animals for to carry pollen from one flower to another. Most of these pollinators are insects. Most of us think of honeybees when we hear the word “pollinator”. But, its not just honeybees that pollinate plants, other bees (native bees), butterflies, moths, beetles, and flies.

-recycling

Insects that feed on dead or dying plant tissues. There are many, soil- and wood-inhabiting species that shred leaves or tunnel in dead wood. This helps plant materials to decay quickly. Over time, decay creates humus, a type of soil rich in organic matter.

-useful products

Honey. As you know, this is a sweet substance made by honey bees from the nectar of plants. Honey bees are very hard working insects, and they have to visit more than 2 million flowers to get enough nectar to make just 1 pound of honey. Bees make and store honey in the comb in their hive. It is used for food when flowers are not growing. Bee keepers take the excess honey from the hives, extract it from the comb, and bottle it for sale.

Silk. This material is produced by the salivary glands of certain insects, primarily caterpillars that use it to protect themselves as they enter the vulnerable pupal to change from a caterpillar to a moth or butterfly.

nsect bites generally have a couple harmful effects -- irritation and illness. The less severe effect is the simple irritation, swelling and pain that sometimes come from bites by certain insects such as mosquitoes, bees and some spider.

Several types of insects have harmful effects on the growth and development of new and budding plants. They puncture the soft tissues and suck out the juices.

12. METHODS USED TO PREVENT PREGNANCY

- The Condom.

- The Oral Contraceptive Pill.
- Intrauterine Device (IUD)
- The Contraceptive Implant.
- The Contraceptive Injection.
- Emergency Contraception Pill (The 'Morning After' Pill
- Contraceptive Ring.
- Diaphragm

13.

PLANT ROOTS.

Roots have hairlike projections called root hairs protruding from their surface. These root hairs help the plant absorb more nutrients and water because they increase the available surface area as they are numerous in number.

For Mammals,

VILLUS

The **villi** in the small intestine are large in the number, hence provide a large surface area with an extensive network of blood capillaries. This makes the villi well adapted to absorb the products of digestion by diffusion and active transport. Each villus is covered in many microscopic microvilli.

ALVEOLE.

Surfaces where O2 diffuses into the blood and CO2 diffuses out of the blood. Each lung contains millions of these sacs. The small round alveoli allow for an amazingly large surface area for **this gas exchange to take place**. Therefore, the greater the surface area, the more gas exchange can occur.