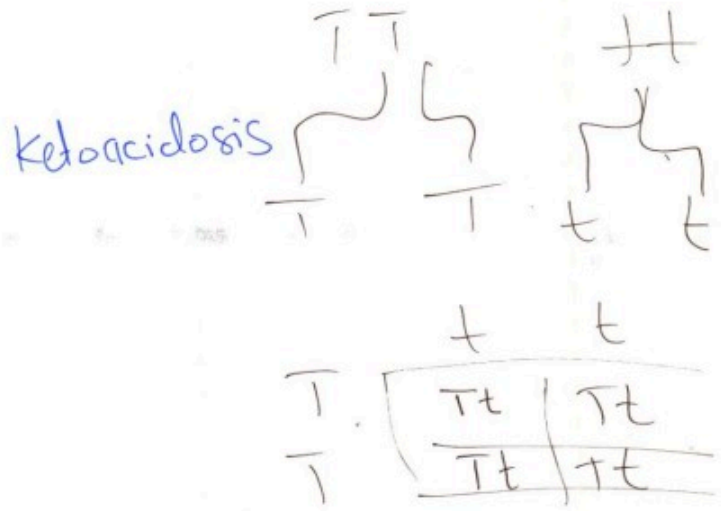



Ketoacidosis
T T
T T
t t
t t
T
T
Tt Tt
Tt Tt

Use for rough work

Q. No. 2 Part (i)

Stimulus:

The response to any change either it's inside or outside of the body is known as stimulus.

Examples:

Stimulus can either be external or internal:

1) Response to external changes such as temperature.
2) Another example can be of hunger which is internal.

Q. No. 2 Part (ii)

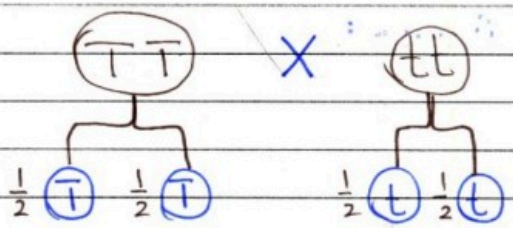
Budding:

Budding is a type of asexual reproduction in which an outgrowth or bud is formed on the body of the parent organism. Over time, it grows and eventually is separated from the parent organism. This leads to the formation of a new organism.

It's best example is Hydra.

Q. No. 2 Part (iii)

Cross Fertilization:



	½ t	½ t
½ T	¼ Tt	¼ Tt
½ T	¼ Tt	¼ Tt

Results:

Phenotype: 100% tall tea plants.

Genotype: 100% heterozygous tall tea plants.

Q. No. 2 Part (iv)

Role of Immune System:

1) Identifying and Recognizing Pathogens: Identifying and recognizing pathogens and foreign substances that have entered into the body
2) Activation of Immune Response: Activation of immune response against pathogens and foreign substances.
3) Elimination of Pathogens: Eliminating and destroying pathogens recognized by the immune system.

Q. No. 2 Part (v)

Treatment:

Myocardial infraction can be treated through bypass surgery, in which an artery from another part of the body is grafted into the heart after removal of the blocked artery.

Preventive Measures:

1) Avoid Smoking.
2) Avoid Stress.
3) Avoid oil and cholestrol rich foods.

Q. No. 2 Part (vi)

Bronchitis:

Bronchitis is the over-inflammation of bronchi and bronchioles in the respiratory track.

Cause:

Bronchitis is mainly caused by smoking and to a lesser extent by pollution.

Symptoms:

It's main symptom is breathlessness and severe coughing.

Q. No. 2 Part (vii)

Spermatogenisis: It is a process involving formation of gametes in male. It starts from puberty. Some cells in testes divide by mitosis to form primary spermatocytes. One of primary spermatocyte undergoes mieosis I to form two haploid secondary spermatocytes. Secondary spermatocytes then undergo mieosis II to form four haploid cells called spermatids. These are non-motile and undergo changes to become motile. Structures such as acrosome, tail and a mitochondrial ring are formed. This leads to formation of sperms.

Q. No. 2 Part (viii)

Blood Clotting:

1) **Injured Vessel:** Blood vessel injured or ruptured which causes bleeding.
2) **Constriction of Blood Vessel:** Blood Vessel constricts to prevent blood loss.
3) **Activation of Platelets:** Platelets are activated and more platelets are attracted towards the injuring.
4) **Platelet Plug Formation:** Platelets stick to the injury site forming a platelet plug.
5) **Fibrin Clot Formation:** Platelets disintegrate at injury site to form a fibrin clot. This clot acts as a barrier preventing pathogen entry.

Q. No. 2 Part (ix)

Pathogen	Type	Example
1) Bacteria	Salmonella Typhi	Typhoid
2) Virus	Corona Virus - SARS-CoV2	COVID-19
3) Fungi	Dermatophytes	Ringworm

Q. No. 2 Part (x)

	Components	Inspired Air	Expired Air
1	Oxygen	21 ·/·	16 ·/·
2	Carbon dioxide	0·04 ·/·	4 ·/·
3	Nitrogen	79 ·/·	79 ·/·
4	Water Vapour	Variable	Saturated
5	Temperature	Variable	Body Temperature
6	Dust Particles	Variable	Little, if any

Q. No. 2 Part (xi)

Glomelular Filtration:

Small molecules in the blood return to the glomerular wall as a result of blood pressure. Molecules such as glucose, amino acids, uric acid and water filter into the glomerulus. This is known as glomerular filtrate. Blood cells and protiens are too large to become part of this filtrate so they are reused by the body.

Q. No. 3 (Page 1)

Diabetes:

Definition: Diabetes is a disorder of insulin producing cells in the pancreas.

Types:

Type-1 diabetes: It is an autoimmune disease in which insulin producing cells in the pancreas (Beta cells) are destroyed.

Type-2 diabetes: It is a type of diabetes which results from insulin resistance and impaired insulin secretion.

Gestational Diabetes: It is a special type of diabetes which only develops during pregnancy. It's effects will reverse shortly after delievry. Proper management includes effective diet and lifestyle changes.

Q. No. 3 (Page 2)

Diabetes Mellatis: This happen when specialized cells called Islets of Langerhans in the pancreas donot perform their function properly. This leads to high blood glucose level and needs proper management.

Effects:

Short-term effects: It's shoot term effects include fatigue, muscle aches, vomitting, nausea, blurred vision and increased thirst.

Long-term effects: It's long-term effects include high blood pressure, high blood sugar level, high cholestrol level, high lipid level, nerve damage, reting damage, ketoacidosis and long term muscle damage.

Q. No. 4 (Page 1)

Breathing:

Breathing is a mechanical process. It is based on two steps.

1) Inhalation or inspiration
2) Expiration or exhalation

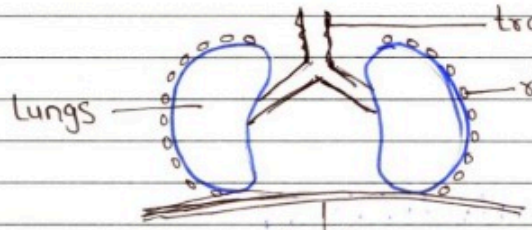
Inhalation:

The diaphragm contracts. This causes the diaphragm to move downward.

The ribs and intercoastal muscles move upwards and outwards.

The volume in the lung increases, causing a decrease in air pressure.

Air moves into the lungs from nose or mouth.



diaphragm moves downwards

INHALATION

Q. No. 4 (Page 2)

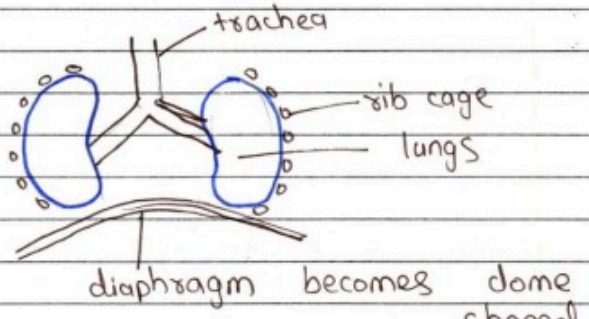
Exhalation:

The diaphragm relaxes. This causes the diaphragm to become normal, domed shape.

The ribs and intercoastal muscles moves inwards and downwards.

The volume of the lung decreases causing an ~~decrease~~ increase in air pressure.

Air moves out from the mouth.



EXHALATION

Q. No. 5 (Page 1)

Stomach:

Structure:

Stomach is a dilated organ of the digestive system and is like a J-shaped organ. It is located at the left of the abdomen just beneath the diaphragm.

The opening of oesophagus into the stomach is known as cardiac opening which is surrounded by muscles known as cardiac sphincter.

The opening of stomach into the duodenum is called pyloric opening and the region around it is known as pyloric region, which is guarded by muscles known as pyloric sphincter.

Digestion in Stomach:

The stomach contains mucous membrance, hydrochloric acid, pepsin and renin.

Q. No. 5 (Page 2)

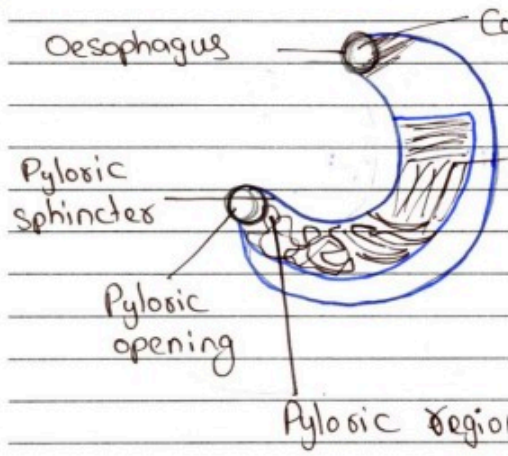
Mucous Membrane: The stomach wall is lined with mucous membrane so that it doesn't get dissolved by acids such as pepsin.

Hydrochloric Acid: Hydrochloric acid performs several functions.

1) It kills many microorganisms.
2) It converts inactive form pepsinogen into its active form pepsin.
3) It breaks down large food molecules into small soluble molecules.

Pepsin: Pepsin is secreted as pepsinogen. Hydrochloric converts pepsinogen into pepsin. It breaks down protien into polypeptides and peptides.

Renin: It is only secreted in infants. It helps in digestion of milk protien.



STOMACH

Q. No. 6 (Page 1)

White Blood Cells:

White blood cells are regular in shape and contains a nucleas. White Blood Cells are divided into two types:

1) Granular leukocytes
2) Agranular leukocytes

1) Granular Leukocytes:

Granular leukocytes contain five granules and a nucleas in their cytoplasm. Granular leukocytes are fusther characterized into:

Neutrophils: They destroy pathogens by engulfing them through phagocytosis.

Eosenophils: They are involved in the control of allergic reactions.

Basophils: They play a role in engulfing pathogens and controlling allergic responses.

Q. No. 6 (Page 2)

Agranular Leukocytes: They are a specialized type of white blood cells. They are further divided into:

Macrophages: They destroy pathogens and infected cells through phagocytosis.

Lymphocytes: They control allergic reactions and are further divided into.

T Lymphocytes: They provide specificity to target pathogens.

B Lymphocytes: They produce specific immune response for same pathogen upon future exposure.