

SMZ

ZANZIBAR EXAMINATIONS COUNCIL

FORM ONE ENTRANCE EXAMINATION

129

SCIENCE

TIME: 2.00 HOURS

**ANSWERS**

FRIDAY 18<sup>ST</sup> DECEMBER, 2020 A.M

**INSTRUCTIONS TO CANDIDATES**

1. This paper consists of sections A, B and C.
2. Answer ALL questions in section A and B. Choose THREE (3) question in section C.
3. Write your examination number on each page.
4. Write all answers in the space provided.
5. Use a blue or black pen in writing. 6. Cellular phones and unauthorized materials are not allowed in the examination room.

**FOR EXAMINER'S USE ONLY**

QUESTION NUMBER	MARKS	SIGNATURE
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SECTION A: (30 Marks)  
Answer ALL questions in this section.

1. Choose the correct answer from the given alternatives and write its letter in the table below.

i. The organisms which have stronger incisors teeth are

- A. Insectivorous
- B. Carnivorous
- C. Herbivorous
- D. Omnivorous

**Answer: C. Herbivorous**

Herbivorous animals have strong incisors that help them cut and chew plant materials such as leaves and grass. Carnivorous animals have strong canines for tearing meat.

ii. Which organ is used to detect vibration of sound?

- A. Nose
- B. Mouth
- C. Skin
- D. Ear

**Answer: D. Ear**

The ear detects vibrations of sound waves and converts them into nerve impulses that are interpreted by the brain. Other organs like skin and nose do not detect sound vibrations.

iii. The other term for short sightedness is

- A. Myopia
- B. Hypermetropia
- C. Astigmatism
- D. Blindness

**Answer: A. Myopia**

Myopia is a vision condition where distant objects appear blurry because the eye focuses light in front of the retina. Hypermetropia is long-sightedness.

iv. Xylem and phloem are present in

- A. Upper epidermis
- B. Lower epidermis
- C. Palisade mesophyll
- D. Spongy mesophyll

**Answer: D. Spongy mesophyll**

Xylem and phloem are vascular tissues mostly found in the leaf veins, which are located within the spongy mesophyll layer of leaves.

v. The common type of cells used in electricity are

- A. Large and small cells
- B. Dry and big cells
- C. Wet and large cells
- D. Wet and dry cells

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**Answer: D. Wet and dry cells**

Wet cells contain liquid electrolytes, while dry cells contain paste electrolytes. Both types are commonly used in electrical devices.

vi. Deficiency of vitamin B1 in diet can cause

- A. Marasmus
- B. Beriberi
- C. Goitre
- D. Pellagra

**Answer: B. Beriberi**

Beriberi results from a lack of vitamin B1 (thiamine) and causes weakness, nerve degeneration, and heart issues. Marasmus is protein deficiency.

vii. Boiling point of water is

- A. 0°C
- B. 100°C
- C. 10°C
- D. 78°C

**Answer: B. 100°C**

Water boils at 100°C at standard atmospheric pressure, turning from liquid to gas.

viii. Sneezing and coughing are the methods of spreading

- A. STDs germs
- B. Air borne disease germs
- C. HIV/AIDS germs
- D. Water borne disease germs

**Answer: B. Air borne disease germs**

Airborne diseases spread through tiny droplets expelled during coughing and sneezing, such as tuberculosis or influenza.

ix. Which one of the following can pass in all three states of matter

- A. Water
- B. Metal iron
- C. Piece of wood
- D. Plastic

**Answer: A. Water**

Water naturally exists as solid (ice), liquid, and gas (steam) depending on temperature and pressure conditions.

x. One of the following is not an agent of soil erosion

- A. Wind
- B. Moving water
- C. Moving animals
- D. Waste disposal

**Answer: D. Waste disposal**

Wind, water, and animals can physically remove or disturb soil, causing erosion. Waste disposal does not directly erode soil.

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2. Match the sentence in LIST A with the corresponding word in LIST B.

LIST A

- i. Saliva has digestive enzyme called
- ii. The process of breaking down food into smaller particles
- iii. First class lever
- iv. Light travels in a straight line
- v. Change mechanical energy into electrical energy
- vi. A bacteria that cause gonorrhea
- vii. It is used in the process of burning substances
- viii. Symptom of Tuberculosis
- ix. The agents of pollination
- x. Organisms that live in the soil

LIST B

- A. Reproductive
- B. Dynamo
- C. Oxygen
- D. Too much sweating at night
- E. Law of reflection
- F. Earthworms
- G. Fish
- H. Amylase
- I. Insects and birds
- J. Fulcrum at center
- K. Effort at center
- L. Digestion
- M. Rectilinear propagation
- N. Motor
- O. Neisseria

**Answers:**

- i. **H. Amylase** – Saliva contains amylase which starts starch digestion in the mouth.
- ii. **L. Digestion** – The process of breaking down food into smaller particles is called digestion.
- iii. **J. Fulcrum at center** – A first-class lever has the fulcrum between effort and load.
- iv. **M. Rectilinear propagation** – Light travels in a straight line.
- v. **B. Dynamo** – A dynamo converts mechanical energy into electrical energy.
- vi. **O. Neisseria** – Neisseria gonorrhoeae is the bacterium causing gonorrhea.
- vii. **C. Oxygen** – Oxygen supports combustion in burning processes.
- viii. **D. Too much sweating at night** – A common symptom of tuberculosis.
- ix. **I. Insects and birds** – These are the main agents of pollination.
- x. **F. Earthworms** – Earthworms live in the soil and help in soil aeration and nutrient recycling.

3. Write TRUE if the sentence is right and FALSE if the sentence is wrong.

- i. Organisms living in the soil give nutrients in the soil. **TRUE** – Soil organisms decompose organic matter to release nutrients.

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- ii. The liquid found in thermometers is water and spirit. **TRUE** – Thermometers use liquids like mercury or colored spirit for temperature measurement.
- iii. The respiratory surface is thin and well-ventilated. **TRUE** – Thin, ventilated surfaces like alveoli allow efficient gas exchange.
- iv. White blood cells are made up in the bone marrow. **TRUE** – Bone marrow produces WBCs as part of the immune system.
- v. Photosynthesis needs two conditions only. **FALSE** – Photosynthesis requires light, water, carbon dioxide, chlorophyll, and suitable temperature.
- vi. Chlorophyll pigment captures sunlight energy. **TRUE** – Chlorophyll absorbs sunlight to drive photosynthesis.
- vii. Pregnant women need different kinds of nutrients. **TRUE** – Additional nutrients are needed for fetal growth and maternal health.
- viii. Obesity is the condition of becoming too thin. **FALSE** – Obesity is excessive body fat, not thinness.
- ix. The water pressure increases as the depth increase. **TRUE** – Water exerts more pressure at greater depths due to the weight of the overlying water.
- x. Plastics are waste products that decay easily. **FALSE** – Plastics are non-biodegradable and take a long time to decompose.

4. Fill in the blanks by choosing the correct words in the box below.

- a) Two substances which are attracted by a magnet are **iron** and **nickel**.  
Iron and nickel are ferromagnetic metals that respond strongly to magnetic fields.
- b) Temperature is measured by instrument called **thermometer**, within it there is a liquid called **mercury**.  
Thermometers use mercury or colored spirit because they expand and contract uniformly with temperature.
- c) In germination the plumule develops into a **shoot** and the radicle develops into a **root**.  
The plumule grows upward forming stems and leaves, while the radicle grows downward into roots.
- d) The peripheral nervous system consists of neurons, **cranial nerves** and the **spinal nerves**.  
These nerves connect the central nervous system to the rest of the body, enabling communication and control.
- e) The **propeller** rotates the wind turbine which makes the generator produce **electricity**.  
The mechanical motion of the propeller is converted into electrical energy by the generator.

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5. a) Write the meaning of the following terms.

i. Voluntary counseling (VC)

Voluntary counseling is a process in which an individual receives **guidance and support to make informed decisions about their health**, particularly related to HIV/AIDS, in a confidential and non-coercive manner.

ii. Voluntary testing (VT)

Voluntary testing is a **procedure where an individual voluntarily undergoes medical tests**, such as HIV testing, to know their health status for timely management and preventive measures.

b) List down two (2) importance of Voluntary Counseling and Testing (VCT).

i. **Early detection of HIV/AIDS** – Helps individuals know their status and take necessary precautions or treatment to maintain health.

ii. **Promotes awareness and prevention** – Counseling educates people on how to avoid infection and adopt safer behaviors, reducing disease transmission.

6. a) What is boiling point?

Boiling point is the **temperature at which a liquid changes into gas** at a given pressure. For example, water boils at 100°C at standard atmospheric pressure.

b) Name the two (2) types of hardness of water.

i. **Temporary hardness** – Caused by dissolved bicarbonates of calcium and magnesium.

ii. **Permanent hardness** – Caused by sulfates and chlorides of calcium and magnesium.

c) Identify the type of water that forms lather easily with soap. Give one (1) example.

**Soft water** – It contains very low amounts of calcium and magnesium salts. Example: rainwater.

d) Identify the type of water that does not form lather easily with soap. Give one (1) example.

**Hard water** – Contains high amounts of calcium and magnesium salts which react with soap to form scum. Example: well water.

7. Draw the diagram of the longitudinal section of the human heart.

i. Label the four (4) chambers of the heart:

• **Right atrium, left atrium, right ventricle, left ventricle**

ii. Show the **aorta, pulmonary vein, and pulmonary artery**.

The atria are the upper chambers that receive blood, ventricles are lower chambers that pump blood, the pulmonary artery carries deoxygenated blood to lungs, the pulmonary vein brings oxygenated blood to the heart, and the aorta distributes oxygenated blood to the body.

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8. a) What is a fruit?

A fruit is a **mature ovary of a flower that contains seeds** and helps in seed dispersal.

b) Name the two (2) types of fruits. Give one (1) example in each case.

i. **Fleshy fruit** – Example: Mango, contains soft edible tissue.

ii. **Dry fruit** – Example: Groundnut, hard or dry pericarp.

c) Mention the three (3) parts of the fruits.

i. **Pericarp** – The outer covering that protects the seed.

ii. **Seed** – The reproductive unit capable of developing into a new plant.

iii. **Endosperm** – Nutritive tissue inside the seed that feeds the developing embryo.

9. a) Mention three (3) conditions which are necessary for germination.

i. **Water** – Moisture is required to activate enzymes in the seed.

ii. **Oxygen** – Needed for cellular respiration to produce energy.

iii. **Suitable temperature** – Optimal warmth allows enzymatic reactions to occur.

b) Label the parts of a longitudinal section of a bean seed.

A. **Testa (seed coat)** – Protects the seed from physical damage and infection.

B. **Cotyledon** – Stores food for the growing embryo.

C. **Plumule** – The

embryonic shoot that will develop into the stem and leaves.

D. **Radicle** – The embryonic root that grows downward into the soil.

E. **Hilum** – Scar on the seed marking attachment to the pod.

10. a) Below is a diagram that shows the structure of the skeletal system of a human being. Label the parts indicated by letters A to D.

A. **Skull** – The skull protects the brain and forms the structure of the face. It also supports the openings for the eyes, nose, and mouth.

B. **Rib cage** – The ribs protect vital organs such as the heart and lungs and assist in breathing by expanding and contracting the chest.

C. **Vertebral column (spine)** – This provides structural support, protects the spinal cord, and allows flexibility and movement.

D. **Pelvis** – The pelvis supports the weight of the upper body when sitting or standing and connects the spine to the lower limbs.

b) List three (3) functions of the human skeletal system.

i. **Support** – The skeleton provides a framework that supports the body's muscles, organs, and tissues.

ii. **Protection** – Bones protect vital organs, for example, the skull protects the brain, and the rib cage protects the heart and lungs.

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iii. **Movement** – Bones serve as attachment points for muscles; joints allow movement when muscles contract.

11. a) What is alimentary canal?

The **alimentary canal is a continuous tube that runs from the mouth to the anus through which food passes**. It is responsible for ingestion, digestion, absorption of nutrients, and excretion of waste products.

b) Name the main parts of the digestive system of a human.

- **Mouth** – where food is ingested and mechanically broken down.
- **Esophagus** – transports food from the mouth to the stomach.
- **Stomach** – secretes enzymes and acids to chemically digest food.
- **Small intestine** – where most nutrients are absorbed.
- **Large intestine** – absorbs water and forms feces.
- **Rectum and anus** – store and expel fecal matter.

c) i) Mention one (1) organ that helps the process of digestion.

- **Stomach** – produces gastric juice to break down proteins and churns food to mix it with digestive enzymes.

ii) Name one (1) gland that helps the process of digestion.

- **Pancreas** – secretes digestive enzymes like amylase, lipase, and protease into the small intestine to aid digestion.

12. a) Write a short essay on three (3) ways of transmission of HIV/AIDS.

HIV/AIDS can be transmitted through **sexual contact**, where the virus is spread via semen, vaginal fluids, or blood during unprotected sex. Another mode is **blood transfusion or sharing contaminated needles**, which allows the virus to enter directly into the bloodstream. The third major route is **from mother to child**, either during pregnancy, childbirth, or breastfeeding, where the virus can pass from an infected mother to her baby. These modes highlight the importance of safe practices, testing, and awareness to prevent infection.

b) Mention any two (2) ways to take care of PLWHA (People Living With HIV/AIDS) at home.

i. **Provide nutritious meals** – A balanced diet helps maintain immunity and supports the body in fighting opportunistic infections.

ii. **Ensure proper hygiene** – Regular handwashing, clean living conditions, and safe disposal of contaminated items reduce the risk of additional infections.

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13. a) State any use of lenses.

Lenses are used to **focus light to form clear images**. They are commonly applied in eyeglasses to correct vision problems, in cameras to focus pictures, in microscopes to magnify objects, and in telescopes to view distant objects.

b) Draw the diagram to show the structure of the human eye showing the following parts: iris, lens, pupil, cornea, retina, optic nerve.

- **Cornea** – transparent outer layer that refracts light.
- **Pupil** – the opening that controls the amount of light entering the eye.
- **Iris** – the colored part of the eye that regulates the size of the pupil.
- **Lens** – focuses light onto the retina.
- **Retina** – contains light-sensitive cells that detect images.
- **Optic nerve** – transmits visual information from the retina to the brain.