

**THE UNITED REPUBLIC OF TANZANIA  
NATIONAL EXAMINATIONS COUNCIL  
CERTIFICATE OF SECONDARY EDUCATION EXAMINATION**

**033/1**

**BIOLOGY 1**  
(For Both School and Private Candidates)

**TIME: 3 HOURS**

**Wednesday, 04<sup>th</sup> November 2015 a.m.**

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**INSTRUCTIONS**

1. This paper consists of three sections A, B and C.
2. Answer **all** questions from sections A and B and **one (1)** question from section C.
3. Except for diagrams that must be drawn in pencil, all writing should be done using a blue or black pen.
4. Calculators and cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

## SECTION A (20 MARKS)

Answer **all** questions in this section.

1. For each of the items (i) – (x), choose the correct answer from among the given alternatives and write its letter beside the item number in the answer booklet provided.

(i) Bowman's capsule is found in which of the following organs?

- |          |            |          |
|----------|------------|----------|
| A Liver  | B Pancreas | C Kidney |
| D Spleen | E Heart    |          |

(ii) Which of the following processes is involved in the regulation of body temperature in human beings?

- |             |                  |               |
|-------------|------------------|---------------|
| A Urination | B Painting       | C Deamination |
| D Sweating  | E Detoxification |               |

(iii) A structure that allows air to enter the trachea and prevents food from entering the wind pipe is known as

- |           |              |              |
|-----------|--------------|--------------|
| A glottis | B tongue     | C soft plate |
| D mouth   | E epiglottis |              |

(iv) Study the following sequence of organisms:

Grass → Rabbit → Wolves → Fleas

The sequence is an example of

- |              |             |             |
|--------------|-------------|-------------|
| A food web   | B ecosystem | C a pyramid |
| D food chain | E abiotic   |             |

(v) Lipase enzymes are mainly contained in which digestive secretions?

- |                     |                    |          |
|---------------------|--------------------|----------|
| A Hydrochloric acid | B Gastric juice    | C Saliva |
| D Intestinal juice  | E Pancreatic juice |          |

(vi) A person who is admitted in the hospital after an operation will most likely be fed on food rich in:

- |             |             |           |
|-------------|-------------|-----------|
| A vitamin C | B vitamin A | C protein |
| D lipids    | E water     |           |

(vii) Which of the following is a vector of sleeping sickness?

- |             |             |              |
|-------------|-------------|--------------|
| A House fly | B Mosquito  | C Tsetse-fly |
| D Tick      | E Cockroach |              |

(viii) The outer most living structure that identifies a plant cell is the presence of

- |                    |                 |             |
|--------------------|-----------------|-------------|
| A cytoplasm        | B vacuole       | C cell wall |
| D nuclear membrane | E cell membrane |             |

- (ix) One of the most distinctive features used to place organisms in the Kingdom Fungi is the presence of
- A gill structures                      B hyphae                      C cellulose  
D cap                                      E exoskeleton
- (x) Which of the following represent the organisms with homologous structures?
- A Wings of Birds and Butterfly  
B Forelimbs of Bird and Bat  
C Tail of Rat and Scorpion  
D Sting of Honey bee and Mosquito  
E Beak of Duck and Hen

2. Match the phrases in **List A** with the responses in **List B** by writing the letter of the correct response from **List B** beside the item number of **List A** in your answer booklet.

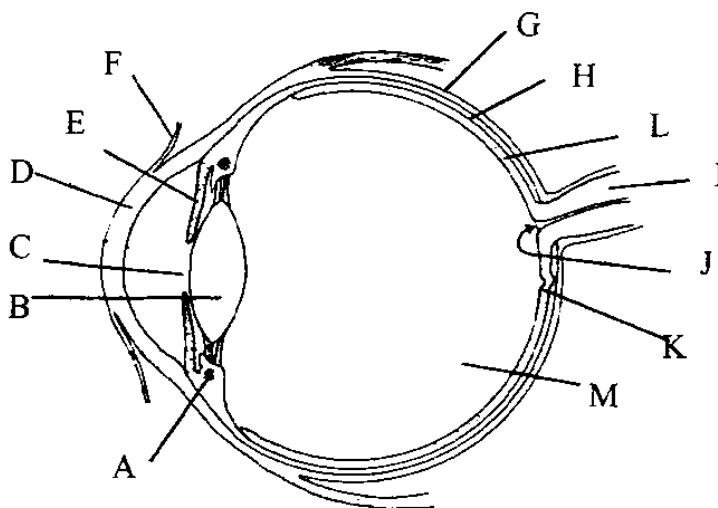
LIST A	LIST B
(i) A stage of growth in humans, characterised by rapid growth and a lot of physical and mental changes.	A. Meiosis
(ii) A type of seed germination whereby cotyledons are pushed above the ground.	B. Metamorphosis
(iii) The ability of seeds to germinate	C. Radicle
(iv) The region of most active growth in plants.	D. Plumule
(v) A type of seed germination whereby cotyledons remain beneath in the ground.	E. Hypogeal germination
(vi) A pore which allows water into a seed during germination.	F. Adulthood
(vii) Inability of a seed to germinate.	G. Dormancy
(viii) Prevents a viable seed from germinating.	H. Epigeal germination
(ix) A stage of family formation and parenthood in growth and development.	I. Adolescent
(x) A type of cell division whereby the number of chromosomes is maintained from parent cell to daughter cell.	J. Cotyledon
	K. Mitosis
	L. Micropyle
	M. Hard seed coat
	N. Stem and root apices
	O. Viability

## SECTION B (60 Marks)

Answer **all** questions in this section.

Each question carries **8 marks** except question three and eight which carry **6 marks** each.

3. (a) What do you understand by the following terms:
  - (i) Biology
  - (ii) Zoology
- (b) Why is it important to study Biology? Give four reasons.
4. (a) What do you understand by the term “First Aid”?
- (b) State how you would render First Aid to a person who has been shocked by electric current.
5. (a) Define the terms “digestion” and “feeding” as used in Biology.
- (b) Explain why during digestion the food is:
  - (i) Alkaline when in the mouth.
  - (ii) Acidic when in the stomach.
  - (iii) Alkaline when in the ileum.
6. (a) List any three characteristics of the Phylum Arthropoda.
- (b)
  - (i) Mention the Classes of the Phylum Arthropoda
  - (ii) Name one representative member for each Class you have mentioned in 6(b)(i).
7. The diagram in Figure 1 represents an eye of a human being.  
Study the diagram and answer the questions that follow:



**Figure 1**

- (a) Name the labeled parts A – L.
  - (b) What will happen in part C if someone suddenly faces:
    - (i) the dim light.
    - (ii) bright light.
8. (a) Define the term “gene” and “genetics”.
- (b) Give two differences between Deoxyribonucleic Acid (DNA) and Ribonucleic Acid (RNA).
9. (a) Give the long meaning of the following abbreviation terms:
  - (i) HIV
  - (ii) STIs
  - (iii) Tds
- (b) Briefly explain any two ways through which HIV is transmitted from one person to another.
10. (a) Define the term “osmoregulation”.
- (b) Briefly explain the mechanisms of regulating sugar level in the blood.

### SECTION C (20 Marks)

Answer **one (1)** question from this section.

11. Explain how parts of the mammalian heart are adapted to their function.
12. Describe the symptoms of a person who is infected by *Vibrio cholera* and suggest six prevention measures and treatment for a cholera outbreak.
13. Explain the functions of the major components of the human skeleton and their adaptations.