THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

033/2A **BIOLOGY 2A**

(ACTUAL PRACTICAL A)

(For Both School and Private Candidates)

Time: 2:30 Hours **ANSWERS** **Year: 2015**

Instructions

1. This paper consists of two questions.

2. Answer all questions.

1. You have been provided with specimens A, B and C.

(a)(i) Identify specimens A, B and C by their common names.
- Specimen A: Flower
- Specimen B: Seed
- Specimen C: Fruit

(ii) Name the agent of pollination in specimen A.
Bee

(iii) Give five reasons which suggest the pollinator you named in (a)(ii).
- Presence of bright-colored petals
- Scented flower attracts bees
- Presence of nectar
- Moderate size and shape suitable for bee landing
- Pollen grains are sticky to attach to bee body

(b)(i) Briefly explain the importance of pollination in specimen A.
Pollination allows transfer of pollen grains from anther to stigma, enabling fertilization which leads to seed and fruit formation.

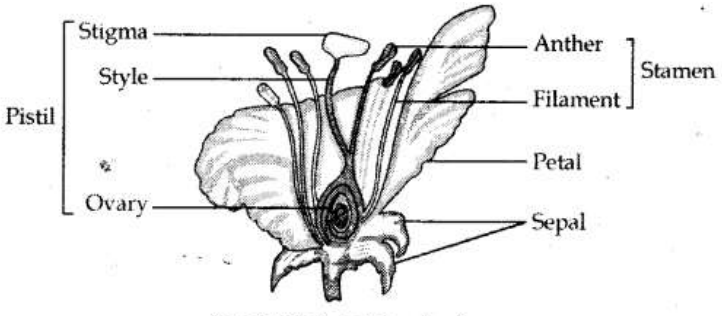
(ii) Describe how the process of fertilization is likely to occur in specimen A.
After pollination, pollen grain germinates on the stigma and forms a pollen tube that grows down the style to the ovary, where the male gamete fuses with the ovum in the ovule to form a zygote.

(c) Study specimens B and C carefully then:

(i) Identify which one developed from an ovum? Give two reasons.
Specimen B (Seed)
- Contains embryo and stored food
- Has seed coat and hilum

(ii) Which one developed from the ovary? Give one reason.
Specimen C (Fruit)
- It has a pericarp and encloses seeds

(d) Using a scalpel, prepare a longitudinal section of specimen A. Then draw a well labelled diagram of the cut surface of specimen A to show its internal and external structures.



Longitudinal section of a flower

g

2. You have been provided with specimens D, E, F and G.

(a) Observe these specimens then:

(i) Identify specimens E and G by their common names.
- Specimen E: Butterfly
- Specimen G: Spider

(ii) Classify specimens D, E, F and G to Class level.

Specimen D:
- Kingdom: Animalia
- Phylum: Arthropoda
- Class: Insecta

Specimen E:
- Kingdom: Animalia
- Phylum: Arthropoda
- Class: Insecta

Specimen F:
- Kingdom: Animalia
- Phylum: Arthropoda
- Class: Arachnida

Specimen G:
- Kingdom: Animalia
- Phylum: Arthropoda
- Class: Arachnida

(b) Study specimens D and G carefully then state why these specimens are said to belong to the same Kingdom but not the same Class?
- Both have jointed appendages and segmented bodies (Arthropoda)
- Specimen D has three body parts and three pairs of legs (Insecta)
- Specimen G has two body parts and four pairs of legs (Arachnida)

(c) State the advantage and disadvantage of each specimen E and F.

Specimen E (Butterfly):
Advantage: Aids in pollination
Disadvantage: Larvae can destroy crops

Specimen F (Spider):

Advantage: Controls insect population
Disadvantage: Some species can bite or be venomous