



OFFICE OF THE DEPUTY PRINCIPAL
ACADEMICS, STUDENT AFFAIRS AND RESEARCH

UNIVERSITY EXAMINATIONS

2018 /2019 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER REGULAR EXAMINATION

**FOR THE DEGREE OF BACHELOR OF
EDUCATION (SCIENCE)**

COURSE CODE: BOT 202E
**COURSE TITLE: DEVELOPMENTAL BIOLOGY AND
PHYSIOLOGY**

DATE: 23RD APRIL, 2019 **TIME: 9.00 AM – 12.00 PM**

INSTRUCTIONS TO CANDIDATES

- SEE INSIDE

THIS PAPER CONSISTS OF 4 PRINTED PAGES

PLEASE TURN OVER

BOT 202 E: DEVELOPMENTAL BIOLOGY AND PHYSIOLOGY

STREAM: BED (SCIENCE)

DURATION: 3 Hours

INSTRUCTIONS TO CANDIDATES

- i. Answer **ALL** questions from section A and any **THREE** from section B.
 - ii. Diagrams should be used whenever they serve to illustrate the answer.
 - iii. Do not write on the question paper.
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SECTION A (24 MARKS)

Question One

- a) Define the following terms
 - i) Parthenocarpy (1 Mark)
 - ii) Abscission (1 Mark)
 - iii) Senescence (1 Mark)
 - iv) Epinasty (1 Mark)
 - v) Nyctinasty (1 Mark)
- b) Distinguish between the following
 - i) Absorption and imbibition (2 Marks)
 - ii) Epigeal and hypogeal germination (3 Marks)
- c) Describe the importance of proton pumps in plants (2 Marks)

Question Two

- a) Outline similarities and differences between male and female gametes in plants (4Marks)
- b) Describe how the life cycle of flowering plants show alternation of generation (4 Marks)
- c)
 - i) What is plasmolysis (1 Mark)
 - ii) Explain how the water potential of a plant root hair cell would be affected if water movement in the xylem ceases (3 Marks)

SECTION B (36 Marks)

Question Three

Describe the process of embryogenesis under the following headings

- a) Early cell division (3 Marks)
- b) Tissue formation (3 Marks)
- c) Regulation of development (3 Marks)
- d) Mature embryo (3 Marks)

Question Four

- a) Illustrate the growth curve shown by the following plants
 - i) Annual plants (3 Marks)
 - ii) Perennial plants (3 Marks)
- b) Differentiate between allometric and isometric growth (2 Marks)
- c)
 - i) What are meristematic tissues? (1 Mark)
 - ii) Describe two meristems in angiosperms (3 Marks)

Question Five

- a) Draw well labeled anatomical diagrams of the transverse section of
 - i) A dicot stem (4 Marks)
 - ii) A monocot stem (3 Marks)
- b) Explain why herbaceous plants wither during hot sunny days (2 Marks)
- c) Chrysanthemum plants in flower farms are produced commercially throughout the year. At certain times of the year growers cover the green house with black polythene paper for part of a day. Account for this practice in terms of photoperiodism. (3 Marks)

Question Six

- a) Explain how Indole Acetic Acid (IAA) causes stem elongation. (3 Marks)
- b)
 - i) Explain the role of Gibberellic Acid (GA) in seed germination. (2 Marks)
 - ii) IAA related substances are often used in gardening. State one such use (1 Mark)

- c)
- i) What is meant by seed dormancy? (1 Mark)
 - ii) Outline three roles of seed dormancy (3 Marks)
 - iii) Describe two ways of breaking seed dormancy (2 Marks)

Question Seven

- a) Seedlings of peas grown in the dark box with unidirectional light bends towards light.
Explain this phenomenon. (2 Marks)
- b) Outline the three pathways by which water absorbed by the root hair cells pass through the cortex (3 Marks)
- c) Describe the mechanism which prevent self-fertilization in flowering plants (7 Marks)
