



FACULTY	AGRICULTURE, ENGINEERING AND NATURAL SCIENCES		
DEPARTMENT	ENVIRONMENTAL SCIENCE		
MODULE	DEVELOPMENTAL BIOLOGY		
MODULE CODE	MIC3872		
DATE	FEBRUARY 2022		
DURATION	3 Hours	MARKS	120

PROMOTIONAL EXAMINATION

Examiners: Prof. E.G. Kwembeya (University of Namibia) & Ms S. Kanyemba (University of Namibia)

Moderator: Prof. R. Mavenyengwa (University of Zimbabwe)

This question paper consists of 3 pages (including the front page)

Instructions

- 1. Carefully read all the instructions.**
- 2. There are two sections in this paper.**
- 3. Answer all questions in Section A and choose any two questions in Section B**

UNIVERSITY OF NAMIBIA EXAMINATIONS

Section A

This section is worth 60 marks. Answer all questions.

QUESTION 1

- (a) Distinguish between plant and animal growth. (4)
- (b) Use examples to explain the concepts of determinate and indeterminate growth in plants. (6)
- (c) Explain the two-fold function of meristems. (4)

QUESTION 2

- (a) Briefly discuss the importance of receptors in signal perception and transduction. (4)
- (b) Explain the role of second messengers in a signal transduction pathway. (4)

QUESTION 3

- (a) Explain any four applications of gibberellins and cytokinins in horticulture. (4)
- (b) Explain the concept of parthenocarpy and how it is influenced by auxins and gibberellins in different plant families. (4)

QUESTION 4

Discuss the three different means of internal fertilization in animals. (12)

QUESTION 5

Due to global climate change and pollution, a lake experiences changes in temperature and pH. The lake has many species, including sexually reproducing frogs, water fleas that multiply by parthenogenesis, hydra that multiply by budding, and sponges that multiply by fragmentation. Which of these species will most likely survive the changing conditions of the lake and why? Also explain why the other groups are less likely to survive. (12)

QUESTION 6

Explain what ensures the species-specific fertilization in aquatic environments, where the sperm and eggs of different animals are released into water simultaneously? (6)

Section B: Essays Section

This section is worth 60 marks; Answer any two questions in this section.

QUESTION 1

Discuss the various environmental factors that control plant development. (30 marks)

QUESTION 2

Discuss how the process of gametogenesis can contribute to the maintenance of genetic diversity and integrity during the development of sexually reproducing animals. (30 marks)

QUESTION 3

Discuss the procedures undertaken during invitro fertilization, and reasons why couples may decide to conceive this way instead of the natural method. (30 marks)

-----**END OF EXAMINATION**-----