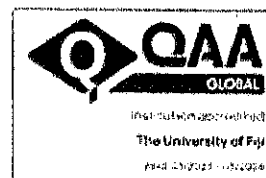




The University of Fiji
(An Entity of Arya Pratinidhi Sabha of Fiji)



SCHOOL OF SCIENCE & TECHNOLOGY

Semester 2, 2025

FINAL EXAMINATION PAPER

BIO111: ANIMAL BIOLOGY

Important Instructions to Students:

1. There are 11 pages. Read the questions and instructions carefully and answer the questions.
2. You are allowed an **extra 10 minutes of reading time** (during this time, you are not allowed to write with pen) and **180 minutes (3 Hours) to complete this paper**.
3. Silent, non-programmable calculators are allowed, but not supplied.
4. Write all your answers in the answer booklet provided. If you need extra sheets, please ask the supervisor. Write your name, course code and student identification number in the answer booklet and in the attendance sheet.
5. This paper contains three (3) sections A, B and C. All questions are compulsory to answer **except** section C has choices.
6. Write all your answers legibly. The marker has the right to award zero for answers that are not legible.
7. This is a **Closed Book Examination**. The University views plagiarism, cheating and dishonest practice as serious offences and if found, offenders are penalized.

Examination Paper Content (Format):

<u>Section</u>	<u>Question</u>	<u>Content</u>	<u>Marks</u>	<u>Suggested Time</u>
A	1-30	Multiple Choice	30	90 minutes
B	1-10	Short Answer Questions	50	54 minutes
C	1-5	Essays (Choose Any TWO out of FIVE)	20	36 minutes
		TOTAL	100	180 Minutes

Section A**Multiple Choice****[30 marks]**

There are 30 multiple choice questions. All are compulsory. Write the letter of the correct answer in your answer booklet.

1. Which of the following cell organelles is called the powerhouse of the cell?
 - A. Nucleus
 - B. Lysosomes
 - C. Chloroplast
 - D. Mitochondria

2. A cell whose cytoplasm has a concentration of 0.02 molar glucose is placed in a test tube of water containing 0.02 molar glucose. Assuming that glucose is not actively transported into the cell, which of the following terms describes the tonicity of the external solution relative to the cytoplasm of the cell?
 - A. Turgid
 - B. Hypertonic
 - C. Hypotonic
 - D. Isotonic

3. The hard-skeletal structures in sponges are called:
 - A. Amebocytes
 - B. Pinocytes
 - C. Spicules
 - D. Spongin

4. The excretory structure in the earthworm is the:
 - A. Malpighian tubule
 - B. Flame cell
 - C. Nephridium
 - D. Kidney

5. Natural selection is BEST described as:
 - A. Able to generate new traits that better suit the species
 - B. Increasing the perfection of a species
 - C. Working on existing variation of traits to favor those better suited to the organism's environment
 - D. Causing the death of a significant proportion of the population

6. Elephantiasis is an enlargement of legs, arms, scrotum, and other tissues caused by:
 - A. An infection of the human coelom by *Ascaris*
 - B. A large number of *Trichinella* worms encysting in our muscles
 - C. Contracting a disease that usually occurs in elephants
 - D. Microscopic nematodes that reproduce and clog lymph glands, causing infection and limbs to swell

7. The movement of water molecules through a semipermeable membrane is called:
- A. Diffusion
 - B. Osmosis
 - C. Contraction
 - D. Active transport
8. The shell of foraminiferans is made up of:
- A. Silica
 - B. Calcium carbonate
 - C. Sponging fibers
 - D. None of the above
9. Aristotle's lantern is a characteristic feature of:
- A. Starfishes
 - B. Sea urchins
 - C. Brittle stars
 - D. Holothurians
10. Echinoderms are named so due to presence of:
- A. Arms
 - B. Tube feet
 - C. Pedicellariae
 - D. Spines
11. Which of the following is an Apicomplexan disease?
- A. African sleeping sickness
 - B. Malaria
 - C. Giardiasis
 - D. Encephalitis
12. Platyhelminthes are best described as:
- A. Flatworms, triploblastic, acoelomate animals
 - B. Flatworms, diploblastic, acoelomates
 - C. Flatworms, triploblastic, coelomates
 - D. Flatworms, triploblastic, pseudocoelomate animals

13. Collared, flagellated cells that cover large parts of the inner chambers of sponges, helping water circulation to continue are:
- A. Porocytes
 - B. Choanocytes
 - C. Amoebocytes
 - D. Pinacocytes
14. Which of the following statements is correct about diffusion?
- A. It is very rapid over long distances
 - B. It requires an expenditure of energy by the cell
 - C. It is a passive process in which molecules move from a region of higher concentration to a region of lower concentration
 - D. It is an active process in which molecules move from a region of lower concentration to one of higher concentration
15. What is the ecological value of green algae?
- A. Producers
 - B. Decomposers
 - C. Habitats
 - D. Food thickeners
16. The protist that reproduces both by binary fission and conjugation is:
- A. Amoeba
 - B. Euglena
 - C. Paramecium
 - D. Monocystis
17. _____ are somewhat flattened and have a convex dorsal surface that bears seven to eight articulating plates.
- A. Gastropods
 - B. Cephalopods
 - C. Chitons
 - D. Bivalves

18. In bivalves, the oldest part of the shell is called the _____.
- A. Siphon
 - B. Pneumostome
 - C. Umbo
 - D. Pinnacle
19. Which among the following is incorrect about Echinodermata?
- A. The word “Echino” means spiny and “dermata” means skinned
 - B. Echinoderms are dioecious with fertilization being external in most cases
 - C. They have a central nerve ring that extends throughout their body
 - D. The circulatory system is closed and they have a heart along with blood vessels
20. The outermost layer of Porifera is called:
- A. Epidermis
 - B. Mesodermis
 - C. Gastrodermis
 - D. Endodermis
21. Flame cells is the characteristic property of:
- A. Cnidaria
 - B. Flatworm
 - C. Protozoan
 - D. Mollusca
22. A rasping organ with transverse teeth and present in the buccal cavity of a mollusk is called:
- A. Dental plate
 - B. Radula
 - C. Tongue
 - D. Rasper
23. Animals with bilateral symmetry:
- A. Can be divided into similar halves by any plane through the longitudinal axis
 - B. Are usually very slow-moving organisms
 - C. Are relatively simple in structure
 - D. Are better adapted for directed forward movement than radially symmetrical organisms

24. A mynah has difficulty pulling an earthworm from its earthen burrow because of small chitinous bristles called _____.
- A. Parapodia
 - B. Segments
 - C. Annuli
 - D. Setae
25. The class Echinoids belonging to phylum Echinodermata, _____.
- A. Have five long, slender arms
 - B. Are enclosed in an endoskeletal test or shell
 - C. Lack tube feet
 - D. Lack ambulacral areas
26. The hagfish has a keen sense of:
- A. Earing in order to locate prey in dark depths
 - B. Smell and touch in order to locate dead and dying fish
 - C. Sight in order to locate dying fish and annelids, molluscs, and crustaceans
 - D. All of the choices are well-developed in hagfish
27. Spiders breathe by means of:
- A. Gills
 - B. Diffusion across the soft cuticle
 - C. An extensive system of tracheae more complex than is found in insects
 - D. Book lungs or primitive tracheae
28. Molting and subsequent ecdysis in crustaceans:
- A. Involves production of a new cuticle and shedding of the old one
 - B. Is initiated by a stimulus perceived by the central nervous system
 - C. Involves a molt-inhibiting hormone produced by the Xorgan of the eye stalk, and a molting hormone produced by the Yorgans near the mandibles
 - D. Cues on stimuli such as day length, temperature, or humidity
29. The most primitive of the early fishes were the:
- A. Gnathostomes
 - B. Lobe-finned fishes
 - C. Agnathans
 - D. Ray-finned fishes

30. An example of a Ciliophoran protozoan is:

- A. Amoeba
- B. Trypanosoma
- C. Paramecium
- D. Plasmodium

Section B

Short Answer Questions

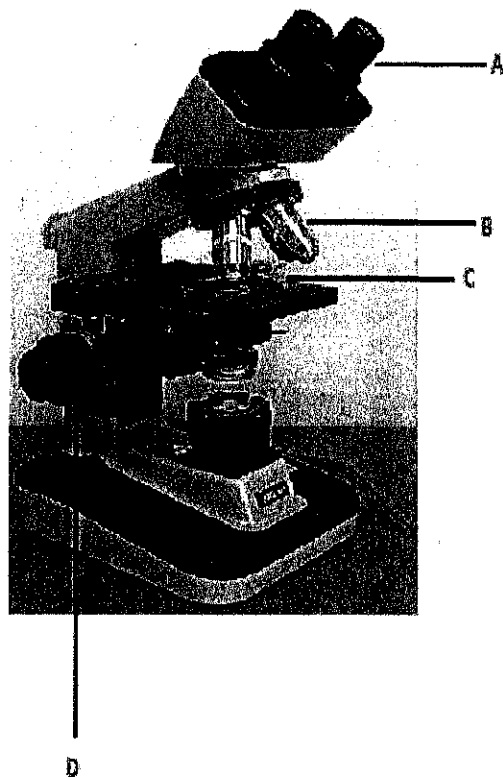
[50 Marks]

There are 10 questions in this section. All questions are compulsory. Answer all the questions in the answer booklet provided.

Question 1

A. Examine the binocular microscope shown below and label parts, A, B, C and D.

[2 marks]



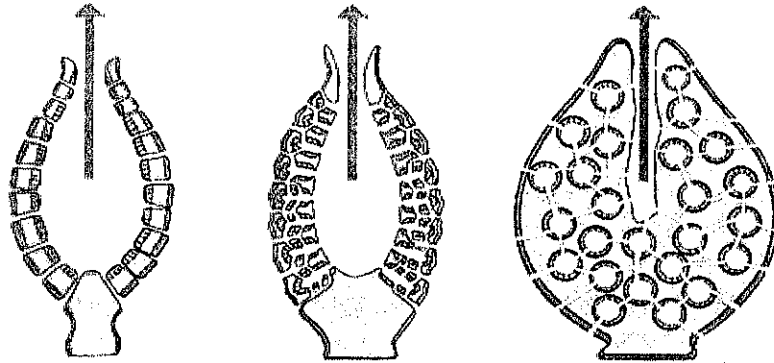
B. State two functions of a microscope.

[2 marks]

C. Which of the following specimens; would be better observed under the dissecting microscope. Choose from; (cheek cells, *Paramecium*, cockroach anterior structure and *Euglena*). Explain your answer? [2 marks]

Question 2

A. Study the diagram of three types of body form found in sponges and answer the questions that follow.



- Which sponge body type is the most efficient and explain why. [2 marks]
- Distinguish between polyp and medusa forms in cnidarians. [1 mark]

B. Match the organism to the correct phylum (either Porifera or Cnidaria): [2.5 marks]

- Hydra
- Bath sponge
- Coral
- Jellyfish
- Glass sponge

Question 3

A. List **two** features of animals belonging to phylum Cnidaria and phylum Platyhelminthes. [4 marks]

B. State **two** ways in which Platyhelminthes are superior to Cnidarians. [2 marks]

Question 4

A. Differentiate between protostomes and deuterostomes. [2 marks]

B. What is the evolutionary significance of bilateral symmetry in animals? [2 marks]

Question 5

- A. How do flatworms differ from roundworms in terms of body structure? [2 marks]
- B. Name one parasitic flatworm and describe its life cycle briefly. [2 marks]
- C. In evolutionary trends, _____ is defined as the process involving the concentration of sensory and feeding organs such as nerve cells, mouth and jaws at the anterior end and the development of the brain. [0.5 marks]

Question 6

- A. What are the repeatable, detachable sections of a tapeworm called and what do they contain? [2 marks]
- B. What is the function of the hydrostatic skeleton? [2 marks]
- C. State **two** ecological importance of earthworms. [2 marks]
- D. Identify the phylum in which adults exhibit radial symmetry and larva exhibit bilateral symmetry. [1 mark]

Question 7

- A. Bivalve molluscs are filter-feeders. Explain how the modified ctenidia assist bivalves in obtaining food. [1 mark]
- B. Differentiate between torsion and coiling in gastropods. [2 marks]

Question 8

- A. What is the function of air bladders in Osteichythes? [1 mark]
- B. Provide **two** difference between cartilaginous and bony fishes. [4 marks]
- C. The lateral line system has been described as a “distant touch” system for sharks. What function does the lateral line system serve? [1 mark]

Question 9

A. Complete the following fill in the blank sentences using an appropriate answer.

[4 marks]

- i. Asexual reproduction in sponges is achieved by _____.
- ii. The minute, needle-like structures that act as a skeletal support system in sponges are called _____.
- iii. Heavy infections of _____ (a type of roundworm) can cause anemia.
- iv. _____ in some protozoa is carried out chiefly by a structure called a contractile vacuole.

Question 10

A. Recently, the endostyle was recognized as a shared chordate character. Discuss the other **four** features that unite all the chordates.

[4 marks]

Section C

Essay

[20 marks]

Write an essay on **any two** questions from the five questions given below. Each essay is worth 10 marks. Your essays should include the following:

- A suitable title
- Relevant ideas to the topic
- Examples and diagrams where applicable
- Clear and logical flow of information

Question 1

Describe the mechanism of bulk transport.

Question 2

Discuss the contribution of the cuticle to the success of arthropods, and describe some other factors that have contributed to their success.

Question 3

Describe the key characteristics that define the Phylum Annelida, and explain how these features are used to classify the phylum into its major classes: Polychaeta, Oligochaeta, and Hirudinea.

Question 4

Sharks belonging to class Chondrichthyes are well equipped for their predatory life. Discuss characteristics of sharks that make them very effective predators in the ocean.

Question 5

Explain the symbiotic relationship between coral and zooxanthellae that live inside their tissues. What environmental conditions are required for development of coral reefs?

The End

