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RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

Bachelor of Science in Applied Sciences
First Year – Semester I Examination – July/August 2023

ZOO 1201 – INVERTEBRATE DIVERSITY

For official use Only						
Marks						
Question 1 50 marks	Question 2 75 marks	Question 3 75 marks	Question 4 100 marks	Question 5 100 marks	Question 6 100 marks	Total 400 marks

Time: Two (02) hours

This question paper consists of sections A, B and C. Answer ALL questions in sections A and B and TWO (02) questions from section C.

Section A: Multiple choice questions (20 minutes)
Answer ALL questions

1. Underline the **most suitable** option using a **pen**. **(10 x 5 = 50 marks)**

a) According to the three-domain model, the tree of life consists of which of the following main branches?
   i. Eukaryotes, Protista and Bacteria
   ii. Archaea, Bacteria and Eukaryotes
   iii. Bacteria and Archaea
   iv. Bacteria, Placozoa and Protista

b) Which of the following statements about ctenophores is **false**?
   i. The body has a gelatinous middle layer called the collenchyma
   ii. Colloblasts and macrocilia are used in prey capture
   iii. Body size and symmetry are very variable
   iv. There are six rows of ctenes arranged radially around the body

c) Which of these statements about cnidarians is **not true**?
   i. They have unique cells called cnidocytes
   ii. Structural eyes are present in all taxa
   iii. A simple nerve net is usually present
   iv. Tropical reef cnidarians include reef-building corals, zooanthideans and gorgonions

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d) The buccal region and radula are characteristic of which of the following systems in most Mollusca?
   i. Digestive system
   ii. Gas exchange system
   iii. Circulatory system
   iv. Reproductive system

e) What is the simplest form of sponge body organization?
   i. Syconoid
   ii. Sylleibid
   iii. Asconoid
   iv. Solenoid

f) Select the class that shows the following features:
   A) Medroporite present in the oral surface
   B) Ring canal present around the mouth
   C) Tube feet has no ampulla and sucker
   D) Tiedemann bodies are absent

   i. Asteroidea
   ii. Ophiuroidea
   iii. Echinoidea
   iv. Crinoidea

g) Select the **correct** statement about the body walls of different invertebrates.
   i. Nematodes contain a clear, epidermal cell layer with cilia.
   ii. Calcareous ossicles are embedded between the epidermis and dermis of echinoderms.
   iii. Annelids contain a syncytial epidermis that is thickened with chitin.
   iv. The platyhelminth body is covered with a cellular epidermis of mesodermal origin.

h) Select the animal which shows direct development.
   i. Round worm
   ii. Starfish
   iii. Earth worm
   iv. Liver fluke

i) Select the **incorrect** pair.
   i. Platyhelminthes - Photonephridia
   ii. Echinodermata - Papillae
   iii. Arthropoda - Coxal gland
   iv. Annelida - Clitellum

j) Select the **incorrect** statement.
   i. Marine nematodes have unicellular renette glands to excrete salts.
   ii. Some annelids have ocelli that are sensitive to light.
   iii. Monogenetic flukes body is usually leaf-like and the posterior end contains suckers.
   iv. All the echinodermates bear pedicellaria and tube feet.

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Section B: Structured Essay Questions (40 minutes)
Answer ALL sections, using only the space provided.

2.

a) "Cnidarians have a biphasic life cycle." Define the term 'biphasic life cycle.'

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(25 marks)

b) What is the major difference in the life cycle of the classes Anthozoa and Cubozoa?

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(10 marks)

c) Describe briefly two features of the life cycle of the class Hydrozoa.

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(10 marks)

d) Explain briefly the term zooid and indicate two features of zooid morphology.

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(15 marks)

e) Describe the terms gonozooids, gastrozooids and dactylozooids.

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(15 marks)

(Total: 75 marks)

3.

a) Explain briefly the term "metameric segmentation".

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(12 marks)

b) State **<u>two (02)</u>** phyla that show metameric segmentation.

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(08 marks)

c) Distinguish between earthworm segments and tapeworm segments.

Earthworm	Tapeworm

(20 marks)

d) State **five (05)** internal or external characters that can be used to distinguish an earthworm from a roundworm.

Earthworm	Roundworm

(20 marks)

e) In the phylogeny, nematodes and arthropods are placed in one clade. Give **one (01)** reason for the grouping of arthropods with nematodes.

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(05 marks)

f) State **two (02)** economic importances of nematodes.

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(10 marks)
(Total: 75 marks)

Section C: Essay questions (60 minutes)
Answer TWO (02) questions

4. Describe the major characteristics of the phylum Porifera. **(100 marks)**

5. During a field excursion to a coastal area, you have found a small animal displaying the following features:
   - bilaterally symmetrical body with hard external shell
   - body with two distinct regions: head and cephalothorax
   - a pair of claws near the head region
   - two pairs of antennae and stalked eyes
   - four pairs of thoracic legs that are biramous and jointed.

   a) Name the phylum, subphylum and class that best fit this species. **(15 marks)**

   b) Describe the respiratory and circulatory diversity of the above mentioned phylum. **(30 marks)**

   c) "The phylum mentioned in part (a) can be considered economically important." Justify this statement, giving suitable examples. **(55 marks)**

6. Write short notes on the following.
   a) The four main types of body symmetry in animals, along with relevant examples
   b) Characteristics of unicellular protists
   c) Structure of the water canal system in seastar.
   d) Distinguish features of classes Oligochaeta and Polychaeta.

(04 x 25 = 100 marks)

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