69

RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. in Applied Sciences
First Year – Semester I Examination – March 2021

ZOO 1201 – INVERTEBRATE DIVERSITY

Index Number: **Time: Two (02) hours**

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

Section A

Multiple choice questions (20 minutes)

1. Underline the **most suitable** option.

a) Which of the following pair of organisms show a tissue-organ grade of body organization
   i. *Trichinella*, *Fasciola*
   ii. *Fasciola*, *Bipalium*
   iii. *Ascaris*, *Taenia*
   iv. *Ascaris*, *Polystoma*

b) Modern classification of organisms is based on
   i. shared features
   ii. unique features
   iii. evolutionary relationships
   iv. genetic similarity

c) An enterocoelous coelom is formed by
   i. splitting of the mesodermal embryonic tissue.
   ii. splitting of the endodermal embryonic tissue.
   iii. splitting of the ectodermal embryonic tissue.
   iv. the pouches of split mesodermal embryonic tissue.

d) The contractile vacuole of protistans is a
   i. specialized structure used for osmoregulation.
   ii. specialized structure used for prey capture.
   iii. specialized structure used for feeding.
   iv. specialized structure used for reproduction.

Index No: .....

e) *Leishmania*, the protistan parasite that causes the disease Leishmaniasis in humans belongs to the phylum
   i. Dinoflagellata
   ii. Ciliophora
   iii. Apicomplexa
   iv. Sarcomastogophora

f) Which of the following are true about polymorphic colonies in cnidarians?
   A. Consists of several different polymorphic polyp colonies.
   B. Both polyp and medusa stages are present in the life cycle.
   C. Gastrozooid is the reproductive polyp in these colonies.
   D. Polymorphic colonies are present in all four classes of cnidarians.
   i. A only
   ii. B only
   iii. A and B
   iv. C and D

g) Which of the following is shared by both cestodes and trematodes?
   i. Hooks and suckers.
   ii. Life cycle with two hosts.
   iii. Segmented bodies.
   iv. Digestive system.

j) What would not be a benefit of having a complete digestive system?
   i. Increased efficiency in digestion.
   ii. Mixing up of digested and undigested food.
   iii. Movement of food in a single direction.
   iv. Increased efficiency in absorption.

k) Which of the following statement is correct?
   i. Blood of earthworm is blue in color.
   ii. Blood pigment of earthworm is haemocyanin.
   iii. Blood pigment of earthworm is red and haemoglobin is dissolved in plasma.
   iv. Blood of earthworm is red and haemoglobin is dissolves in RBC.

l) Musculature of nematodes consists of
   i. circular muscles only.
   ii. outer longitudinal muscles and inner circular muscles.
   iii. outer circular and inner longitudinal.
   iv. longitudinal muscles only.

Index No: .....

m) Select the incorrect statement about Echinodermata.
   i. Most Echinodermates bear pedicellariae.
   ii. Tiedmann's bodies produce coelomocytes and amoeboid cells.
   iii. Nephridia is the organ of excretion in some echinodermates.
   iv. All of the above.

n) All species belong to phylum Mollusca,
   i. bears a shell either internal or external.
   ii. shows bilateral symmetry at least during one stage of their life cycle.
   iii. srestricted coelom.
   iv. all of the above.

o) Sub phylum, Class and Order of Scorpion is:
   i. Crustacea, Arachnida, Scorpionida
   ii. Hexapoda, Arachnida, Acari
   iii. Myriopoda, Merostomata, Arachnida
   iv. Chelicerata, Arachnida, Scorpionida

p) Select the statements that best describe class Scaphopoda.
   A. Development include trochopore larva
   B. All are benthic
   C. Do not have gills but mantel function as gills
   D. Elongated and enclosed in a shell that open at both ends
   i. Only A, B and C
   ii. Only B, C and D
   iii. Only A and C
   iv. All of the above

q) External feature that can be used to distinguish Hexapoda from a Myriopoda
   i. Number of pairs of antennae
   ii. Number of body segments
   iii. Number of jointed legs
   iv. Number of eyes

r) Select the incorrect statement with regards to respiration and gas exchange in invertebrates.

i. Parasitic nematodes show anaerobic respiration whereas free living forms have Ctenidia for aerobic respiration.
ii. Some marine Annelid species have gills or structures called parapodia.
iii. Aquatic molluscks have gills or ctenidia for respiration whereas the terrestrial ones have a vascularized regions in the mantle cavity.
iv. Respiration by diffusion through dermal branchiae, tube feet, respiratory tree and bursae can be seen in Echinodermates.

(Total = 80 marks)

Section B

Structured Essay Questions (40 minutes)

Answer ALL sections only in the space provided.

2.

a) List the different types of asexual reproductive strategies shown by protistans.

.....

.....

.....

(06 marks)

b) State the difference between conjugation and syngamy.

.....

.....

.....

(06 marks)

c) Describe what cross-fertilization is,

.....

.....

(04 marks)

d) Explain why cross-fertilization is more beneficial than self-fertilization for most organisms.

.....

.....

.....

(06 marks)

Index No: .....

e) Describe what monoecious forms and give **two (02)** examples.

.....

.....

.....

.....

.....

(08 marks)

f) Draw and label the structure of mature proglottid of a cestode and briefly describe its reproductive strategy.

.....

.....

.....

.....

.....

.....

(20 marks)

g) Explain why Monoecious forms which use self-fertilization are generally sessile or endoparasitic .

.....

.....

.....

.....

.....

.....

.....

.....

(10 marks)

(Total = 60 marks)

2.

a) Describe briefly the term "metameric segmentation".

.....

.....

.....

.....

.....

.....

(05 marks)

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

.....

.....

.....

(04 marks)

c) State **<u>two (02)</u>** external features of each of the phyla you have mentioned in (b) that can be used to distinguish the phylum.

.....

.....

.....

.....

.....

.....

(10 marks)

d) When walking in the garden you found a worm-like animal with segmentation, where each segment, except the one behind the head and the last two in the body, bears a pair of jointed legs. It also bears a pair of antennae and poison claws. From given information state the phylum, subphylum and class of this animal.

.....

.....

.....

.....

.....

.....

(06 marks)

e) What is the specific feature that helped you to identify the class of organism described in (d)?

.....

(03 marks)

f) State the classes of the first phylum which shows metameric segmentation in the evolution of the animal kingdom.

.....

.....

.....

.....

(06 marks)

Index No: .....

g) Give **<u>two (02)</u>** external features you can use to distinguish the classes of the phylum mentioned in (f).

.....

.....

.....

(06 marks)

h) Explain briefly the structure of the body wall of the above mentioned (f) phylum.

.....

.....

.....

.....

.....

.....

.....

.....

.....

(06 marks)

i) What is the primary mechanism of locomotion of the species included in the above (f) phylum?

.....

.....

.....

.....

(04 marks)

(Total = 60 marks)

Section C

Essay questions (60 minutes)

Answer two (02) questions only.

4. Among the metazoans, sponges show a very basic type of tissue organization. Justify this statement using their body form and function. **(100 marks)**

5. a) Explain the structure of the water canal system of Echinodermata using Sea Star (Asteroidea) as the typical example. **(60 marks)**

   b) Describe the differences of the water canal systems shown in the classes; Crinoidea, Ophiouroidea, Echinoidea and Holothuroidea from the above described system. **(40 marks)**

6. Write short notes on any **four (4)** of the following
   a) Phylogeny and Classification
   b) Trematoda
   c) Subphylum Trilobitomorpha
   d) Sensory and nervous system of nematodes
   e) Coral reefs

   (100 marks)

---END---