

Royal University of Bhutan
Paro College of Education
Autumn Semester Examination – 2012

B.Ed(S) IV – Vertebrates and Invertebrates (BIO409)

Full mark: 100

Pass mark: 50

Time: 3 hours

Instruction: This paper has two sections A and B. Read the instructions in each section carefully. You are asked to give well labeled diagrams where necessary.

Section A (40 marks)

Answer all questions.

Question 1

Each question is followed by four possible answers. Choose the most appropriate answer and write it on your answer booklet. (2x15)

- a. Following are the rules of nomenclature, **except**,
- i. The names of plants and animals are in local language.
 - ii. The generic name should begin with a capital letter.
 - iii. Both the generic and species names should be written in Italics.
 - iv. All scientific names should have a Latin designation.
- b. Which of the following protozoan causes malaria in human beings?
- i. Trypanosoma brucei.
 - ii. Amoeba proteus.
 - iii. Plasmodium vivax.
 - iv. Paramecium caudatum.
- c. The Phylum Porifera is characterized by cellular level of organization. Specialized type of flagellated choanocytes is for,
- i. distribution of digested food particles.
 - ii. protection of the body surface.
 - iii. maintenance of water current inside the body.
 - iv. secretion of spicules.
- d. Aurelia sp. belongs to class,
- i. scyphozoa.
 - ii. anthozoa .
 - iii. hydrozoa.
 - iv. Mastigophora.

- e. Flatworms are freeliving , commensal or parasitic organisms. Their excretory organs have specializes cells called,
- archeocytes.
 - flame cells.
 - scleroblast cells.
 - interstitial cells.
- f. Sexual dimorphism is a unique feature of,
- Pheretima posthuma*.
 - Taenia solium*.
 - Ascaris lumbricoides*.
 - Pila globosa*.
- g. Annelids placed in the class oligochaeta have a clitellum which is a structure for,
- digging
 - forming cocoons
 - secreting mucous
 - storing eggs
- h. Ambulacral grooves are absent in,
- Asteroidea
 - Crinoidea
 - Ophiuroidea
 - Nautiloidea
- i. Class bivalvia is characterized by,
- presence of tentacle around the mouth
 - absence of head
 - coiled shell
 - absence of gills
- j. Tube feet are locomotory organs of,
- spider
 - snake
 - star fish
 - cat fish
- k. The adults are radially symmetrical but larvae exhibit bilateral symmetry in,
- Mollusca
 - Hemichordata
 - Chordata
 - Echinodermata

- l. The glands present in the skin of frogs are,
 - i. sweat and mammary
 - ii. sweat and sebaceous
 - iii. sweat and mucous
 - iv. mucuous and poisonous
- m. Mammary glands are without teats in,
 - i. prototheria
 - ii. eutheria
 - iii. metatheria
 - iv. theria
- n. One of the primary characters of chordates is,
 - i. solid ventral nerve cord
 - ii. dorsal tubular nerve cord
 - iii. paired nerve cord
 - iv. ganglionated nerve cord
- o. Choose the **incorrect** combination.
 - i. Mollusca and gastropoda
 - ii. Mammalia and eutheria
 - iii. Arthropoda and enteropneusta
 - iv. Agnatha and cyclostomata

Question 2

Fill in the blanks with appropriate word(s).

(1x10)

- a. Animals in which the cells are arranged in two embryonic layers, an external ectoderm and an internal endoderm, are called animals.
- b. Cnidocytes are concentrated around mouth and on
- c. A hoemocoel is characteristic of animals having.....type of circulatory system.
- d. Sponges have skeletal elements called.....
- e. Chelicerae and pedipalps are found in the members of class.....
- f. In most arthropods, the excretory structures are theand in some they are coxal glands.
- g. The extinct members of hemichordata belong to class.....
- h. Marsupials do not have.....placenta
- i. Swim bladder in Pisces is aorgan.
- j. Members of class amphibia have eyes with movable lid called.....membrane.

Section B (60 marks)

There are eight sets of questions in this section. You are asked to write any six. All questions carry equal marks.

Question 3

Assign taxonomic position to the following organisms. (2x5)

- a. Slipper animalcule
- b. Hydra
- c. Round worm
- d. Frog
- e. Amphioxus.

Question 4

Differentiate between (Any five) the following pairs. (2x5)

- a. Aschelminthes and platyhelminthes
- b. Polyp and medusa
- c. Pinnacocytes and choanocytes
- d. Archnida and insect
- e. Papillae and amphids
- f. Chondrichthyes and osteichthyes

Question 5 (5+5)

- a. Define the following terms
 - i. Metamorphosis
 - ii. Apolysis
 - iii. Radula
 - iv. Poikilothermal
 - v. kappa factors
- b. Describe the morphological features of *Taenia solium*.

Question 6 (5+5)

- a. Describe the general characteristics of phylum mollusca.
- b. Discuss the life cycle of an earth worm with a well labeled diagram.

Question 7

(5+5)

- What features are unique and characteristic to mammals?
- Name the two living sub classes of mammalia and explain how would you identify a representative of each.

Question 8

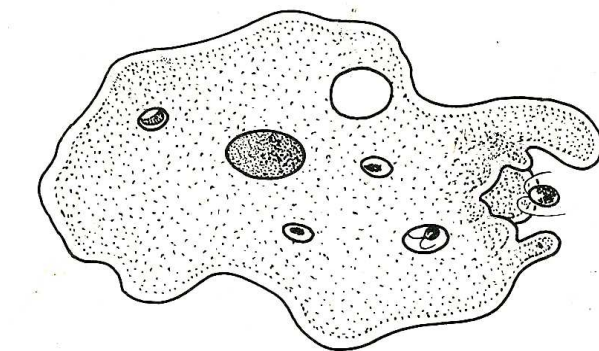
(10)

Compare the circulatory systems of fish, amphibian and mammal. Justify your answer with proper illustration.

Question 9

The following illustration represents a single celled microscopic living organism which exhibits all the essential functions of any living organism. (1+2+2+3+2)

- Give the scientific name of the organism.
- Label all the parts shown in the diagram.
- Name the process significantly shown in the diagram and define it.
- How does this organism reproduce?
- Discuss the process of locomotion in this animal.

**Question 10**

Write short notes on (**any two**) of the following.

(2x5)

- Canal systems in Porifera
- Types of locomotion in *Hydra*.
- Water vascular system in Echinodermata.