Student Number: _____ Seat Number_____

BIO 1130FF

An Introduction to Organismal biology
Final examination
Worth 35% of your final grade

December 16, 2014

Part A: Multiple choice questions
40 points (1 point/question)

a) Fill in the bubbles for your name and student number and BIO1130FF for the course code. Fill in the same information in text in the boxes above the bubbles.

b) Use only a pencil to fill in the answer sheet. If you erase a question be sure to erase all of the pencil mark. Don't place any marks anywhere on the sheet other than where the bubbles are for personal information or your answers.

c) Do not place any answers on the question sheet.

d) This is not an open book exam.

e) A calculator is not required for this exam

f) **CAUTION to minimize paper waste this part of the exam has been printed back to back**

NOTE: If you do not fill in the student number and course code as **BIO1130FF** it will be impossible to identify your answer sheet and you will receive a **ZERO** for this part of the exam

FF.1 Living members of the lineage ____ include the sharks, skates, and rays. They all have skeletons made entirely of cartilage.

a. Actinopterygii
b. Petromyzontoidea
c. Sarcopterygii
d. Chondrichthyes

FF.2 Which reproductive strategy is facilitated by (easier to use in) an aquatic habitat, as compared with a terrestrial habitat?

a. sexual reproduction
b. asexual reproduction
c. internal fertilization
d. external fertilization

FF.3 Protostomes and deuterostomes differ markedly in

a. the pattern of embryological development
b. the origin of the anus and the mouth
c. the pattern offertilization
d. the presence of a mantle cavity

FF.4 Which of the following is a diploblastic phylum of aquatic predators?

a. Mollusca
b. Echinodermata
c. Annelida
d. Arthropoda
e. Cnidaria

FF.5 A single vegetative body that contains both a fungus and a green alga would be called a(n)

a. haustorium.
b. ectomycorrhiza.
c. lichen.
d. arbuscule.

FF.6 Deuterostomes that have an endoskeleton are part of which phylum?

a. Mollusca
b. Cnidaria
c. Arthropoda
d. Echinodermata
e. Annelida

FF.7 Which of the following characteristics is found only in the angiosperm life cycle?

a. double fertilization
b. megaspores
c. ovule
d. pollen tube

FF.8 The specialized male gametophyte of seed plants, such as gymnosperms, is called a(n)
a. ovule.
b. pollen grain.
c. strobilus.
d. sporopollenin.

FF.9 A typical ectoparasite has all of the following characteristics except:
a. feeds from an organism larger than itself.
b. lives outside its host.
c. grasps its host with its legs or mouth.
d. has piercing mouthparts.
e. lacks a digestive system.

FF.10 The last common ancestor of all animals was probably a
a. unicellular algae.
b. plant.
c. multicellular fungus.
d. unicellular yeast.
e. flagellated protist.

FF.11 Which of the following is NOT a trait shared between green algae and land plants?
a. stomata
b. store energy captured during photosynthesis as starch
c. chloroplasts with chlorophyll b
d. cellulose in their cell walls
e. chloroplasts with chlorophyll a

FF.12 Which of the following are characteristics of the phylum Cnidaria?
1. a gastrovascular cavity, 2. a polyp stage, 3. a medusa stage, 4. Cnidocytes, and 5. a pseudocoelom
a. 2, 3, and 4
b. all five of these
c. 1, 2, 3, and 4
d. 1 and 4
e. 2 and 3

FF.13 Which of these time intervals, based on plant fossils, came last (most recently)?
a. rise and diversification of angiosperms
b. carboniferous swamps with giant horsetails and lycophytes
c. extensive growth of gymnosperm forests
d. colonization of land by early liverworts and mosses

FF.14 Most of the world's coal deposits were formed when from ancient _____ died.
a. seedless vascular plants
b. dinosaurs and their monocot diet
c. cycads
d. mosses

FF.15 Specialization of regions of the body for specific functions, as seen in the arthropods, is called
a. tagmatization.
b. metamerism.
c. truncation.
d. differentiation.
e. cephalization.

FF.16 Which of the following sequences properly depicts the plant life cycle?
a. zygote, sporophyte, spore, gametophyte, gametes, zygote
b. zygote, gametophyte, gametes, sporophyte, spore, zygote
c. zygote, spore, sporophyte, gametes, gametophyte, zygote
d. zygote, gametes, gametophyte, spore, sporophyte, zygote

FF.17 The acoelomate body is characteristic of which animal taxon:
a. Ecdysozoa
b. Platyzoa
c. Lophotrochozoa
d. Deuterostomia

FF.18 Which of the following characteristics is not found in liverworts?
a. asexual reproduction by gemmae
b. sexual reproduction when motile sperm swim outside the plant to the egg
c. sporophyte grows within the parent gametophyte
d. central strand of primitive conducting tissue

FF.19 Bilateral symmetry is advantageous primarily because it allows for the development of _____.
a. a specialized body cavity.
b. a hydrostatic skeleton.
c. limbs for the infant to attach to a parent.
d. duplicate body parts in case of injury.
e. a specialized head and posterior.

FF.20 Protostome characteristics include which of the following?
a. a mouth that develops secondarily, and far away from the blastopore
b. coelom formed by shizocoely
c. radial body symmetry
d. spiral cleavage
e. None of the above

FF.21 Which of the following is the most accurate definition of a mushroom?
a. a collection of saclike cells called asci
b. the nutrient-absorbing region of an ascomycete
c. the nutrient-absorbing region of a basidiomycete
d. a reproductive structure formed only by basidiomycetes

FF.22 Which evolutionary innovation was most significant in helping tetrapods move to dry terrestrial environments?

a. the amniotic egg
b. the lung
c. endothermy
d. bone
e. limb specialization

FF.23 Which are the major endomembrane components in a eukaryotic cell?

a. nuclear envelope, the endoplasmic reticulum, and mitochondria
b. nuclear envelope, mitochondria, and chloroplasts
c. nuclear envelope, the endoplasmic reticulum, and chloroplasts
d. nuclear envelope, the endoplasmic reticulum, and the Golgi complex

FF.24 Terrestrial vertebrates made their appearance approximately _____ years ago.

a. 4 billion
b. 1 billion
c. 900 million
d. 400 million
e. 98 million

FF.25 The process in fungi that allows nutrients to flow from food-absorbing parts of the fungal body to other, nonabsorptive parts is

a. osmosis.
b. symbiosis.
c. cytoplasmic streaming.
d. plasmogamy.

FF.26 The rasping/grinding structure occurring in the mouth of most molluscs is the

a. Tongue.
b. radula.
c. jaw.
d. operculum.

FF.27 In which of the following groups is the evolution of true roots first seen?

a. mosses
b. conifers
c. liverworts
d. seedless vascular plants

FF.28 The evolutionary contribution of amphibians to life on land was the development of

a. the amniotic egg and shell.
b. lungs and limbs.
c. a watertight skin.
d. a life cycle independent of a need for water to breed.
e. All of the above are amphibian "innovations."

FF.29 The slender, rootlike structures found in nonvascular plants are called ____.
a. rhizomes
b. gametangia
c. thalli
d. rhizoids
e. protonemata

FF.30 The shell of a mollusc is secreted by the
a. radula.
b. mantle.
c. visceral mass.
d. foot.

FF.31 Periodic shedding of the arthropod exoskeleton is called
a. sclerotization.
b. ecdysis.
c. calcification.
d. articulation.
e. metamorphosis.

FF.32 Monotremes differ from other mammals in that they _____.
a. do not maintain elevated body temperatures
b. do not nurse their young with milk
c. lay eggs
d. do not have a four-chambered heart

FF.33 Insect dominance of the terrestrial environment is probably due to the evolution of
a. flight.
b. cephalization.
c. the exoskeleton.
d. metamerism.
e. jointed appendages.

FF.34 Best describes muscle organization in a nematode
a. layers of longitudinal and circular muscle
b. bands of longitudinal muscle
c. a single layer of circular muscle
d. a single layer of longitudinal muscle
e. none of the above

FF.35 Flatworms have
a. radial symmetric.
b. tube-within-a-tube body plan
c. eucolomate body plan
d. none of the above

FF.36 The water pumping cell of a sponge is the
a. sclerocyte
b. amoebocyte
c. choanocyte
d. pinacocyte

FF.37 Which of the following is a characteristic of adult echinoderms?
a. lophophore
b. exoskeleton
c. radial symmetry
d. gastrovascular cavity
e. spiral cleavage

FF.38 In addition to decomposition and decay, the other major ecological role of the fungi involves
a. producing medicines for humans.
b. digesting ant species.
c. assisting plants in mineral acquisition.
d. performing photosynthesis

FF.39 The substance that typically provides rigidity to fungal cell walls is
a. cellulose.
b. lignin.
c. starch.
d. chitin.

FF.40 Which of the following is the developing gut for most animal embryos?
a. mesoglea
b. archenteron
c. blastopore
d. schizocoelom

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Worth 35% of your final grade
Total points for both parts of the exam is 110 pts

December 16, 2014
Part B: Written questions

a) Place your name and student number in the space provided below. Be sure only your student number, is on the top of each of the following pages – the exam will be separated and if you name is not on a page your mark will be zero for that page. This part of the exam is worth 65 points.

b) Answer all questions in the space provided on the exam. Do not transfer answers to the back of the page.

c) You may use either pencil of ink for your answers.

d) Answers as written paragraphs are preferred but point form is acceptable as long as the points are logically organized and not random statements or facts

e) This is not an open book exam.

f) A calculator is not required for the exam

g) There are seven pages including this one in part B of the exam, be sure you have all seven pages

Name: _____

Student number: _____

18 pts Part 1. Briefly explain what each of the following terms means or the biological contribution made by the person. Where possible include an example in your explanation from a group or an organism to which the term or name applies.

Companion (Albuminous) cell

Karyogamy

Secondary cell wall

Antheridia

Amnion

Pseudocoelom

Anything written below this line will not be marked.

29 pts Part 2: Fill in the missing word, or provide the one word answer in the space provided at the end of the sentence. If the line is missing, add it.

2.1 This is the sessile stage in the cnidarian life cycle. _____

2.2 Sori (singular sorus) on the fern leaf are the site for the production of these. _____

2.3 Fungal hypae are wound together to form this filamentous stands. _____

2.4 The most anterior pair of fins on the side of a shark are this type. _____

2.5 Plant spores are produced inside this structure. _____

2.6 The biopolymer of the plant cell wall. _____

2.7 Number of cellulose synthase molecules in a plant cell rosette. _____

2.8 Type of cell division that the spore mother cell in a moss sporangium undergoes when it produces spores. _____

2.9 Maximum number of genome duplication to occur in chordates. _____

2.10 In non vascular plants this stage of the life cycle dominates. _____

2.11 Functionally the cells of the fruiting bodies of mushrooms have this chromosome compliment. _____

2.12 A strand of fungal cells aligned end to end. _____

2.13The food that a reptile embryo feeds on is the _____ .

2.14 Informal name for jawless fish. _____

2.15 This gas is the source of almost all the biomass of a plant (Two words) _____

2.16 Of the two main vascular tissues in vascular plants this moves water up the plant. _____

2.17 The structure on a choanocyte that propels the water through a sponge. _____

2.18 The feeding strategy of fungi (Two words). _____

2.19 Special type of cell division found in plants. _____

2.20 The location of microtubular organizing units that produce fungal spindles during mitosis (three words). _____

2.21 At some point in every mammal's life the first set of teeth fall out and are replaced with a second set. This is the term for this type of dentition. _____

2.22 Terrestrial plants evolved from this type of algae. _____

2.23 The shell of a clam is composed of this number of valves. _____

2.24 These structures are used to propel water across the mollusc gill. _____

2.25 Tentacular structure surrounding the mouth of a bryozoan. _____

2.26 The appearance of radial symmetry in the echinoderms is referred to as this type of evolutionary event. _____

2.27 The tube foot of a sea start is an example of this type of skeleton. _____

2.28 Minimum percentage loss of biodiversity for there to be a mass extinction event. _____

2.29 The supercontinent that straddled the globe from north to south pole. _____

Part three of the exam is on the next page

18 pts Part 3: Answer the following three questions in the space provided. Each answer is worth 6 points

3.1 How does the interaction between cells of a multicellular organism differ from a colonial type and how does this interaction occur in the multicellular taxa?

3.2 How did the vertebrate jaw evolve and what taxonomic term is used for vertebrates with jaws?

3.3 What evidence is there for multicellular life prior to the start of the Cambrian?

Anything written below this line will not be marked.