BIO 1130 An Introduction to Organismal biology
Final examination
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

{part of the phloem}{works with sieve elements/cells}{pumps sugar into the sieve element that pulls water in to create sugar movement}

Karyogamy

{Part of the fungal life cycle}{fusion of the nuclei} {creates diploid (2N) nucleus} This question is not about Plasmogamy which is the fusion of the cell cytoplasm

Secondary cell wall

{composed of lignin}{inner surface/lines the inside/between primary and cell membrane}{found in tracheids/or vessel elements/evolution of vascular tissues in plant}{increases the strength/rigidity/support of the cells} any three of the four.

Antheridia
{found in plants/example}{type of gamatangia}{produces sperm/male gamete}

Amnion

{One of a number of membranes/surrounds one of the compartments in the amniote egg – this is the only point for mentioning the other membranes}{fluid filled/supports/aqueous}{Embryo is suspended in the fluid}

Pseudocoelom
{Type of body cavity}{not completely lined in mesoderm}{mesoderm only associated with body wall/outer ectoderm not the gut/digestive tract/endoderm}{Nematodes/often found in animals that have specialized by miniaturization}

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. _____**Polyp**_____

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

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

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

2.5 Plant spores are produced inside this structure. _____**Sporangia**_____

2.6 The biopolymer of the plant cell wall. _____**Cellulose**_____

2.7 Number of cellulose synthase molecules in a plant cell rosette. _____**Thirty-six**_____

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

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

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

2.11 Functionally the cells of the fruiting bodies of mushrooms have this chromosome compliment. _____**Dikaryotic / N+N**____

2.12 A strand of fungal cells aligned end to end. _____**Hypha**____

2.13The food that a reptile embryo feeds on is the _____**Yolk / Albumin**____ .

2.14 Informal name for jawless fish. _____ **Agnatha** _____

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

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

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

2.18 The feeding strategy of fungi (Two words). ____**Absorbtive heterotroph/feeder**___

2.19 Special type of cell division found in plants. _____**Phragmoplastic**_____

2.20 The location of microtubular organizing units that produce fungal spindles during mitosis (three words). _____**Nuclear envelope/membrane/spindle pole body**___

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.

_____**Diphyodent/deciduous**_____

2.22 Terrestrial plants evolved from this type of algae. _____**Green**____

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

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

2.25 Tentacular structure surrounding the mouth of a bryozoan. ____**Lophophore**___

2.26 The appearance of radial symmetry in the echinoderms is referred to as this type of evolutionary event. _____**Secondary/convergent**___

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

____**Hydrostatic**_____

2.28 Minimum percentage loss of biodiversity for there to be a mass extinction event. _____**50**_____

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

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?

Difference {There is some form of cytoplasmic connection between the cells/cell to cell communication in multicellular forms that does not appear in colonial}

Animals: {Septate/Gap junctions} {connexins control cytoplasmic exchange }
Fungi: {there are no cell walls or membranes between the nuclei}
Plants: {Plasmodesmata}{perforated cell wall with desmotubes controlling cytoplasmic exchange}

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

{Taxonomic term Gnathostomata}{Innovation originally for improved respiration/oxygenation without movement}{Flexing of gill/pharyngeal arches} {pulled water into the mouth and across pharyngeal}{First/anterior gill arch} {folded completely on itself to form the jaw}

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

There are three events that suggest multicellular life occurred before the Cambrian
1. {Doushantou fossils}{appear to be embryos of multicellular organisms}
2. {Edicarian fossils} {fractal branching organisms/sponges and other animal types are found in the fossils may also include jelly fish/polyps}
3. {Hox/Homeotic genes}{Molecular clock says that the origins of the genes are up to 100 million years before the Cambrian. }

Not the burgess shale fossils – that is the Cambrian

Anything written below this line will not be marked.