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 21, 2015
Part B: Written questions

Please read the following instructions and sign in the space provided below to acknowledge the instructions:

a) Cellular phones, unauthorized electronic devices or course notes (unless an open-book exam) are not allowed during this exam. Phones and devices must be turned off and put away in your bag. Do not keep them in your possession, such as in your pockets. If caught with such a device or document, the following may occur: you will be asked to leave immediately the exam, academic fraud allegations will be filed which may result in you obtaining a 0 (zero) for the exam
b) 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.
c) 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

_____
Signature

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.

Doushantuo fossils

{microfossils – very small fossils}{Resemble embryos of early animals}{As embryos they would be multicellular and this is before the Cambrian which is when traditionally multicellularity arose}{580-542 Mya}

Indeterminate meristem

{Plant tissue that can form into other specific types of tissue – root or base cell that can develop into specialized cells/tissues/organs}{unlike other meristem indeterminate can give rise to more indeterminate/is a self-perpetuating tissue}{found at growing tips of the plant/source of genetic variation}

Pseudocoelom

{type ofbody cavity}{incomplete lining of mesoderm explained as mesoderm associated with the body wall but not the gut}{Often found in animals that show miniaturization}{Example Nematodes/Ascaris}

Synapsid

{One of two reptile/vertebrate/amniote skull morphologies}{One opening in the skull for the muscles that move the jaws/one temporal fenestra or arches for jaw muscles}
{Lineage of reptiles that evolves into the mammals}Cell plate

Cell plate

{formed during plant cell division}{new cell wall forms between the two new cells}{connects with the outer cell wall}{Forms from vesicles transported by microtubules of phragmoplast}

Ciliate micronucleus

{Found in ciliophoran/ciliophoran – no point for ciliate need the more precise name of the protozoan group}{Nucleus containing one copy of the genome/diploid complement of genetic material}{Used only for reproduction, must be clear that it is only for reproduction and not general function of the cell} There is no point for saying it is the smaller of the two – that's obvious from the term

Anything written below this line will not be marked.

35 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 The ancestral food for amphibians was this group of animals and their feeding strategy is this. ___ **Insectivore** ___

2.2 Chromosome compliment of hyphae before plasmogamy occurs. ____ **Haploid** ____

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

2.4 Of the two types of muscles in worms important in the function of the hydrostatic skeleton, these stretch the muscles oriented in line with the anterior to posterior axis of the worm. _____ **Circular** ____

2.5 This geological period follows the Cambrian period. _____**Ordivician**_____

2.6 These geological events are too small and infrequent to result in any change in greenhouses gasses to cause a mass extinction. ___ **Volcanoes** _____

2.7 Thirty six cellulase molecules are organized into this structure in all plants. ___ **Rosette** ____

2.8 The number of peripheral microtubular doublets in either a cilium or flagellum. _____ **Nine** _____

2.9 The main locomotory structures used by echinoderms. _____ **Tubefeet** ___

2.10 Reptiles, birds and mammals are distinguished from fishes and amphibians in that their embryos develop in this fluid filled sac. _____**Amnion**_____

2.11 Together, bundles of the living cells that move sugar in a plant are referred to as this type of plant tissue. _____ **Phloem** _____

2.12 In the life cycle of a gymnosperm pine, this type of spore is wind born.

____**microspore**_____

2.13 This bacterial domain is the sister group to the Eukarya. ___ **Archea** _____

2.14 One of the main roles of Fungi is in this important part of the carbon cycle. ____ **Decomposition** _____

2.15 Bikonts are the ancestral cell to which of the multicellular eukaryote Kingdoms.

____**Plantae**_____

2.16 When plants first appeared on land the plant's fungal partner provided these essential nutrients to the plant and still do so today. ____ **Minerals** ____

2.17 These genes control pattern in multicellular organisms. ____ **Homeotic/Hox**__

2.18 Fungal hypae are wound together to form this filamentous stands. ___ **Mycelium** ____

2.19 The unique shape of a sharks tail, which has a dorsal lobe that is much larger than the ventral lobe. ___ **Heterocercal** ___

2.20 Number of mass extinctions like the one at the end of the Ordovician that have happened. _____**Five**_____

2.21 One of the advantages of a nuclear envelope surrounding the nucleus is that replication and this stage in the central Dogma of Biology is restricted to the nucleus. ____**Transcription**___

2.22 In cilia and flagella these molecular motors connect the outer microtubular components to each other. ____ **Dynein** _____

2.23 The plant sap collected for making maple syrup is from this tissue. ___ **Phloem** ___

2.24 Slits in this are one of the chordate characteristics. ___ **Pharynx** _____

2.25 This type of movement allowed the Cambrian fauna to tap into a rich unused food source of the marine sediments. ____ **Burrowing** ___

2.26 Like feathers, these help insulate mammals and are a diagnostic character of this vertebrate class. ____ **Hairs** _____

2.27 The Cambrian period marks the start of this the final geological eon. ___**Phanerozoic**____

2.28 During the eight cell stage in the developing embryo, when the cells above the equatorial plane where cleavage occurs remain in place, and aligned perfectly with the cells underneath the cleavage pattern is this type. ____ **Radial** _____

2.29 Number of flagella on the moss sperm cell. _____**Two**_____

2.30 Unlike the primary cell wall the secondary cell is composed of cellulose and this compound. _____ **Lignin** ____

2.31 A waterproof insect package of sperm is given this name. ____ **Spermatophore** ____

2.32 Decreased dissolved oxygen in water makes the water ___ **Anoxic** _____ .

2.33 Like the corals, these animals also built reefs in the Ordovician oceans. ___ **Bryozoa** ____

2.34 This type of gliding was probably a precursor to movement in the first eukaryote cells. ___**Cellular**___

2.35 The malaria parasite lives in these mosquito glands before being injected into the human host when the mosquito bites. ____ **Salivary** _____

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 Aquatic animals try to maintain neutral buoyancy so that all the energy used for locomotion is used for moving forward, not to counter the effects of gravity. What is neutral buoyancy and use one type of fish in your answer to explain how that fish attains neutral buoyancy.

Definition of Neutral Buoyancy: {Having the same density as the surrounding water}{Important because no energy is used to prevent sinking} Two points

If the students answer with two animals only use the first.

Sharks: {Shark uses oils/squalene}{Explanation of oil: oily tissue is less dense than normal tissue} {Cartilage is less dense than bone}{heterocercal tail constantly provides lift}{This may occur in students who have done the reading: Presence of high concentrations of urea/trimethylamine oxide decreases tissue density} Only award 4 points

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Fish: {amount of air in the swim bladder changes} Must know why volume of bladder changes {Water pressure at different depths compresses the air in the bladder}Must know when air is added{in deeper water the pressure of the water decreases amount of air in bladder and more must be added}{Rising must remove air and return it to the blood }1 point for knowing the names of the structures of the swim bladder {red body – ret mirable adds the air from the blood and oval body removes the air} Only award 4 points.

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3.2 Ancestral fungal cells lacked septa and, compared to plants and animals, developed a unique way to divide their cell. How does cell division occur in these early fungi fungus.

{type of division uses Spindle pole body}{Found in the nuclear envelope/membranous wall of the nucleus}{Microtubules extend into the nucleus and outside}{Inside microtubules direct the division of the chromosomes into two daughter neuclii}{Outside micronuclei position the new neucleus in its proper position}{Unlike plants and animals nucleus remains intact and chromosomes are separated from each other while inside the nucleus}

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3.3 What is endocytosis and how is used to obtain nutrients by protists

Definition of endocytosis: {Bulging of plasma membrane/cytoplasm to surround material}{that enter the cell as a vacuole/phagosome} There may be a drawing for this be sure the drawing conveys the information in these first two points {Two types: Pinocytosis and phagocytosis}{Pinocytosis nutrients are dissolved in liquid}{Phagocytosis solid or undissolved food}{In both fuse with lysosome with digestive enzymes that break food down and nutrients diffuse into the cell}

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