BIO 1130 An Introduction to Organismal Biology
Midterm examination
Worth either 15% or 20% of your final grade
Total points for both parts of the exam is 80 pts

Saturday, November 8, 2014

Part B: Written questions

a) Place your name and student number in the space provided below. Be sure that your student number is on the top of each of the following pages – the exam will be separated. ONLY place your student number on the pages where indicated

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

g) Enter the multiple choice exam code in the space provided

Name: _____

Student number: _____

Multiple Choice Exam Code (MM or FF): _____

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12 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.

Dyenin

{Type of molecular motor} {Travels along microtubules/cytoskeleton} {Moves towards from centriole or the plus end} {inside flagella or cilia} any three of four.

Symplesiomorphy

{Plesiomorphy is an primitive/ancestral trait/ that is unmodified and in the original}{Syn = Shared by all the ancestors from the first with the trait} {shared ancestral traits}

Vicariance

{Type of allopatric speciation}{Involves geographic isolation of parts of a population} {nature of the isolating factor - by a nonbiological factor event}{ex: used in class rock crickets in the mountains of western Canada/different plants and animals on the continents that have resulted from continental drift – there may be other example}any three of the four for the full points.

Eukaryote flagellum
{9+2 arrangement of microtubules - drawn or explained with 9 doublets around the outside and pair inside}{long and only one (unikont) or two (bikont) on the cell} {beat in planar or helicoid/spiral pattern}

28 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 to the end of the line.

2.1 Different species of fireflies have unique flash sequences for the light they use to attract a mate. It's an example of this type of isolation mechanism. _____**Behavioural**_____

2.2 Most of the earth's gaseous atmosphere probably resulted from its release from the cooling molten core. The process was called this. _____**Outgassing**_____

2.3 Cladistics emphasizes this type of relationship between the different taxa. _____**Monophyletic/Common ancester**_____

2.4 Most of the life of an organisms with this life cycle is spent in the haploid state. _____**Haplontic/Fungus**_____

2.5 The space between the two lipid layers of the Gram-negative bacterium. _____**Periplasm**_____

2.6 This geological eon is the youngest and shortest. _____**Phanaerozoic**_____

2.7 This gas wasn't present in the earth's first atmosphere, its absence is why the early atmosphere was reducing. _____**Oxygen**_____

2.8 Abundant bacterial cytoplasmic inclusion involved in protein production. _____**Ribosomes**_____

2.9 The highly organized charged surface of these inorganic compounds may have been critical for the assembly of some of the first self replicating biopolymers. _____**Clays**_____

2.10 The contents of this organelle contain the digestive enzymes that will fuse with the food vacuole in protozoans. _____**Lysosome**_____

2.11 During this stage of the viral life cycle hundreds if not thousands of new viral particles are released. _____**Lytic/Lysis**_____

2.12 Whether it's protein or RNA that come first in the chemical origins of life doesn't affect the fact that which ever it was it had to be capable of doing this. ___**Replication**_____

2.13 Geological eras are combined into these larger units of time. _____**Eons**_____

2.14 Which part of the central dogma of biology does not occur inside the nuclear envelope. _____**Translation**_____

2.15 The first amino acid added to start the growing peptide chain in Archea and Eukarya. _____**Methionine**_____

2.16 Cell wall component in the plant like eukaryotic protists. _____**Cellulose**_____

2.17 This specialized cytoplasmic region contains the bacterial genome. _____**Nucleoid**_____

2.18 This bacterial domain includes the closest relatives to the Eukarya. _____**Archea**_____

2.19 Changes and mutations are expressed immediately in bacteria because of this structure of the genome. _____**Haploid**_____

2.20 Type of molecular motor used in amoebozoan cytoplasmic streaming. _____**Myosin**_____

2.21 The first motile eukaryote had this number flagella. _____**One**_____

2.22 The engine for a bacterial flagellum is fuelled by the movements of these across the membrane. _____**Protons**_____

2.23 This term describes life's origins as occurring somewhere other than the planet earth. _____**Panspermia**_____

2.24 The name given to the rich mix of inorganic and organic compounds that appear in the oceans at the end of the Hadean (two words) _____**Primordial/Prebiotic soup**_____

2.25 Polar lipids spontaneously form these small structures in aqueous solutions. _____**Micelles**_____

2.26 Its anatomically impossible for two different species to physically mate, an example of this type isolation mechanism. _____**Mechanical**_____

2.27 This geological eon occurred from 3.8 Ma ago until 2,500 Ma and ends when oxygen first appears in the earth's atmosphere. _____**Archean**_____

2.28 Prokaryotes are before the kernel and eukaryotes have a true kernel - what's the kernel? _____**Nucleus**_____

Part three of the exam is on the next page

12 pts Part 3: Answer the following two questions in the space provided. Each question is worth 6 points

3.1 In the chemical and biological evolution of the first cells how do scientists explain how the first organic small molecules appeared?

{First organic small molecules formed with carbon-carbon bonds}{Appeared spontaneously as simple chemical reactions}
{Miller – Urey} {Gases, water and electrical discharge in a closed system will generate them}
{Geothermal/Hydrothermal vents – reactions occur in the deep oceans}
{may have arrived on the planet from outer space}

3.2 The centrosome was an important event in eukaryote evolution. What is a centrosome and give three reasons why it was important in eukaryote cell evolution.

3 pts - Centrosome is {nine triplets of microtubules arranged around a central tubule – this may be drawn to explain}, {Build microtubules in a a cell} use one of these two for the third point {usually paired} {also called basal bodies – centrioles}

3 pts reason for importance or things microtubules are involved in: {separate the chromosome pairs during cell divisions/mitosis and meiosis}{produce the cytoskekton of the cell}{important in the evolution of movement locomotion in eukaryote cells – flagella and cilia} {motors running along the tubules are the transport of the system – faster than diffusion} use three of these four