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 9, 2013

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): _____

•

BIO1130 Midterm Examination – November 9, 2013
STUDENT NUMBER:_____
Don't enter your name.

---

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.

Autapomorphy

{ derived characters} {shared by a monophyletic group} {these characters define the group}{ex. Could include the following: Endomembrane system, mitochondria, nuclear envelope, diploidy and centrosomes are autapomorphies of the Eukaraya/Eukaryotes}{ There may also be autapomorphies for the Kingdoms: Plantae – autotroph, Animalia ingestive heterotroph and fungi – Absorptive/saprophytic heterotroph}

Bacterial conjugation
{Gene transfer mechanism/increase in genetic variation}{two bacterial cells fuse with a cytoplasmic bridge, pilli}{DNA/plasmid moves across the bridge, pilli, to the other cell} There are no points for bacterial sex – sex implies meiosis and there is none

Chemoorganotroph
{Description of energy metabolism and/or building complex carbon molecules}{Carbon is obtained from Carbon dioxide – absence of the heterotroph term}{Chemoorgano – Breaking of existing C-C bonds are used to generate the High energy electrons/protons to produce ATP as an energy source to stith the Carbon dioxide carbons together}
http://salinella.bio.uottawa.ca/BIO1130/Lectures/default.php?1130_lectB02_Dvty_Arch_Meta.php??E?Md2ChapterMcp1

Haplontic life cycle

{Most of the life cycle is spent in the haploid state/mitotic divisions of the life cycle are in the haploid state}{gametes when they form are from haploid cells that fuse and the zygote is short-lived and immediately undergoes meiosis}{Basic life cycle of fungi and fungi-like protists (Protozoa)}{Product of meiosis forms a spore} There are four possible points here the first two must be in the answer and either of the other two for a total of 3 points.

BIO1130 Midterm Examination – November 9, 2013
STUDENT NUMBER:_____
Don't enter your name.

---

30 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 Prions are common on the surface and are important in this cellular process. **Adhesion**

2.2 The field of science that is primarily interest in the atomic element six on the periodic table (Two words). **Organic Chemistry**

2.3 Short nucleotide and protein sequences share this property when they are placed in aqueous solutions. **Insoluble/precipitate**

2.4 The late heavy bombardment in the history of the solar system marks the start of this Hadean phase. **Stabilizing**

2.5 With only one chromosome the genetic compliment of a bacterial cell is considered to be this. **Haploid**

2.6 Both Archea and Eukarya use these proteins to package their DNA. **Histone**

2.7 This describes the problem of long chains of either RNA or protein as the first biopolymers. They are this. **Unstable/Break down**

2.8 Halophile bacteria love this. **Salt**

2.9 Which part of the central dogma of biology does not occur inside the nuclear envelope. **Translation/ Protein synthesis**

2.10 In addition to the mitochondria this organelle in photosynthetic autotrophs also arose for the first time by a primary endosymbiotic event. **Plastid/chloroplast**

2.11 This gradient is essential if ATP is to be synthesized in a cell. **Proton**

2.12 This common gas in today's atmosphere was absent in the Hadean atmosphere. **Oxygen**

2.13 This nucleus is the larger of the two different nuclei found in ciliates. **Macronucleus**

2.14 Discovery of this virus reversed the direction of information flow between DNA, RNA and proteins. **HIV/Retrovirus**

2.15 Mitochondria replicate themselves using this bacterial process (Two words) **Binary fission**

2.16 Myosin motors travel along strands of this protein. **Actin**

2.17 The name for the stage of the malaria parasite as it feeds inside the red blood cell. **Trophozoite**

2.18 The habitable zone that earth occupies in the solar system is also referred to as this type of zone. **Goldilocks**

2.19 The part of the amoeba where the endoplasm is converted to ectoplasm. **Front**

2.20 Phylogenetic systematics is also called this. **Cladistics**

2.21 The percentage of the matter in our solar system that isn't a part of the sun. **One**

2.22 These bacteria ultimately produced the oxygen environment we live in today. **Cyanobacteria**

2.23 These bacteria produced the natural gas that we currently burn as fuel. **Methanogens**

2.24 The presence of this compound in the inner wall of the photosynthetic organelle in algae is evidence of the organelles bacterial origins. **Peptidoglycans**

2.25 The fusion of male and female gametes produces this. **Zygote**

2.26 This specialized cytoplasmic region contains the bacterial genome. **Nucleoid**

2.27 When the second flagellum appeared in the bikonts it was used for this activity. **Swimming/Movement**

2.28 A subset of organisms within a group that all have the same shared characters are referred to as this, and give this method of classification its name. **Clade**

2.29 From about 4,800 Ma to 3,800 Ma this eon saw the formation of our solar system and our planet earth. **Hadean**

2.30 This chromosomal reorganization associated with meiosis increases genetic variation in Eukaryotes (Two words) **Crossing Over / Random Segregation**

Part three of the exam is on the next page

BIO1130 Midterm Examination – November 9, 2013
STUDENT NUMBER:_____
Don't enter your name.

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

3.1 How does the Proteins first Hypothesis explain the origins of the Central Dogma in Biology; what is the Central Dogma?

{Central Dogma is that DNA contains the coded information that is transferred to RNA {Message RNA is then used to produce the protein or product that the genetic code codes for} {DNA replicates itself} This may be drawn with a series of arrows

{Protein hypothesis is that Protein was the first self-replicating molecule of the three to appear}{Evidence could include prions/centrosomes/centriole as a potential examples of proteins changing or replication proteins}{problem how to get from the protein to the genetic code of the RNA/problem small strings are insoluble}
First three points – proper explanation of the Central dogma. Three points for remainder for a total of 6 points

3.2 Describe the structure a protist flagellum

{Movement is generated inside the flagellum}{basal body/ centrosome at the base builds the flagellum} one point for saying (9+2 organization without reference to the microtubular organization) or 2 points{9 outer doublets of microtubules} surround {a central pair of tubules} {Dyenin arms connect the outer tubules} plus an additional point for {movement of dynein arms/dynein arms walking on microtubules bend the flagellum to create movement}