BIOL 1000 3.0 Section A
Test 1: Friday October 5, 2012

This ENTIRE test package and scantron MUST be submitted to receive a grade

Your **STUDENT NUMBER** and **NAME** must be clearly indicated on this package and scantron sheet to receive a grade

Your **STUDENT NUMBER** must also be **BUBBLED CORRECTLY** in the scantron sheet to receive a grade

There are 25 Multiple Choice Questions (1 mark each). Choose the BEST answer for each question.

ELECTRONIC AIDS (e.g. calculators, phones iPods etc.) are **NOT PERMITTED.**

Invigilators will immediately **RELOCATE** anyone or **SUSPEND** the examination for any individual suspected of **ACADEMIC DISHONESTY**

ONLY THE SCANTRON WILL BE GRADED SO MAKE SURE YOU FILL IN THE ANSWER TO EACH QUESTION ON THE SCANTRON BEFORE THE ALLOTTED TIME FOR THE TEST IS UP.
YOU WILL NOT BE PROVIDED EXTRA TIME TO DO SO.
HAND IN QUESTION BOOKLET WITH SCANTRON.

If you finish the test before the allotted time then please raise your hand and an invigilator will come and collect your test

GOOD LUCK!

Last name:	**Section**
First name:	**A**
Student number:	

1.What is the difference between a pigment and a photoreceptor?

A. There is no difference: all pigments are photoreceptors.
B. Photoreceptors contain membrane; pigments do not.
C. Photoreceptors contain protein; pigments do not.
D. Photoreceptors are found only in prokaryotes; pigments are found in all domains.
E. Pigments are found only in photosynthesizing organisms and photoreceptors are found only in animals.

2.Of the three different ways light can interact with matter, which is the most biologically relevant?

A. Transmitted light.
B. Transformed light.
C. Absorbed light.
D. Reflected light.

3.What is the difference between an eyespot and an eye?

A. The only difference is size; an eyespot is a smaller version of an eye.
B. An eyespot detects light but does not trigger a response; an eye does both.
C. An eyespot contains photoreceptors; an eye does not.
D. An eyespot detects light but does not generate an image; an eye does both.
E. Eyes contain retinal; eyespots do not.

4.Which of the following is responsible for photomorphogenesis in plants?

A. Chromatophore.
B. Chlorophyl.
C. Phytochrome.
D. Rhodopsin.

5.Dr. Art E. Fact is studying a hormone that is linked to feeding behaviour in wild rats, and notices that the hormone levels go up and down on a 24 hour cycle, peaking between 10 am and 6 pm. He takes a group of the wild rats and keeps them in the lab for a week. He keeps half of them on a 24 hour light cycle and half on a 24 hour dark cycle. In the former case the hormone levels stay high all the time and in the latter case they drop low and stay low. What would be the best conclusion from this work?

A. The high levels of hormone are triggered by high levels of melatonin.
B. The gene responsible for making the hormone may be a clock gene.
C. The hormone exhibits a circadian rhythm.
D. Hormone release is triggered by light.
E. All of the above conclusions fit the data equally well.

6.Which of the following statements about DNA damage by ultraviolet (UV) light is true?

A. The most common DNA damage due to UV light is the formation of dimers between adenine and guanine.
B. Dimers disrupt the shape of the double helix.
C. Thymine dimers form when cytosine is altered by UV light to form thymine, then linked covalently to an adjacent thymine.
D. Dimer formation is especially serious because they cannot be repaired by the normal repair enzymes in the cell.

7.DNA is a double-stranded molecule. How are the adjacent nucleotides in a single strand of DNA joined together?

A. Hydrogen bonds between adenine and thymine and cytosine and guanine.
B. Hydrogen bonds between deoxyribose and phosphate.
C. Covalent bonds between deoxyribose and the nitrogen bases.
D. Covalent bonds between deoxyribose and phosphate.
E. Covalent bonds between adenine and thymine and cytosine and guanine.

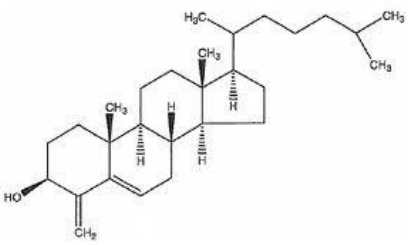
8.What is the difference between a chemoautotroph and a chemoheterotroph?

A. Chemoheterotrophs use light as their energy source; chemoautotrophs do not.
B. Chemoheterotrophs oxidize organic molecules for energy; chemoautotrophs do not.
C. Chemoheterotrophs use CO_2 as their carbon source; chemoautotrophs use organic molecules.
D. Chemoheterotrophs use organic molecules as a carbon source; chemoautotrophs use CO_2

9.Which of the following statements about cell theory and evolution is false?

A. Evolution can be defined as a change in allele frequencies within a population over time.
B. Evolution by natural selection occurs when individuals within a population adapt to changes in the environment and pass these changes on to their offspring.
C. The direction of evolutionary change can be influenced by changes in the environment.
D. The notion of common ancestry is supported by the cell theory which states that all cells come from pre-existing cells.

10.The following molecule is a



A. Lipid
B. Protein
C. Amino acid
D. Carbohydrate
E. Nucleic acid

11.Which of the following things are not found in all domains of life?

A. Phospholipid-based membrane.
B. Cell walls.
C. Two plasma membranes surrounding the cell.
D. Flagella.
E. Single celled organisms.

12.Which of the following statements about prokaryotes are true?

A. Prokaryotes have a nucleoid.
B. Archaea and bacteria appear to have evolved/appeared around the same time during the history of the earth.
C. All prokaryotes are photoautotrophs.
D. B and C.

13. A large carbohydrate is tagged with a fluorescent marker and placed in the extracellular environment surrounding a eukaryotic cell. The cell ingests the carbohydrate via endocytosis to form an endocytic vesicle. Upon viewing the cells with a microscope, which of the following cellular substructures is most likely to be fluorescently labeled?

A. The nucleus.
B. The rough ER.
C. The golgi.
D. The lysosomes.

14.A vesicle is observed travelling along down the axon of a neuron away from the nucleus at the cell centre. This movement is most likely associated with

A. Microtubules and Kinesin
B. Actin and Dynein
C. Actin and Myosin
D. Microtubules and Dynein
E. Intermediate filaments

15.Which of the following statements best describes the synthesis of glucose using carbon dioxide as a carbon source?

A. It is a catabolic reaction where carbon dioxide is oxidized.
B. It is an anabolic reaction where carbon dioxide is oxidized.
C. It is a catabolic reaction where carbon dioxide is reduced.
D. It is an anabolic reaction where carbon dioxide is reduced.

16.What is the difference between a gram positive and gram negative bacterium?

A. A gram positive bacterium has a capsule.
B. A gram positive bacterium has two plasma membranes with a cell wall surrounding both.
C. A gram negative bacterium has a cell wall surrounded by a second membrane.
D. A gram negative bacterium is surrounded by pili.

17.What is meant by secondary endosymbiosis?

A. The inpocketing of the cell membrane that gave rise to the second nuclear membrane of the nuclear envelope.
B. When a cell acquires an organelle by internalizing another cell that already has the organelle.
C. The evolution of nuclear pores via symbiotic relationships between early bacteria and the ancestral eukaryotic cell.
D. When organelles form by the fusion of a smaller cell with a larger cell.

18.How is compartmentalization achieved in eukaryotic cells?

A. Primarily by cellular structures surrounded by protein.
B. Primarily by membrane-bound structures.
C. Primarily by secondary endosymbiosis.
D. Primarily by the cytoskeleton, which divides the cell into different domains for different functions.

19.Eukaryotic cells can be much larger than prokaryotic cells because

A. They are found in multicelled organisms and so can be bigger.
B. They lack cell walls.
C. The cytoskeleton provides structural support.
D. They contain an endomembrane system.

20.Which of the following is NOT a characteristic that chloroplasts and mitochondria share?

A. Have their own ribosomes.
B. Contain multiple membranes.
C. Have a linear chromosome.
D. Capable of dividing/reproducing within the cell.

21.What does mitochondrial movement and muscle contraction have in common?

A. Both require ATP.
B. Both involve microtubules and dynein.
C. Both involve motor proteins moving to the minus end of a cytoskeletal polymer.
D. Both use actin and myosin.

22.What is the difference between oxygenic and non-oxygenic photosynthesis?

A. Oxygenic photosynthesis is believed to have evolved before non-oxygenic photosynthesis.
B. Oxygenic photosynthesis is found only in eukaryotes; non-oxygenic photosynthesis is found only in prokaryotes.
C. Oxygenic photosynthesis requires the presence of oxygen; non-oxygenic photosynthesis does not.
D. Oxygenic photosynthesis requires water; non-oxygenic photosynthesis does not.

23. Why is the cell membrane referred to as "fluid"?

A. The membrane is primarily composed of water.
B. Many different components enter and exit the membrane.
C. Many of its components can move around within the membrane.
D. The high concentration of ions in the membrane attracts water which sticks to its exterior.

24. Which of the following statements is not true?

A. The only lipid found in membrane is the phospholipid.
B. The membrane bilayer is asymmetric, with different components in the outer and inner layers.
C. Phospholipids typically have 2 fatty acid tails.
D. Phospholipids can have different hydrophilic head groups.

25. Which of the following statements about the nucleus is true?

A. The nucleus is found in both archaea and eukarya
B. The nuclear pores regulate the transport of small molecules exiting the nucleus using the signal sequences in the nuclear pore protein.
C. The nuclear pores are composed of the protein nuclein.
D. The nuclear membrane is continuous with the endoplasmic reticulum.

26. You are writing version A of the test. To ensure it is properly graded fill in A for this question.

A. Fill me in!
B. Don't choose me.
C. Don't choose me either.