SBI4U(N) Mixed Exam Review

- Answer the questions using only your brain first IN PEN. Put an asterisk next to any unsure answers, and write down any unfamiliar terms/words.
- When signalled use your notebook and textbook to answer the questions
- **Do NOT change your previous answers**
- When signalled find a buddy and discuss the questions then answer

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Brain															
Book															
Buddy															

1. Which statement best explains why C4 grasses often do better than C3 grasses in hot, dry environments?
    a. C4 grasses open their stomata at night.
    b. C4 grasses have nearly eliminated photorespiration.
    c. C4 grasses generate a positive turgor pressure under high temperatures.
    d. The enzymes for photorespiration in C4 grasses are inactivated at high temperatures.
    e. The rate of cellular respiration is higher for a C3 grass than for a C4 grass at higher temperatures.
2. In a comparison of amounts of urea in human urine, the largest amount of urea would be found with a diet very rich in:
    a. animal fat.
    b. simple carbohydrates (e.g., sucrose).
    c. complex carbohydrates (e.g, starches).
    d. protein.
    e. fruits and vegetables.
3. Arrange the following steps involved in synthesis of a protein in the correct order.
    i. A complementary mRNA copy of DNA is made.
    ii. The DNA double helix unwinds.
    iii. mRNA binds to ribosomes.
    iv. The amino acids of two adjacent tRNAs form a peptide bond.
    v. mRNA leaves the nucleus.
    vi. An anticodon of tRNA recognizes an mRNA codon.
    a. i, ii, iii, v, vi, iv
    b. ii, i, iii, v, iv, vi
    c. ii, i, iii, iv, vi, v
    d. iv, v, ii, i, vi, iii
    e. ii, i, v, iii, vi, iv
4. Cells have a resting membrane potential of approximately -60 mV. If a cell receives a stimulus that opened Na+ channels in the plasma membrane:
    a. K+ ions would enter the cell against their chemical/concentration gradient.
    b. Na+ ions would enter the cell down their electrochemical gradient.
    c. The membrane potential would change to -80 mV.
    d. Na+ ions would leave the cell down their chemical/concentration gradient.
    e. K+ ions would leave the cell down their electrical gradient.
5. Molecules resulting from the hydrolysis of a dipeptide are:
    a. two sugars.
    b. an amino acid and an alcohol.
    c. an acid and an amine.
    d. a sugar and an amino acid.
    e. two amino acids.
6. In mitochondria, H+ ions are moved by the electron transport chain. What is this an example of?
    a. Active transport
    b. Facilitated diffusion
    c. Passive transport
    d. Electron transport
    e. Electrochemical gradient transport
7. Which statement about enzymes is FALSE?
    a. They function best at a particular pH.
    b. All enzymes are catalysts.
    c. They function best at specific temperatures but break down at high temperatures.
    d. They undergo a major chemical change after reacting with their specific substrate.
    e. They are essential to the metabolism of cells for the conversion of energy.

8. Which statement about the light reactions of photosynthesis is FALSE?
    a. Chlorophyll a is the only pigment that can absorb photons.
    b. Electrons from chlorophyll a are boosted to a higher energy level.
    c. As electrons are lost from chlorophyll a through the electron transport chain, they are replaced through the photolysis of water.
    d. The photolysis of water releases protons into the interior of chloroplast membrane sacs (thylakoids), thus generating a proton gradient that can drive ATP synthesis.
    e. Photophosphorylation results in the reduction of NADP+ to NADPH.
9. Which of the following use their own metabolic energy to maintain a near constant body temperature?

    i. Fish
    ii. Birds
    iii. Reptiles
    iv. Amphibians
    v. Mammals

    a. i, ii, iii, iv and v
    b. ii, iii, iv and v
    c. ii, iii and v
    d. ii and v
    e. v only
10. What would be an expected consequence of changing one amino acid in a particular protein?
    a. The primary structure would be changed.
    b. The tertiary structure would be changed.
    c. The biological activity of this protein might be altered.
    d. The number of amino acids present would stay the same.
    e. All of the above are expected.
11. Which statement is FALSE?
    a. Glucose-6-phosphate is an intermediate in glycolysis.
    b. Pyruvate from glycolysis enters the mitochondrion and is converted to acetyl coenzyme A.
    c. Some energy from ATP is required for glucose to enter the glycolysis process.
    d. For each glucose molecule broken down during aerobic respiration, the citric acid cycle produces more ATP molecules than does the electron transport chain.
    e. The energy to make ATP comes from a proton gradient across the inner mitochondrial membrane, which is made by passing electrons through the electron transport chain.
12. Fats are a better source of energy than carbohydrates because:
    a. fats are digested better than carbohydrates.
    b. the oxidation of fats produces larger quantities of ATP.
    c. fats are converted to fatty acids that directly enter the citric acid cycle.
    d. fats enter cells faster than carbohydrates.
    e. fats can be broken down by glycolysis without entering the mitochondrion.
13. The essential characteristic of a polar molecule is that it:
    a. contains oxygen.
    b. contains ions as part of the structure.
    c. has an asymmetrical distribution of electrical charge.
    d. is formed at extremely low temperatures.
    e. contains double or triple bonds.
14. Which statement comparing the biochemical processes of photosynthesis and cellular respiration is FALSE?
    a. Both biochemical processes take place in specialized organelles that have complex systems of internal membranes.
    b. ATP synthesis in both processes relies on the chemiosmotic mechanism, involving the pumping of protons through a membrane.
    c. Both processes involve the passing of electrons from carrier to carrier in a series of oxidation-reduction reactions which liberate energy.
    d. The initial source of electrons which pass from carrier to carrier are from high-energy food molecules in both processes.
    e. Oxygen is an end-product of photosynthesis and carbon dioxide is an end-product of cellular respiration.
15. Which statement about the Calvin cycle is FALSE?
    a. It is used by C4 plants to concentrate carbon dioxide.
    b. The initial carboxylation reaction is catalysed by the enzyme RuBisCO
    c. The reduction of 3PG to a sugar phosphate requires ATP, NADPH , and H+ .
    d. It is a process which involves enzymes that are light activated.
    e. The Calvin cycle operates in C3, C4, and CAM plants.