SECOND TEST BIOLOGY 107 SUMMER 1993

ANSWER ONLY A OR B OF THOSE QUESTIONS WITH A CHOICE, PLACE THE ANSWERS IN ORDER, TELL WHICH ANSWER A OR B YOU ARE GIVING.

1. A. Distinguish between DNA replication and transcription.
   B. What is the difference between base pairing and codon triplets?

2. A. What is the difference between cDNA made from mRNA and the gene for that mRNA?
   B. How can viruses which only contain RNA and a coat reproduce?

3. A. Distinguish between mRNA, tRNA, rRNA.
   B. How is mRNA translated to a sequence of amino acids?

4. A. How do cells become differentiated as development proceeds?
   B. What is important about gastrulation?

5. A. What is different about male and female meiosis?
   B. What is meant by negative feedback reactions in the menstrual cycle?

6. A. How are sporophytes and gametophytes different in plants?
   B. Describe one plant hormone, where it is produced and its effect.

7. A. How can a control region of one gene and a reporter gene sequence be used to investigate how gene activity is controlled?
   B. How is it possible for different genes from the same genome to be active in different tissues?
HATCHING. Answer on this sheet – place the correct letter beside the numbered statement.

e. sol-gel reversibility
b. transcription by RNA polymerase
c. microtubules
d. action potential
e. threshold
f. anaphase
g. oval window
h. freeze fracture
i. transfer RNA
j. messenger RNA
k. sarcoplasmic reticulum
l. medulla
m. DNA polymerase
n. metaphase
o. lens
p. photosynthesis

1. Usually splits membranes in half at hydrophobic lipid core for observing particles present.
2. Needed to activate and carry amino acids to ribosome.
4. Lowest level of stimulus able to cause depolarization and propagation of impulse.
5. Release calcium causing sarcomere shortening.
7. Important characteristic of colloidal suspension necessary for ameboid movement.
8. Results in synthesis of RNA off DNA
9. Stage of mitosis during which the chromosomes migrate toward the poles.
10. Component of spindle, aster, centriole.
11. Necessary for accommodation for distance or close-up vision.
12. Moved by ear bone movement.
13. Results from excitation of electrons in chlorophyll capturing energy in ATP.
FILL IN THE BLANKS. 3 pts each.

1. The dark reaction of photosynthesis depends upon the presence of __________________________ made in the light reaction plus the gas __________________________ and results in production of __________________________.

2. The Na⁺-K⁺ pump requires __________________________ as shown by its stopping after administering metabolic poisons.

3. The active transport by the sodium pump maintains a higher concentration of __________________________ inside the cell than out.

4. If chromosomes are all labeled with radioactive nucleotides before one division, __________________________ of the chromosomes are still labeled after the next division.

5. Adenine is always opposite __________________________ in RNA.

6. The light reactions of photosynthesis result in photolysis of __________________________ and production of the gas __________________________ and the reduced molecule __________________________.

7. Ribosomes are composed of 2 __________________________ containing __________________________ and __________________________.

8. Elongated cells probably are able to maintain their shape because of the presence of __________________________, the cytoskeletal element.

9. The product of ATP and adenylyl cyclase is __________________________, sometimes called the "second messenger."

10. Levels or concentrations of __________________________ or __________________________ can regulate rates of the glycolysis or citric acid cycle due to modification of enzymes.
TRUE OR FALSE. Blacken the space under 1 for True, under 2 for False on your answer sheet.

1. Sympathetic motor fibers and parasympathetic motor fibers innervate the same organs, with antagonistic responses.

2. Rods and cones are evenly distributed over the retina.

3. Blood passes more quickly through the narrow channels of the capillaries than it does through the larger channels of the arteries and veins.

4. The entire spiral length of the basilar membrane is set in motion by each noise frequency in the cochlea.

5. Contraction of the right ventricle pushes blood through the pulmonary semilunar valve and into the pulmonary artery in humans.

6. The functional unit of contraction in myofibrils is the sarcoplasmic reticulum.

7. Proteins necessary for contraction include actin and myosin.

8. Microfilaments and microtubules are necessary for release of acetylcholine released at a synapse.

9. Drugs can stop nerve transmission by decreasing the amount of acetylcholine released at a synapse.

10. Relaxation can occur in a contracted muscle only when more calcium is released.

11. Nerve impulses normally travel toward the cyton over dendrites and away from the cyton by axons.

12. The right half of the cerebellum controls motor functions of the right arm and the right leg.

13. An aggregation of cell bodies located outside the brain or spinal cord is called a ganglion.

14. The fluid mosaic model of cell membranes has a lipid core and solid layers of proteins on the inside and outside of that.

15. The inside of the resting muscle or nerve cell is positive as compared to the outside of it.

16. Cytochalasin treatment prevents many cell movements.
MULTIPLE CHOICE. Choose the one correct answer and mark it on the answer sheet.

17. The cerebellum is
   a. the center for vision and smell
   b. the brain region closest to the pituitary
   c. the major center of autonomic regulation
   d. part of the forebrain
   e. the major muscle coordination center

18. Different sensations arise
   a. because motor nerves have a lower threshold
   b. because of various sense organs
   c. because of connection with different regions of the cerebral cortex
   d. because some cells are myelinated
   e. because the impulses from the connecting neurons are of different intensity

19. The chamber of the fish heart to receive blood from the body is
   a. the conus arteriosus
   b. the ventricle
   c. the sinus venosus
   d. the same as in the mammal heart
   e. the atrium

20. The Fissure of Rolando separates
   a. the thalamus into three parts
   b. the motor and sensory areas of the cerebrum
   c. the visula from the auditory centers
   d. the compartments of the heart
   e. the pons from the medulla

21. The dorsal root ganglia contain
   a. cell bodies of motor fibers
   b. clusters of brain cells
   c. cell bodies of sensory neurons
   d. synapses between pre- and post-ganglionic fibers
   e. the cell bodies of association neurons