NAME:
SEMAPHOR:

I.

Choose the correct answer. Every question is worth two points.

1. Which lipid-type molecules are the most abundant in biological membranes? (2p)

a. cholesterol
b. phospholipids
c. carotenoids
d. triacylglycerols

2. Which structures are NOT found in prokaryotes? (2p)

a. nucleus, mitochondria, centrosomes
b. cell wall, circular chromosome, RNA
c. cell membrane, DNA, ribosomes
d. anabolic enzymes, amino acids

3. What is true for the function of the cell membrane and the cell wall? Choose the most appropriate answer! (2p)

a. The cell wall is an external skeletal structure of the cell, while the cell membrane is a semipermeable barrier.
b. Cell wall protects the cell, while the cell membrane merely surrounds it.
c. Both are important for animal cells because of the cell wall rigidity and membrane permeability.
d. The cell wall protects the cell from outer osmotic changes, while the cell membrane does not react to them.

4. Which organelles have a double membrane: an inner and an outer one? (2p)

a. Golgi-apparatus
b. lysosome
c. endoplasmic reticulum
d. mitochondria

5. What happens to animal cells placed in a fluid with a salt concentration much lower than the salt concentration in its cytoplasm? (2p)

a. the cell will lose protein
b. the cell will remain the same
c. the cell will shrivel
d. the cell will swell and might break open

6. Where does the Krebs (citric acid) cycle take place? (2p)

a. in the cytoplasm
b. in the Golgi-apparatus
c. in the mitochondria
d. in the endoplasmic reticulum

7. During which stage of the cell cycle is DNA replicated? (2p)

a. Interphase, S
b. Interphase, G2
c. Interphase, G1
d. M phase, i.e., cell division

8. What is the correct order of the phases of cell division (mitosis)? (2p)

a. prophase, interphase, metaphase, anaphase
b. prophase, metaphase, anaphase, telophase
c. anaphase, prophase, metaphase, telophase, interphase
d. anaphase, cytokinesis, metaphase, prophase, telophase

9. Which molecule is the final electron acceptor in cellular respiration? (2p)

a. nitrogen monoxide
b. carbon dioxide
c. hydrogen
d. oxygen

10. What cellular transport process means cell engulfing matter from the outside environment? (2p)

a. diffusion
b. phagocytosis
c. exocytosis
d. osmosis

11. What is the definition of a gene? (2p)

a. a section of RNA that codes for a protein
b. a location of a protein in the human genome
c. a section of DNA that codes for a protein
d. a different version of the same gene, a group of genes

12. Two black mice were crossed, and one-fourth of all offspring had brown fur. What is the best explanation? (2p)

a. the allele for black fur exhibits complete dominance
b. both parents have a recessive mutation
c. independent assortment has occurred
d. the alleles for black and brown fur exhibit incomplete dominance

13. How many chromosomes are in a gamete (like egg and sperm) in humans? (2p)

a. 23 chromosomes
b. 46 chromosomes in 23 pairs that are mostly similar in their structure
c. 46 differently structured chromosomes
d. 23 autosomes and 23 gonosomes

14. At which stage of development is the embryo implanted (2p)

a. blastocyst
b. zygote
c. morula
d. chorion

15. What is the evolutionary advantage of sexual reproduction (2p)

a. genetically stable species
b. the genetic recombination
c. the presence of two genders
d. to produce genetically identical gametes

II.

Write an essay/motivational letter about your carrier model! (~1000 words)

Why did you choose this health sciences field? What do you know about it?

What are your short-term and long-term goals and expectations by studying it, working in the field? What milestones do you want to achieve?

Where do you plan on working after graduation? What is your motivation behind that?

Where do you see yourself in 10 years?