Instructions (shown before students start the test)

This is the Division B Food Science test.

Introduction (shown after students start the test)

1. (1.00 pts) Glycolysis is the conversion of glucose to what 3 carbon compound?

- A) Lactic acid
- B) Pyruvate
- C) Pyruvate
- D) Propionic acid

2. (1.00 pts) The inoculum to make Kefir is:

- A) Kefir grains
- B) Cocao beans
- C) Leuconstoc cultures
- D) Lactobacillus cultures

3. (1.00 pts) A food scientist who studies fermented food products may be referred to as a:

- A) Zoologist
- B) Zymologist
- C) Fermentologist
- D) Chemist

4. (1.00 pts) Select the food product that is not made by a fermentation process:

- A) bread
- B) chocolate
- C) yogurt
- D) pickles
- E) all of the foods may be made by a fermentation process

5. (1.00 pts) Select the food product that has slow acting yeast which produce alcohol and CO_2 in the final product:

- A) Kimchi
- B) Sauerkraut
- C) Kefir
- D) Yogurt

6. (1.00 pts) Sauerkraut and other fermented food products become acidic which prevents the growth of what deleterious microbe?

- A) Clostridium botulinum
- B) Sacchromyces cerevisiea
- C) Lactobacillus plantarum
- D) Acetobacter pasteurianus

7. (1.00 pts) Invertase is an enzyme catalyzes which reaction?

- A) $Sucrose + H_2O \rightarrow Glucose + Fructose$
- B) $Maltose + H_2O \rightarrow Glucose + Glucose$
- C) $Lactose + H_2O \rightarrow Glucose + Galactose$
- D) $Amylose + H_2O \rightarrow Glucose$

8. (1.00 pts) A student has 3 test tubes containing disaccharides. She identifies one sugar as not being a reducing sugar. What is this sugar most likely to be?

- A) Lactose
- B) Maltose
- C) Sucrose
- D) Amylopectin

9. (1.00 pts) What is a biological advantage for microbes that release acidic compounds as part of their metabolic processes?

- A) The acidic compounds can be further metabolized (i.e. an alternative food source).
- B) The acidic compounds neutralize the environment.
- C) The resulting acidic environment inhibits the growth of competitive microbes.

D) There is no biological advantage – merely the result of metabolism.

10. (1.00 pts) What are the final (waste) products of glucose metabolism in aerobic organisms?

A) CO_2 and H_2O

B) Pyruvate and H_2O

C) ATP and H_2O

D) ATP, NADH, and H_2O

11. (1.00 pts) How many electrons are required to fully reducing oxygen (O_2) to water (2 molecules)?

A) 1 electron

B) 2 electron

C) 4 electron

D) 6 electron

E) 8 electron

12. (1.00 pts) In eukaryotic cells such as yeast, where does the Kreb's cycle take place?

A) in the cytosol (cytoplasm)

B) in the mitochondria

C) in the chloroplasts

D) in the golgi apparatus

13. (1.00 pts) How many ATP molecules are formed directly from the Citric acid cycle?

A) 0 ATP molecules per cycle

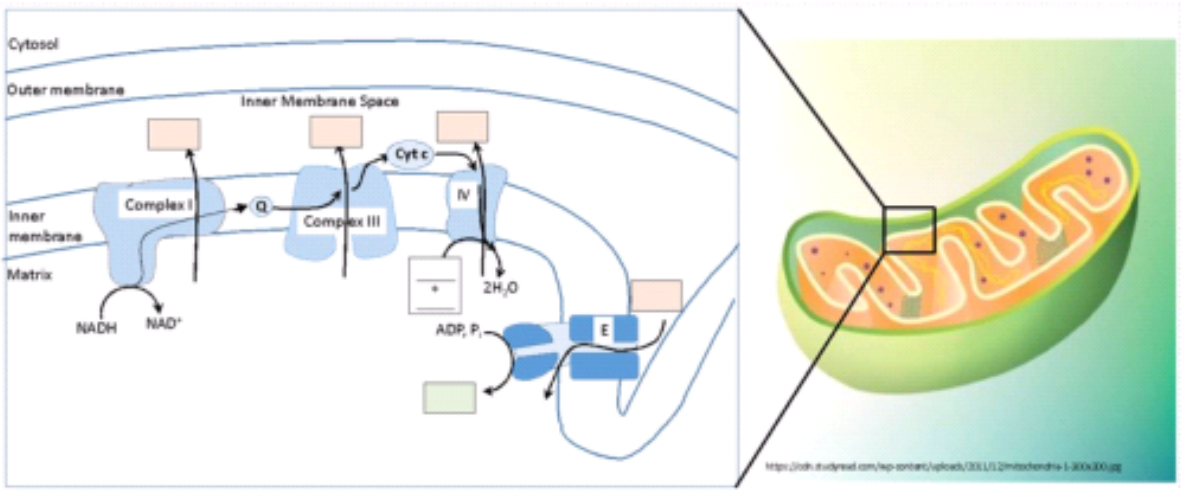
B) 2 ATP molecules per cycle

C) 4 ATP molecules per cycle

D) 6 ATP molecules per cycle

Short Answer/Fill in the blank

Please complete the diagram below – fill in the boxes. A chemical species may appear in more than one box. Then use the diagram to help answer the questions below.



14. (1.00 pts) What do Ubiquinone (Q) and Cytochrome c (Cyt c) carry as a function of the electron transport chain?

The inner membrane has two sides, named P for positive (charge) and N for negative

15. (1.00 pts) The P side is also referred to as the:

16. (1.00 pts) The N side is referred to as the:

17. (1.00 pts) How many ATP molecules are directly synthesized by the electron transport chain (e.g complex I – IV)?

Thanks for participating!