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Practice Exam in March 2008, questions

Metabolism and Physiological Chemistry (McMaster University)

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Name_____
Student No._____

SAMPLE ONLY **BIOCHEMISTRY 2EE3** Dr. B. S. Zhorov

50 min. March Test 2008

THIS EXAMINATION CONSISTS OF 5 PAGES AND 25 QUESTIONS. YOU ARE RESPONSIBLE FOR ENSURING THAT YOUR COPY OF THE PAPER IS COMPLETE. BRING ANY DISCREPANCY TO THE ATTENTION OF THE INVIGILATOR.

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- Print your student number, name, date, and course name in the space provided at the top of side 1 of the form. Then the sheet MUST be signed in the space marked SIGNATURE.
- Mark your student number in the space provided on the sheet on side 1 and fill in the corresponding circles underneath. **One mark will be subtracted for an incorrect student number.**
- **Fill in the VERSION CODE beside your student number.**
  THIS IS TEST VERSION 1. One mark will be subtracted for an incorrect test version.
- For each question, mark only ONE choice from the alternatives (a,b,c,d) provided. The question number is to the left of the circles. Make sure that the number of question on the scan sheet is the same as the question number on the test paper.
- Pay particular attention to the Marking Directions on the form.
- Begin answering questions using the first set of circles, marked "1".
- Each question is worth one mark for a correct answer and a zero marks for an incorrect answer. An unmarked question is considered an incorrect answer.

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Questions

1. X. Heterotrophs obtain from autotrophs carbohydrates.
   Y. Heterotrophs obtain from autotrophs lipids.

   a) Only X is correct
   b) Only Y is correct
   c) Both X and Y are correct
   d) Neither X nor Y is correct

2. Which coenzyme is the major electron carrier in metabolism?

   a) NADH
   b) TPP
   c) FAD
   d) CoA

3. Which coenzyme brings the acetyl group in the citric acid cycle?

   a) NADH
   b) $FADH_2$
   c) CoA
   d) None of the above

4. X. Hexokinase catalyzes transfer of glucose to glucose-6-phosphate.
   Y. Aldolase catalyzes cleaving of fructose-1,6-biphospahate

   a) Only X is correct
   b) Only Y is correct
   c) Both X and Y are correct
   d) Neither X nor Y is correct

5. Degradation of which nutrients yields acetyl groups for the citric acid cycle?

   a) Carbohydrates
   b) Proteins
   c) Lipids
   d) All of the above

6. Which of the following is the most reduced compound?

   a) CO_2
   b) $H_3C\text{-}CH_2\text{-}OH$
   c) $H_3C\text{-}C(O)\text{-}OH$
   d) $H_3C\text{-}C(O)H$

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7. What is true about isozymes?

a) They catalyze the same reaction
b) They have different structure
c) They are differently regulated
d) All of the above

8. In eukaryotic cells, reactions of the citric acid cycle take place in

a) Cytosol
b) Nucleus
c) Mitochondrion
d) Liposomes

9. The mammalian organ that is largely responsible for the gluconeogenesis is

a) Liver
b) Muscle
c) Adipose Tissue
d) Heart

10. The general name for protein-phosphorylating enzymes is:

a) Phosphatases
b) Hexokinases
c) Hydrolases
d) Kinases

11. What is the slowest mechanism of control of metabolic reactions?

a) Genetic control
b) Allosteric modulation of the enzyme
c) Phosphorylation
d) Dephosphorylation

12. What is the final product of the anaerobic glycolysis in yeast?

a) Ethanol
b) Lactate
c) Pyruvate
d) GAP

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13. Non-reducing ends of glycogen are sugars in which anomeric carbon forms

a) 1,6 glycosidic bond
b) 2,6 glycosidic bond
c) 1,4 glycosidic bond
d) None of the above

14. The multienzyme complex that catalyzes synthesis of Acetyl-CoA is

a) Lactate dehydrogenase
b) Hexokinase
c) Pyruvate dehydrogenase
d) None of the above

15. The dark color of flight muscle in geese is due to:

a) hemoglobin
b) cytochromes
c) myoglobin
d) none of the above

16. Phosphate compound that conserves more free energy than ATP is:

a) G6P
b) Phosphoenolpyruvate
c) G1P
d) None of the above

17. Citrate isomerization is catalyzed by:

a) Malate dehydrogenase
b) Isocitrate dehydrogenase
c) Aconitase
d) None of the above

18. High-energy compounds produced in the citric acid cycle upon oxidation of one pyruvate molecule are

a) 3 NADH
b) $FADH_2$
c) 1 GTP
d) All of the above

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Students are advised to formulate seven multiple-choice questions. Try to make difficult questions. **(The real test will contain 25 questions and you will NOT be asked to formulate questions)**

19.

a)
b)
c)
d)

20.

a)
b)
c)
d)

21.

a)
b)
c)
d)

22.

a)
b)
c)
d)

23.

a)
b)
c)
d)

24.

a)
b)
c)
d)

25.

a)
b)
c)
d)

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