Metabolism

Second year (model 3)

Second semester
Date: 9 June 2024
Time: 120 min

Damietta University
Faculty of Agriculture
Agr. Biotechnology Dept.

15. When ketones are produced faster than they can beused, they can be broken down into ……., which is considered as indicator for diabetic.
    a) Two molecules of glycerol b) amino acids c) CO_2 and acetone

Question Num 3: Choose more than correct answer [5 Marks]

1. Ketogenic amino acids include ……
   a) Phenyl alanine b) Leucine c) Proline d) lysine
2. Glucogenic amino acids include ……..
   a) Alanine b) Aspartic c) Glutamine d) Leucine
3. Phenyl alanine is ……
   a) Glucogenic amino acid b) ketogenic amino acid c) carbohydrates d) non-essential amino acid
4. Arginosuccinate can be broken down to ……
   a) Fatty acid b) arginine c) oxalic acid d) fumarate
5. Exopeptidases can be classified to ……..
   a) Carboxy peptidase b) amylase c) aminopeptidase d) enolase
6. Through glycolysis process ……
   a) Just two enzymes are involved in the process b) a glucose molecule is broken down into two molecules of Pyruvate c) takes place in the cytoplasm d) fatty acids are synthesized
7. Transamination is ……
   a) responsible for transferration of amine group b) in need to transaminase in the prescence of pyridoxal-5-phosphate c) responsible for transferration of phosphate group d) in need to kinase in the prescence of pyridoxal-5-phosphate
8. The enzyme aldolase converts fructose-1,6-bisphosphate into ……
   a) glyceraldehyde-3-phosphate b) glucose c) dihydroxyacetone phosphate d) glycerol
9. Oxidative Deamination process requies ……
   a) needs isomerase b) glutamic dehydrogenase c) ATP d) NAD^+
10. Amino acids can be classified to …… based on their metabolism
    a) Polar amin acids b) ketogenic amino acids c) glucogenic amino acids d) nonpolar amino acids

Question Num 4: Essay [4 Marks]

Clarify the synthesis of Dopamine from Tyrosine, supporting your answer with chemical equation.

Question Num 5: Essay [4 Marks]

Mention briefly Urea cycle steps during the metabolism

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Question Num 1: T&F [15 Marks]

1 Glycolysis process takes place in the mitochondria in just aerobic organisms
a)True b) False

2 During glycolysis process, a phosphate group is added to glucose in the cell cytoplasm by the action of enzyme hexokinase, forming glucose-6-phosphate
a)True b) False

3 Glucose-6-phosphate is isomerised into fructose-6-phosphate by the enzyme phosphogluco dehydrogenase
a)True b) False

4 Triose phosphate isomerase converts dihydroxyacetone phosphate into Glyceraldehyde-3-phosphate which is the substrate in the successive step of glycolysis
a)True b) False

5 The enzyme enolase removes a water molecule from 2 phosphoglycerate to form phosphoenolpyruvate
a)True b) False

6 One symptom of ketogenesis is that the patient's breath smells sweet like alcohol
a)True b) False

7 The carbon dioxide produced from break down of ketones increases the *p*H value of blood
a)True b) False

8 Through lipogenesis process acetyl COA can be used to create lipid
a)True b) False

9 Oxaloacetate forms via the action of pyruvate dehydrogenase, whereas the action of pyruvate carboxylase creates acetyl CoA
a)True b) False

10 Oxaloacetate is converted into malate and then into pyruvate, which crosses back across the mitochondrial membrane.
a)True b) False

11 Glycolysis is the metabolic process that converts glucose into pyruvic acid
a)True b) False

12 At the end of glycolysis, fatty acids can be created
a)True b) False

13 The N-C bond in adenosyl cobalamin is and easily undergoes reversible hemolytic cleavage at an ambient temperature
a)True b) False

14 Metalloproteins are the proteins containing metal ions with a weak bond
a)True b) False

15 In humans, deficiency of vitamin B_{12} causes pernicious anemia.
a)True b) False

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Question Num 2: MCQ (choose only one correct answer) [15 Marks]

1. ..... is the metabolic process that converts glucose into pyruvic acid.
   a) Lipolysis b) Glycolysis c) Ketogenisis
2. When glucose is broken down to produce energy, it produces .....
   a) One molecule of pyruvate b) two molecules of pyruvate c) Fatty acid
3. In the presence of ..... gucose-6-phosphate can be converted to fructose-6-phosphate.
   a)kinase b) amylase c) isomerase
4. In the presence of ..... 3-phosphoglycerate can be converted to Bisphosphoglycerate.
   a) phosphoglycerate kinase b) phosphoglycerate dehydrogenase c) phosphoglycerate isomerase
5. The enzyme enolase removes .....from 2-phosphoglycerate to form phosphoenolpyruvate
   a) water molecule b) phosphate group c) hydrogen
6. When glucose levels are plentiful, the excess .....generated by glycolysis can be converted into fatty acids, triglycerides, cholesterol, steroids, and bile salts
   a) acetyl CoA b) glucose c) glycerol
7. .....molecule is added to acetoacetate, forming acetoacetyl CoA
   a) An HS CoA b) A pyruvate c) A glucose
8. Acetyl CoA molecules are then processed through the .....cycle to generate energy
   a) Ketogenesis b) Krebs c) lipogenesis
9. When glucose levels are plentiful, the excess .....generated by glycolysis can be converted into fatty acids.
   a) glucose b) glycerol c) acetyl CoA
10. Lipogenesis begins with acetyl CoA and advances by the subsequent addition of ..... from another acetyl CoA
    a) two carbon atoms b) two nitrogen atoms c) three glucose molecules
11. pyruvate is converted into both .....
    a) malonic acid and acetyl CoA b) oxaloacetate and acetyl CoA c) two acetyl CoA
12. Lipid metabolism begins in the intestine where ingested .....are broken down into smaller chain fatty acids
    a)starch b) proteins c) triglycerides
13. ..... is necessary to obtain energy from fat, where triglycerides must first be broken down by hydrolysis into fatty acids and glycerol.
    a)Lipolysis b) Glycolysis c) Ketogenisis
14. Fatty acyl CoA combines with .....to createa fatty acylcarnitine molecule, which helps to transport the fatty acid across the mitochondrial membrane.
    a) carnitine b) glucose c) glycerol