

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN NURSING

NURU 119: MEDICAL BIOCHEMISTRY

STREAMS:

TIME: 2 HOURS

DAY/DATE: THURSDAY 06/12/2018

8.30 AM. – 10.30 A.M

INSSTRUCTIONS:

- Answer question one and any other two questions

QUESTION ONE (30 MARKS)

1. (i) Which of the following is not a lipid storage disease. [1 marks]
- (a) Nieman-pick disease
 - (b) Gauchers disease
 - (c) Tay-sach's disease
 - (d) Compactin
- (ii) Which of the following is not a glucoegeonic precursor. [1 mark]
- (a) Glycerol
 - (b) Lactase
 - (c) α ketoacid
 - (d) *glucose*
- (iii) Indicate which is not a function of the krebs cycle. [1 mark]
- (a) Energy generation
 - (b) Provide CO_2 for gluconeogenesis
 - (c) Provide O_2
 - (d) Provide precursors for aminoacid synthesis
- (iv) Which electron transfer does not occur in oxidative phosphorglation. [1 mark]
- (a) Direct transfer of electrons

- (b) Transfer of a hydrogen atom
 - (c) Transfer of hydrogen gas
 - (d) Transfer of a hydride ion
- (v) Which of the following is not a class of cytochrome found in the mitochondria. [1 mark]
- (a) Cytochrome -d
 - (b) Cytochrome – a
 - (c) Cytochrome –b
 - (d) Cytochrome –c
- (vi) Which of the following is not a complex of the respiratory chain .
- (a) Complex v
 - (b) Complex I
 - (c) Complex II
 - (d) Complex III
- (vii) The following are suggested hypotheses for the coupling mechanism of electron transport and oxidative phosphorylation. Which one is not? [1 mark]
- (a) High energy intermediate serves as precursor of ATP
 - (b) Proton gradient across inner mitochondrial membrane
 - (c) Activated protein conformation
 - (d) Osmotic pressure
- (viii) Which of the following is not a function and respiratory poisons? [1 mark]
- (a) Inhibits electron flow
 - (b) Inhibits proton translocation
 - (c) Inhibit O_2 consumption
 - (d) Inhibits CO_2 consumption
- (ix) Which of the following is not an inhibitor of respiratory chain complexes. [1 mark]
- (a) Rotinone
 - (b) Amytal
 - (c) Antimycin A
 - (d) Sucrose

- (x) The following are two ways of regulation of ketose bodies pick them. [2 marks]
- (a) rate of β –oxidation
 - (b) Availability of substrates to enter TCA cycle
 - (c) Synthesis of lipids
 - (d) Oxidation of CO_2
- (xi) Indicate the two ways of regulation of fatty acid synthesis. [2 marks]
- (a) High carbohydrate diet
 - (b) Synthesis of proteins
 - (c) PalmitoylcoA inhibits synthesis
 - (d) Catecholamine products
- (xii) Indicate the three stages of biosynthesis of triacylglycerols. [3 marks]
- (a) Acylation of the two free hydroxyl groups of L- glycerol -3 phosphate
 - (b) Phosphatidic acid is hydrolyzed to form 1,2- diacylglycerol
 - (c) Diacylglycerol are converted to tracylglycerols
 - (d) Synthesis of insulin
- (xiii) Which of the following is a precursor in biosynthesis of cholesterol. [1 mark]
- (a) Isoprene units
 - (b) Phosphatidic acid
 - (c) Glycerol phospholipid
 - (d) Triacyl glycerol
- (xiv) Indicate which three are functions of bile salts. [3 marks]
- (a) They lower surface tension, emulsify fats
 - (b) They activate lipose
 - (c) They form micelles with fatty acids
 - (d) Do not promote absorption of fat soluble vitamins
- (xv) Decrease in bile salts can be due two. [2 marks]
- (a) Failure in enterohepaticcirculation
 - (b) Cirrhosis of the kidney
 - (c) Increase in blood glucose sugar
 - (d) Disease of the ileum
- (xvi) Pick two hyper cholestevolemic drugs. [2 marks]

- (a) Compactin
- (b) Mevinolin
- (c) Panadol
- (d) Aspirin

(xvii) Pick three reasons why dietary fibre is better than a drug in cholesterol management. [3 marks]

- (a) Bile salts gets trapped in fibres
- (b) Insulin production is increased
- (c) Cholesterol absorption is decreased
- (d) More cholesterol breaks down

(xviii) Which of the following are lipid storage diseases. [2 marks]

- (a) Bilharzia
- (b) Nieman –pick disease
- (c) Gaucher disease
- (d) Taysachs disease

QUESTION TWO

- (a) Define gluconogenesis and give three advantages of gluconeogenesis. [4 marks]
- (b) Discuss the two stages of the pentose phosphate pathway. [10 marks]
- (c) Discuss the mitchellschemiosmotic theory [4 marks]
- (d) Give two functions of respiratory proteins. [2 marks]

QUESTION THREE (20 MARKS)

- (a) Discuss the first three reactions of the krebs cycle. [6 marks]
- (b) Define the following terms:
 - (i) Cytochromes
 - (ii) Uncouplers [2 marks]
- (c) Give the three stages of fatty acid oxidation. [3 marks]
- (d) Five three ways in which oxidation of fatty acids is regulated. [3 marks]
- (e) Define fatty liver and give three causes of fatty liver. [4 marks]
- (f) Give two things that happen in the presenc of uncouplers. [2 marks]

QUESTION FOUR (20 MARKS)

- (a) Give the four stages of the synthesis of cholesterol. [4 marks]
- (b) Give three causes of ketosis. [3 marks]
- (c) Explain the following term's briefly [6 marks]
- (i) Cholelithiasis (gall stores)
 - (ii) Hypercholesterolemia
 - (iii) Atherosclerosis
- (d) Give the first two steps of the urea cycle. [4 marks]
- (e) Give three reasons for toxicity of ammonia to the central nervous system. [3 marks]
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