



**AMREF INTERNATIONAL UNIVERSITY**  
**SCHOOL OF MEDICAL SCIENCES**  
**DEPARTMENT OF NURSING AND MIDWIFERY SCIENCES**  
**BACHELOR OF SCIENCE IN NURSING**  
**END OF SEMESTER EXAMINATIONS AUGUST 2022**

**COURSE CODE AND TITLE: BSN 213 MEDICAL BIOCHEMISTRY**

**Date: 9TH AUGUST 2023**

**Time: 2 Hours**

**Start: 9:00 A.M. Finish: 11:00 A.M.**

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**Instructions**

- 1) This paper has three sections: Section I, Section II and Section III
- 2) Answer **ALL** questions in Section I and Section II and only answer **ONE** in Section III
- 3) Use the University examination booklets provided
- 4) Re-writing the questions on your answer sheet is unnecessary

**SECTION I: MULTIPLE CHOICE QUESTIONS (20 MARKS)**

1. LDH<sub>1</sub> and LDH<sub>2</sub> are elevated in:-
  - A. Myocardial infarction
  - B. Liver disease
  - C. Kidney disease
  - D. Brain disease
2. All of the following statements are true for orotic aciduria EXCEPT: -
  - A. Orotic acid is excreted in urine.
  - B. Anaemia is a symptom of this disease.
  - C. Growth retardation is seen in affected people.
  - D. Self mutilation is another symptom of this disease.
3. Carnitine is synthesis from: -
  - A. Lysine and methionine
  - B. Glycine and arginine
  - C. Aspartate and glutamate
  - D. Proline and hydroxyproline
4. The ratio that approximates the number of net molecule of ATP formed per mole of Glucose oxidized in presence of Oxygen to the net number formed in absence of Oxygen is:-
  - A. 4: 1
  - B. 10: 2
  - C. 12: 1
  - D. 18: 1
5. One of the following conditions is associated with hypouricemia:-
  - A. Lesch Nyhan syndrome
  - B. Adenosine deaminase deficiency
  - C. Over activity of PRPP synthetase
  - D. Over activity of amido transferase
6. Compared to the resting state, vigorously contracting muscle shows: -
  - A. An increased conversion of pyruvate to lactate
  - B. Decreased oxidation of pyruvate of CO<sub>2</sub> and water
  - C. A decreased NADH/NAD<sup>+</sup> ratio
  - D. Decreased concentration of AMP
7. Salvage pathway is used in the synthesis of :-
  - A. Amino acid
  - B. Carbohydrate
  - C. Nucleotide
  - D. Fatty acid

8. At a pH below the isoelectric point, an amino acid exists as: -
- A. Cation
  - B. Anion
  - C. Zwitterion
  - D. Undissociated molecule
9. Serum amylase is increased in: -
- A. Acute parotitis
  - B. Acute pancreatitis
  - C. Pancreatic cancer
  - D. All of these
10. Carnitine is synthesized from:-
- A. Lysine and methionine
  - B. Glycine and arginine
  - C. Aspartate and glutamate
  - D. Proline and hydroxyproline
11. The most toxic compound is:-
- A. Tyrosine
  - B. Phenylpyruvate
  - C. Lysine
  - D. Phenylalanine
12. Prostaglandins are synthesized in the body from:-
- A. Myristic acid
  - B. Arachidonic acid
  - C. Stearic acid
  - D. Lignoceric acid.
13. The following is a hereditary disease caused due to an error in amino acid metabolism:-
- A. Homocystinuria
  - B. Albinism
  - C. Phenylketonuria
  - D. Branched-chain ketoaciduria
14. The following statement is FALSE regarding ketone bodies:-
- A. They may result from starvation
  - B. They are formed in kidneys
  - C. They include acetoacetic acid and acetone
  - D. They may be excreted in urine.

15. A manifestation of vitamin A deficiency is:-
- A. Painful joints
  - B. Night blindness
  - C. Loss of hair
  - D. Thickening of long bones
16. Fibre in the diet is beneficial in:-
- A. Hyperglycemia
  - B. Hypercholesterolemia
  - C. Colon cancer
  - D. All the above conditions
17. Phosphofructokinase key enzyme in glycolysis is inhibited by:-
- A. Citrate and ATP
  - B. AMP
  - C. ADP
  - D. TMP
18. Catecholamine hormones are synthesized in the:-
- A. Chromaffin cells of adrenal medulla
  - B. Zona glomerulosa of adrenal cortex
  - C. Zona fasciculate of adrenal cortex
  - D. Zona reticularis of adrenal cortex
19. In thyroxine, tyrosine residues are iodinated at positions: -
- A. 1 and 3
  - B. 2 and 4
  - C. 3 and 5
  - D. 4 and 6
20. Gout is a metabolic disorder of catabolism of: -
- A. Pyrimidines
  - B. Purines
  - C. Alanine
  - D. Phenylalanine

**SECTION II: SHORT ASSAY QUESTIONS**

**(30 MARKS)**

1. Illustrate the reaction sequences that stimulate the mobilization of fatty acids from the adipose tissues. (4 Marks)
2. Explain:
  - a. Ureotelic organisms (2 Marks)
  - b. Schizophrenia (2 Marks)
  - c. The fate of pyruvate in the cell (6 Marks)
3. a. Explain how Allopurinol works to decrease Uric Acid excretion. (3 Marks)  
b. Highlight **FOUR** (4) key enzymes of gluconeogenesis (4 Marks)
3. Regarding fats
  - a. Explain why we require fats in our diet. (2 Marks)
  - b. Outline three (3) outstanding differences between biosynthesis and  $\beta$  oxidation of fatty acids. (3 Marks)
4. Outline Four (4) roles of metabolism. (4 Marks)

**SECTION C: LONG ASSAY QUESTIONS (20 MARKS)**

**INSTRUCTIONS: Answer ONLY ONE Question**

1. (a) Describe the biosynthesis and metabolic effects of Catecholamine. (10 Marks)  
(b) Describe the fate of Propionyl-CoA in the  $\beta$ -oxidation of fatty acids. (10 Marks)
2. (a) Describe various signals of protein degradations in human body. (6 Marks)  
(b) Describe Five (5) disorders of amino acid metabolism. (14 Marks)