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University Examinations 2020/2021

FIRST YEAR, SECOND SEMESTER SUPPLEMENTARY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN NURSING

NND 3124: MEDICAL BOCHEMISTRY II

DATE: SEPTEMBER 2021 **TIME: 3 HOURS**

INSTRUCTIONS:

SECTION A: MULTIPLE CHOICE QUESTIONS (20 MARKS)

1. In all enzymes the active site:

   a) Contains the substrate binding site

   b) Is contiguous with the substrate binding site in the primary sequence

   c) Lies in a region of the primary sequence distant from the substrate binding site

   d) Contains a metal ion as a prosthetic group

2. Enzymes may be specific with respect to all of the following EXCEPT:

   a) Chemical identity of the substrate

   b) The atomic mass of the elements in the reactive group (e.g ^{12}C but not ^{14}C). C optical activity of product formed from a symmetrical substrate

   c) Type of reaction catalyzed.

3. Proteins may be separated according to size by

    a) Isoelectric focusing

    b) Polyacrylamide gel electrophoresis

    c) Ion exchange chromatography

    d) Molecular exclusion chromatography

4. Which of the following has quaternary structure?

    a) Achymotrypsin

    b) Hemoglobin

    c) Insulin

    d) Myoglobin

    e) Trypsin

5. All of the following are examples of the four major elements contributing to body mass except

    a) Hydrogen

    b) Carbon

    c) Nitrogen

    d) Sodium

6. A deficiency in this element can be expected to reduce the haemoglobin content of blood

    a) Fe

    b) I

    c) F

    d) Ca

7. Water's importance to living systems reflects

    a) Its polarity and solvent properties

    b) Its high heat capacity

    c) Its high heat of vaporization

    d) Its chemical reactivity

8. A triglyceride consists of

    a) Glycerol plus three fatty acids

    b) A sugar phosphate backbone to which two amino groups are attached

    c) Two to several hexoses

    d) Amino acids that have been thoroughly saturate with hydrogen

9. The lipid(s) used as the basis of Vitamin D, sex hormones, and bile salts is/are

    a) Triglycerides

    b) Cholesterol

    c) Phospholipids

    d) Prostaglandin

10. Enzymes are organic catalyst that

    a) Alter the direction in which a chemical reaction proceeds

    b) Determine the nature of the products of a reaction

    c) Increase the speed of a chemical reaction

    d) Are essential raw materials for a chemical reaction that are converted into some of its products

11. Which of the following yields the greatest caloric value per gram?

    a) Fats

    b) Proteins

    c) Carbohydrates

    d) All are equal in caloric value

12. Transamination is a chemical process by which

    a) Protein is synthesized

    b) An amine group is transferred from amino acid to a keto acid

    c) An Amine Group Is Cleaved From The Amino Acid

    d) Amino acids are broken down for the energy

13. Amino acids are essential (and important) to the body for all the following except

    a) Production of some hormones

    b) Production of antibodies

    c) Formation of most structural materials

    d) As a source of quick energy

14. Which of the following is not a function of the liver?

    a) Glycogenolysis and gluconeogenesis

    b) Synthesis of cholesterol

    c) Detoxification of alcohol and drugs

    d) Synthesis of glucagon

15. Which is not true of centrioles?

    a) They start to duplicate in G_1

    b) They lie in the centrosome

    c) They are made of microtubules

    d) They are membrane-walled barrels lying parallel to each other

16. The solute pumping type of active transport is accomplished by

    a) Exocytosis

    b) Phagocytosis

    c) Electrical forces in the cell membrane

    d) Changes in shape and position of carrier molecules in the plasma membrane

17. The endocytosis process in which a sampling of particulate matter is engulfed and brought into the cell is called

    a) Phagocytosis

    b) Fluid phase endocytosis

    c) Exocytosis

    d) All the above

18. What is formed during aerobic respiration when electrons are passed down the electron transport chain?

    a) Oxygen

    b) Water

    c) Glucose

    d) $NADH+H^+$

19. The formation of glucose from glycogen is

    a) Gluconeogenesis

    b) Glycogenesis

    c) Glycogenolysis

    d) Glycolysis

20. The smallest unit capable of life by itself is

    a) The organ

    b) The organelle

    c) The cell

    d) The nucleus

    e) Atom

SECTION B (SHORT ANSWER QUESTIONS) 40 MARKS)

QUESTION ONE

Describe the process of blood clotting (6 marks)

QUESTION TWO

Briefly explain three biochemical tests for liver function (6 marks)

QUESTION THREE

Briefly explain the role NAD and FAD in metabolic reactions (6 marks)

QUESTION FOUR

Explain the role of acetyl CoA in integration of metabolic pathways (6 marks)

QUESTION FIVE

Explain the mechanism of cyanide poisoning (6 marks)

QUESTION SIX

Briefly describe the glycogen storage disease (5 marks)

QUESTION SEVEN

Briefly describe the haemoglobin structure (5 marks)

SECTION C (LONG ANSWER QUESTION) 40 MARKS)

QUESTION ONE

Compare and contrast glycolysis and Krebb's cycle (20 marks)

QUESTION TWO

Explain the biomedical significance of serum proteins (20 marks)