



**On Telegram
@keleme_2013**

39. What is the name of the glycolytic enzyme that converts dihydroxyacetone phosphate (DHAP) to glyceraldehydes-3-phosphate (GAP)?
- A. Hexokinase
 - B. Triose phosphate isomerase
 - C. Aldolase
 - D. Enolase
40. Which of the following occurs in both photosynthesis and cellular respiration?
- A. Calvin cycle
 - B. Chemiosmosis
 - C. Glycolysis
 - D. Krebs cycle
41. Where exactly in the cell does the electron transport chain occur?
- A. Cytoplasm
 - B. Inner membrane of the mitochondria
 - C. Matrix of the mitochondria
 - D. Ribosome
42. The synthesis of ATP using the process of chemiosmosis takes place during which phase of respiration?
- A. Glycolysis
 - B. TCA cycle
 - C. Electron transport chain
 - D. Biosynthesis
43. NADPH₂ and ATP produced by the light-dependent reactions are used to reduce
- A. Carbon Monoxide
 - B. Hydrogen
 - C. Carbon Dioxide
 - D. Oxygen
44. What is the fluid-filled space of chloroplasts that contains enzymes for the light-independent reactions of photosynthesis?
- A. Thylakoid
 - B. Grana
 - C. Matrix
 - D. Stroma

45. What are the possible causes of metabolic disorders?

- A. Age
- B. Family history of genetic metabolic disorder
- C. Obesity and lack of exercise
- D. All

Short Answer

1. _____ is a process for experimentation which is used to explore observations and give answers to research questions.
2. List three major characteristics of living things
3. Write down three steps used in the scientific method.
4. What are the three types of RNA involved in protein synthesis?
5. Mention the three components of a nucleotide.
6. What do you call fatty acids that have at least one double bond in their hydro-carbon chain?
7. Based on their solubility, vitamins are classified as _____ and _____
8. Write two functions that minerals have in living organisms.
9. Mention two physiological and structural functions of lipids in living cells.
10. Monosaccharides that have the aldehyde functional group are classified as _____
11. _____ is part of the nucleus where ribosomes are synthesized.
12. What are the two unique features of mitochondria?
13. _____ is a kind of enzyme inhibition in which the inhibitor binds on a site other than the active site.
14. What do you call the mechanism of transport of polar molecules or ions according to a concentration gradient (downhill) using carrier molecules but with no expenditure of energy?
15. What is endocytosis?

28. A form of diffusion in which there is a net movement of water down its concentration gradient through a selectively permeable membrane is called

- A. Simple diffusion B. Facilitated diffusion C. Active transport D. Osmosis

29. Which of the following statements is correct?

- A. Facilitated diffusion uses proteins to transport molecules across the cell membrane
B. In active transport, substances move from an area that is more concentrated to less concentrated
C. In passive transport, substances move from an area that is less concentrated to more concentrated
D. Passive transport requires energy while active transport does not

30. Which of the following transport processes across the plasma membrane are correctly matched with the mechanisms of transport? Movement of

- A. Water along concentration gradient ----- passive diffusion
B. Na^+ along concentration gradient ----- active transport
C. Water along concentration gradient ----- facilitated diffusion
D. Na^+ against concentration gradient ----- passive diffusion

31. Which transport mechanism is used to transport charged and polar molecules along a concentration gradient?

- A. Passive diffusion C. Bulk transport
B. Active transport D. Facilitated diffusion

32. A cell containing sodium ions at a concentration of 0.05 mM was kept in a 0.005 mM of sodium solution. If more sodium ions happen to enter into the cell, the mechanism used must have been

- A. diffusion B. osmosis C. active transport D. exocytosis

23. A biological molecule of the plasma membrane which plays essential role in maintaining fluidity, flexibility and stability of the lipid membrane is

- A. cholesterol
- B. carbohydrate
- C. cytoskeleton
- D. $\text{Na}^+\text{-K}^+$ pump

24. If the function of a cellular organelle is sorting, modification, and packaging of synthesized proteins, then this organelle must be a

- A. Smooth ER
- B. Ribosome
- C. Rough ER
- D. Golgi body

25. Which of the following organelles have their own DNA?

- A. Lysosomes and peroxisomes
- B. Smooth end Rough ER
- C. Mitochondria and chloroplast
- D. Golgi body and ribosomes

26. What are the two main parts of the plasma membrane?

- A. Phospholipids and cholesterol
- B. Proteins and carbohydrates
- C. Carbohydrates and cholesterol
- D. Phospholipids and proteins

27. The internal skeleton of a cell is composed of

- A. Microfilaments, microtubules, and intermediate filaments
- B. Intermediate filaments and cellulose
- C. Centrioles, microtubules, and cellulose
- D. Microfilaments and centrioles

33. Which of the following is least likely to cross a cellular membrane by simple diffusion?

- A. carbon dioxide B. potassium ion C. oxygen D. steroid hormone

34. Categories of enzymes that have two components which are a protein and a cofactor are called

- A. Simple enzymes C. Isozymes
B. Conjugate enzymes D. Metallo-enzymes

35. Increasing the substrate concentration increases the reaction rate. But this effect stops at some point and reactions proceed at a constant rate beyond this point. This is due to

- A. Reduced efficiency of the enzyme
B. Competition between substrate molecules
C. Saturation of all available enzymes
D. Reduced kinetic energy of substrate molecules

36. Glycolysis occurs in which part of the cell?

- A. Inner membrane of the mitochondria
B. Matrix of the mitochondria
C. Cytoplasm
D. Ribosome

37. Organisms that acquire energy through photosynthesis are called

- A. Photoautotrophs
B. Chemoautotrophs
C. Heterotrophs
D. Saprotrophs

38. Which of the following occurs during the Krebs cycle?

- A. FADH_2 accepts two electrons in order to form FAD.
B. NAD^+ is reduced to form NADH.
C. Pyruvate is converted into acetyl-CoA.
D. Acetyl-CoA combines with oxaloacetate to release NADH

16. Write two factors which affect the rate of diffusion of molecules across the plasma membrane using carrier mediated transport?
17. _____ class of enzymes catalyze reactions involving formation of carbon and other bonds with energy from ATP.
18. _____ is the sum of cellular activities that breakdown large molecules to release energy and synthesize building materials from smaller ones.
19. Enzymes speed up chemical reactions by decreasing the _____ energy of reactions.
20. The light-dependent reactions of photosynthesis are important because they produce _____ and _____ that are used as raw materials for the light-dependent reactions.

_____ **END** _____

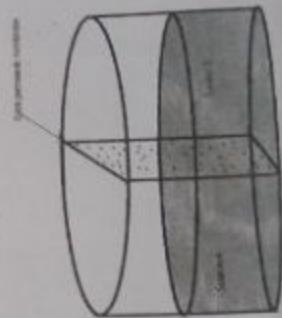
2. what is the difference between prokaryotic and eukaryotic cells? (8 marks)

3. Draw a general structure of amino acids and label each chemical group properly. (3 marks)

4. In the following diagram, assume 'Solution A' is 0.9% NaCl solution and 'Solution B' is 5% NaCl solution. Discuss movement of molecules (direction and type of movement) across the semi permeable membrane under the following specified hypothetical conditions. (4 marks)

a. Condition 1: The membrane is permeable to water molecules only

b. Condition 2: The membrane is permeable to Na^+ ions only



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DILLA UNIVERSITY COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES
DEPARTMENT OF BIOLOGY

General Biology (Biol. 1012) Test for year I Natural Science students

Test date: 3rd Aug. 2021

Time allowed 1 hr

Name _____ Id No. _____ Group _____

Instruction I: From the given alternatives choose the best answer and write the letter of your choice on the space provided (1 mark each)

- ____ 1. Which theory of origin of life denies changes/modifications happen to life forms?
A. Catastrophism C. Cosmozoic E. Chemical evolution
B. Creationism D. Spontaneous generation
- ____ 2. Which of the following is NOT among the major characteristics of all living things?
A. Mobility C. Growth E. Homeostasis
B. Irritability D. Metabolism
- ____ 3. The correct order of steps of activities in scientific method or investigation is;
A. Questioning, hypothesis, observation, experimenting, conclusion
B. Observation, questioning, hypothesis, conclusion, experimentation
C. Observation, questioning, hypothesis, experimenting, conclusion
D. Observation, hypothesis, experimenting, questioning, conclusion
E. Observation, experimenting, hypothesis, questioning, conclusion
- ____ 4. Which of the following is true about biological molecules?
A. They are all organic D. Are necessary for cellular life
B. Have structural role only E. Are all water soluble
C. Are all polymers
- ____ 5. Which of the following is NOT a polysaccharide?
A. Starch C. Glycogen E. Cellulose
B. Galactose D. Chitin
- ____ 6. Cellulose and starch differ in;
A. cellulose is storage molecule while starch is structural
B. starch is made up of glucose and cellulose is made up of fructose
C. cellulose is plant polysaccharide and starch is animal polysaccharide
D. starch is made up of alpha glucose and cellulose made up of beta glucose
E. cellulose is soluble but starch is insoluble

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7. Property that all lipids have in common is;
A. all are made up of long chain carboxylic acids
B. all are made up of fatty acids attached to glycerol
C. all are soluble in fat but insoluble in water
D. all are sources of energy
E. all are saturated
8. Which of the following is **NOT** true about phospholipids?
A. have glycerol back bone
B. have hydrophobic fatty acid tails
C. are non polar biomolecules
D. have hydrophilic phosphate head
E. are chief component of biological/cell membranes
9. In polypeptide chain formation, amino acids are linked together by;
A. carboxylic bond
B. amine bond
C. glycosidic bond
D. peptide bond
E. hydrogen bond
10. Nucleotides are;
A. basic units of lipids
B. basic units of nucleic acids
C. made of amino acids
D. composed of sugar, phosphate and base
E. B and D are correct
11. Which of the following is a membraneous organelle?
A. Ribosomes
B. Flagella
C. Peroxisomes
D. Centrosomes
E. Nucleolus
12. Organelles responsible for transport and storage of materials are;
A. Ribosomes
B. Vesicles
C. Lysosomes
D. Peroxisomes
E. Cytoskeleton
13. Proteins are modified, packaged and prepared for transport in vesicles for delivery to targeted destinations in;
A. Golgi body
B. Endoplasmic reticulum
C. Lysosomes
D. Mitochondria
E. Vesicles
14. Cellular structure that helps the cell to move and maintain its shape;
A. Cytoskeleton
B. Mitochondria
C. Nucleolus
D. Ribosomes
E. Chloroplast

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15. Membrane proteins function as:

- A. Carrier molecules
- B. Membrane bound enzymes
- C. Cell adhesion molecules
- D. Receptors
- E. All of the above

16. Which of the following ways of material transport across biological membranes requires cellular energy?

- A. Facilitated diffusion
- B. Active transport
- C. Simple diffusion
- D. Osmosis
- E. None of the above

17. Which of the following molecules is NOT component of cell membranes?

- A. Nucleic acids
- B. Carbohydrates
- C. Proteins
- D. Cholesterol
- E. Phospholipid

Instruction II: Match the biological molecules under column A with their major biological roles under column B and write the alphabet of your choice on the space provided (0.5 mark)

A

- 1. Carbohydrates
- 2. Minerals
- 3. Lipids
- 4. Water
- 5. Nucleic acids
- 6. Proteins

B

- A. Polar solvent
- B. Cellular fuel
- C. Biological membrane
- D. Cell movement
- E. Genetic information
- F. Enzymes
- G. Enzyme cofactors

Instruction III: Attempt each of the following questions on the space provided. Your answer should be short, precise and to the point.

1. Is the study of biology restricted to botany and zoology? Briefly explain your answer (2 marks)

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Wollo University

College of Natural Sciences

Department of Biology

General Biology (Biol 1012) Mid Examination for 1st year Natural Science

Febr

Name _____ ID No. _____ Section. _____ M.M: 20%

allowed: 25 min

I. Write true if the statement is correct and false if the statement incorrect (1 pt each)

- _____ 1. Cane sugar is formed from α - glucose molecule and β -galactose molecule.
- _____ 2. The more the double bonds in fatty acid, the higher will be its melting point.
- _____ 3. Glucose reacts with galactose to make the Disaccharide maltose.

II. Match the appropriate word or phrase from column "B" to "A" (1pt each)

Column A

- _____ 4. Lactose
- _____ 5. Saturated fatty acid
- _____ 6. Nucleic acids
- _____ 7. Starch
- _____ 8. Unsaturated fatty acids

Column B

- A. Precursor molecules for the first living cells
- B. Glucose
- C. Lipids that have tail chains with only single bonds carbon atom
- D. Milk sugar
- E. Factors that the scientist measures
- F. Malt sugar
- G. Lipids that have at least one double bond between carbons in the tail chain
- H. Composed of amylose and amylopectin polymers
- I. Store genetic information

III. Choose the correct answer from the given multiple choice (1pt each)

- _____ 9. Which one is organic molecule?
A. Methane B. Calcium C. Chlorine D. Iodine
- _____ 10. _____ forms and holds the two monosaccharide units together

- A. Peptide bond B. Double bond C. Glycosidic bond D. Ester bond

11. Which one of the following is different from the others?

- A. Sucrose B. Lactose C. Galactose D. Maltose

12. Which one of the following is the correct order of scientific methods?

- A. Question → Observation → Hypothesis → Experiment → Conclusions
B. Observation → Question → Hypothesis → Experiment → Conclusions
C. Observation → Question → Experiment → Hypothesis → Conclusions
D. Question → Observation → Experiment → Hypothesis → Conclusions

13. Which carbohydrate would you find as part of a molecule of RNA?

- A. Galactose B. Deoxyribose C. Ribose D. Glucose

14. The process of inductive reasoning involves.

- A. The use of specific observation to develop general principles
B. The use of general principles to predict a specific result
C. The generation of specific prediction based on a belief system
D. The use of general principles to support a hypothesis

15. _____ is a data depends on observations made more precise by measurements.

- A. Qualitative data C. Primary data
B. Quantitative data D. Secondary data

III. Fill the blank spaces (1 pts each)

16. _____ is the removal of waste products of metabolism from the cell.

17. Starch is a storage molecule in plants while _____ is in animals.

18. _____ is energy releasing process that breaks a bond with the addition of water.

19. Two glucose molecules react to form _____.

20. Protein is a compound made of small carbon compounds called _____.