JIMMA UNIVERSITY

GENERAL BIOLOGY MID TERM EXAM

Part I: Write True if the statement is correct and write False if the statement is incorrect (2.5%)

1. The contractile vacuole pe excess water out of the cell in freshwater protists.

2. The bulk transport via plasma membrane does not need energy.

3. Lactose (Milk sugar) is monosaccharide

4 In plant cells, the cell membrane is made of cellulose

5. Cellulose is a structural polysaccharide present in plants.

Part II: Choose the best Answer from the given options (10.5%)

1. Which one the following best defines modern Biology?

A. The study of animals and microorganisms

B. The study of plants and animals

C. The study of all living organisms

D. The study of energy transfers

E. All except B

2. Which one of the following corresponds to the beginning stop of scientific work?

A. Testing hypothesis

B. Making observation

C. Conducting experiment

D. Drawing conclusion

E. None

3. After dividing plant materials in to two groups, an experiment has applied a Biofertilizers to 'Croup A plants and not to ‘Group B' plants, What group is "plant B' called?

A. Control group

B. Experimental group

C. Test group

D. Variable group

E. All

4. A microscope helps to distinguish between tree points that are close together. This is related to

A. Magnification

B. Staining

C. Resolution

D. Mounting

E. All

5. Assume if you have 0.1 um sample size and use a Microscope with 10X ocular lens and middle power objective lens, what is the total size you have observed by using microscope.

A. 0.01 µm

B. 100 µm

C. 10 µm

D.1 µm

E. None

6.The sugars that are used to make nucleic acids are

A. Fructose and Glucose

B. Deoxyribose and Glucose

C. Ribose and Sucrose

D. Deoxyribose and Ribose

E .AAL

7. Which of the following statement is truc about saturated fatty acids?

A. Saturated fatty acid contain one or more double bond

B. Saturated fatty acid contain maximum number of hydrogen

C. Saturated fatty acid make up the majority of plant oil

D. Food composed of saturated fatty acid are good for our health

E. All

8. The primary structure of the protein is due to:

A. Interaction among the side chain of R group of the amino acids

B. The coiling due to Hydrogen bonding between amino acids

C. The number and sequence of amino acid

D. All

E. None

9. Which of the following element is found in proteins and Nucleic acids but not is carbohydrates?

A. Carbon

B. Nitrogen

C. Oxygen

D. Hydrogen

E. All

10. Which biomolecule responsible for insulation and energy storage?

A. Protein

B. Nucleic Acid

C. Lipid

D. Carbohydrate

E. C and D

11. The organelle found in all three cell types ie. animal cell, plant cell and bacterial cell is

A. Centrosome

B. Large central vacuole

C. Chloroplast

D. Ribosomes

E. All

12. DNA or nucleic acids are composed of a repeating units of

A. Glucose

B. Amino acids

C. Nucleotides

D. Fatty acid

E. Starch

13. A six carbon simple sugar that forms long chain of carbohydrates such as starch, cellulose and glycogen is

A. Sucrose

B .Glucose

C. Lacotse

D. Maltose

14. Which of the following are not functions of protein

A. Body building

B. Provide structural support

C. Serve as enzyme

D. Provide insulation

E. Transport substances

15. Select a characteristics associated with living things

A. Growth and reproduction

B. Interaction with environment

C. Metabolism

D. Adaptability

E. All are correct

16. An organelle associated with function of intracellular digestion is

A. Mitochondria

B. Nucleus

C. Golgi apparatus

D. Lysosome

E. Plastids

17. How does active transport of molecules/ions across a cell membrane is differs from passive transport

A. Active transport requires energy and passive transport does not

B. Active transport moves molecules against their concentration gradient

C. Active transport requires carrier protein and all passive transport does not

D. A and B are correct

E. All are correct

18. The major structural component of a cell membrane in the part that gives the membrane selectively permeable is,

A. Glycolipids

B. Phospholipids

C. Cholesterol

D. Protein

E. Carbohydrates

19.RNA is differs from DNA in that RNA contains,

A. Ribose sugar instead of Deoxyribose

B. Uracil nitrogen base instead of thymine

C. RNA is single stranded

D. All are correct

E. None of the above

20. An organelle capable of producing its own protein since has ribosome, RNA and DNA

A. Mitochondria

B. Lysosome

C. Microfilaments

D. Ribosomes

E. Vesicles

21. Which of the following statement are wrongly stated the function of proteins found in plasma membrane?

A. Replicating DNA

B. Serve as carrier molecule

C. Receptor sites for different hormones

D .Lipid transporter

E. Serve as membrane enzyme

Part III: Insert the Letters (A-R) from the choices below against the corresponding statements (numbers), in the spaces provided. (9%)

A. Selective permeability B. Amphipathic C. Trans membrane proteins D. Glycoproteins E. passive transport F.Diffusion G. Osmosis

H.Osmoregulation I. Plasmolysis J. Facilitated diffusion K. Transport proteins L. Aquaporins M. Gated channels N. Against O. ATP P. Sodium potassium pump Q. Phagocytosis R. Plasma membrane

1. Diffusion where transport proteins speed the passive movement of molecules across the plasma membrane.

2. lon channels that open or close in response to a stimulus

3. Active transport moves substances_____ their concentration gradient

4 Molecules containing hydrophobic and hydrophilic regions

5. Diffusion of water across a selectively permeable membrane

6. Integral proteins that span the membrane

7. Active transport requires energy in the form of_____

8. Some substances cross the plasma membrane more easily than others

9. Movement of substances down their concentration gradient

10. Phospholipid bilayer

11.Membrane carbohydrates covalently bonded to proteins

12. Plant cells lose water in a hypertonic environment with the plasma membrane pulling away from the cell wall a lethal effect called

13.Diffusion of a substance across a____ membrane, with no energy needed for the process

14 The control of solute concentrations and water balance

15. Channel proteins and carrier proteins

16. Major electrogenic pump of animal cells

17. Channel proteins that facilitate the passage of water

18. Endocytosis____cellular eating

Part IV: Fill the blank spaces (2%)

1._____ is type of transportation of packed larger materials in or out of cell.

2._____is a type of passive transportation through mediated protein, while the energy consumer transportation is called _____.

V. Short answer (6%)

1. Briefly discuss how substances enter or leave a cell through the Plasma membrane (consider the property of cell membrane, direction of the movement, factors that affect the rate of movement)?

2. Name at least three common features of prokaryotic and eukaryotic cells.