

LUSAKA APEX MEDICAL UNIVERSITY
FACULTY OF PRE - MEDICAL SCIENCES
DEPARTMENT OF BIOLOGY
BS1001
INTRODUCTORY BIOLOGY
(CELLS AND BIOMOLECULES) SEMESTER 1, TEST 2 (JANUARY 2020 INTAKE)
Examiners: Ms. K. Malisa & Ms. K. Chanda

DATE: Wednesday 8th April 2020

DURATION: 50 minutes

INSTRUCTIONS: ANSWER ALL THE QUESTIONS BY CIRCLING THE BEST OPTION

1. At prophase 1, the chromosome number is...

- A. Haploid
- B. Triploid
- C. Diploid
- D. Quadrapled

2. Meiosis produces...

- A. Blood Cells
- B. Gametes
- C. Somatic cells
- D. Muscle cells

3. A phospholipid consist of

- A. a hydrophobic head, hydrophilic tail
- B. a hydrophobic head, hydrophobic tail
- C. a hydrophilic head and a hydrophilic tail
- D. a neutral head and neutral tail

4. The phospholipid bilayer is termed amphipathic. Amphipathic means...

- A. Contains both hydrophobic and hydrophilic part
- B. Is entirely hydrophobic
- C. Is entirely hydrophilic
- D. Is neither hydrophilic nor hydrophobic

5. Crossing over occurs in.....

- A. Metaphase II of meiosis II
- B. Anaphase I of meiosis I
- C. Prophase II of meiosis II
- D. Prophase I of meiosis I

6. The permeability of the plasma membrane is affected by...
- A. Concentration gradient
 - B. Distance and Time
 - C. Surface area and thickness
 - D. Size and polarity
7. A foetus of a given organism contains 36 chromosomes, how many chromosomes did each male and female gamete contain?
- A. 12 chromosomes
 - B. 14 chromosomes
 - C. 18 chromosomes
 - D. 36 chromosomes
8.are produced in meiosis
- A. 4 daughter cells genetically identical to the parent
 - B. 4 daughter cells genetically different to the parent cell
 - C. 2 daughter cells genetically identical to the parent cell
 - D. 2 daughter cells genetically different from the parent cell
9. At anaphase I of meiosis I,
- A. Homologous chromosomes separate and are pulled towards the poles
 - B. Sister chromatids separate and are pulled towards the poles
 - C. Sister chromatids of homologous chromosomes separate and are pulled towards the poles.
 - D. Homologous chromosomes do not separate and remain at the metaphase plate
10. Which sequence shows the correct sequence of events after prophase I of meiosis I?
- A. -Telophase I- Metaphase I-Anaphase I- Prophase II
 - B. -Metaphase I-Anaphase I- Telophase I- Prophase II
 - C. -Anaphase I-Prophase II-Metaphase I-Telophase I
 - D. -Prophase II-Telophase I-Anaphase I-Telophase I

11. At the end of spermatogenesis..... are produced

- A. Spermatogonia
- B. Spermatozoa
- C. 1° spermatocytes
- D. 2° spermatocytes

12. Which of these is a type of active transport?

- A. Diffusion
- B. Osmosis
- C. Endocytosis
- D. Facilitated Diffusion

13. In passive transport, molecules move...

- A. A region of high concentration to a region of low concentration
- B. A region of low concentration to a region of high concentration
- C. With the use of energy and ATP is hydrolyzed
- D. Without the use of energy from a low concentration to a high concentration

14. Which of these statements is false?

- A. Sperm is haploid
- B. 1° spermatocyte is diploid
- C. 2° spermatocyte is haploid
- D. Spermatogonium are haploid

15. Which list includes the three types of endocytosis?

- A. receptor mediated endocytosis, osmosis and pinocytosis
- B. Phagocytosis, pinocytosis, and protein pumps
- C. Osmosis, Diffusion and Facilitated diffusion
- D. Phagocytosis, pinocytosis and receptor mediated endocytosis

16. Oogenesis occurs in the.....

- A. Ovaries
- B. Testicles
- C. Oogonium
- D. Heart

17. The sodium potassium pump is an example of

- A. Osmosis
- B. Active transport
- C. Diffusion
- D. Facilitated Diffusion

18. Which of these statements is true?

- A. Spermatogonium and oogonium are diploid
- B. 1^o oocyte and 1^o spermatocyte are haploid
- C. Sperm and Eggs are diploid
- D. Sperm is diploid while eggs are haploid

19. When a cell is placed in a hypotonic solution, what will be the direction of the movement of water molecules?

- A. from the cell to the external environment
- B. from the external environment to the cell
- C. at an equal rate from the solution to the environment and from the environment to the solution
- D. there will be no movement of water molecules

20. Active transport includes:

- A. Endocytosis and Diffusion
- B. Exocytosis and Osmosis
- C. Facilitated diffusion and endocytosis
- D. Endocytosis and Sodium/Potassium Pump

21. In meiosis,

- A. 1 daughter cell is produced in meiosis I and 2 daughter cells are produced in meiosis II
- B. 2 daughter cells are produced in meiosis one and 4 daughter cells are produced in meiosis II
- C. No daughter cells are produced in meiosis I and 2 daughter cells are produced in meiosis II
- D. No daughter cells are produced in meiosis I and 4 daughter cells are produced in meiosis II

22. Meiosis produces genetically different daughter cells because of:

- A. separating of homologous chromosomes in anaphase I
- B. Chromosomes aligning at the metaphase plate in metaphase I
- C. Attachment of the spindle fibers to the centromeres in anaphase I and II
- D. Crossing over of homologous chromosomes in prophase I

23. During oogenesis, the meiotic division first pauses in...

- A. Metaphase I in the foetus
- B. Prophase I in the foetus
- C. Anaphase I in the foetus
- D. Telophase I in the foetus

25. The attraction between molecules of the same substance is called;

- A. covalent bonding
- B. ionic bonding
- C. adhesion
- D. cohesion

26. The property of water that allows it to form dew-drops on the top of a leaf in the morning is called;

- A. adhesion
- B. cohesion
- C. surface tension
- D. capillary action

27. When we say water is a “polar molecule” we mean...

- A. It mixes well with other substances
- B. It has an ion and has full positive and negative charges
- C. It has slight positive and negative charges
- D. It originates from the North Pole of the earth

28. What property of water best accounts for the ability of human beings not to over-heat on a hot summer day?

- A. Specific Heat Capacity
- B. High Heat of Vaporization
- C. High latent heat of Fusion
- D. Ice floatation

29. By what process do water molecules enter plant cell epidermis?

- A. Diffusion
- B. Active transport
- C. Osmosis
- D. Capillary action

30. Carbohydrate portions of glycolipids and glycoproteins in cell surface membranes are located on.....

- A. the inside and outside surfaces of the membrane
- B. the inside surface of the membrane
- C. the interior of the membrane
- D. the outside surface of the membrane

31. Which of the following is likely to increase membrane fluidity?

- A. a greater portion of saturated phospholipids
- B. a lower content of cholesterol
- C. a relatively high protein content in the membrane
- D. a lower temperature

32. What type of bonding takes place with elements that make up a water molecule?

- A. Nitrogen bonds
- B. Ionic bonds
- C. Hydrogen bonds
- D. Covalent bonds

33. Which type of transport proteins have higher transport rates?

- A. Carrier proteins
- B. Channel Proteins
- C. Transport Vessicles
- D. Both A & B are correct

34. Why does ice float on water?

- A. As water freezes, it takes up more oxygen from the atmosphere, causing it to have a greater buoyancy
- B. As water freezes it expands and its density decreases
- C. As water freezes, air becomes trapped between the hydrogen bonds of water molecules
- D. As water freezes, it takes up more hydrogen from the atmosphere, causing it to have greater buoyancy.

35. Which of the following organisms does not benefit from the ability of ice to float on liquid water in the polar regions of the world.

- A. Walrus
- B. Polar Bear
- C. Seal
- D. Pond skater

36. Which property of water makes it suitable for biological processes such as digestion?

- A. Adhesion
- B. Surface tension
- C. Good solvent
- D. Heat of vaporization

37. A mixture of water and a non-dissolved material are called;

- A. ionic solutions
- B. covalent solutions
- C. suspensions
- D. covalent mixtures

38. Which of the following best describes a hydrogen bond?

- A. The bond between hydrogen and oxygen within a molecule of water
- B. The bond between a hydrogen in one water molecule and a hydrogen in another water molecule
- C. The bond between hydrogen in one water molecule and oxygen in another water molecule.
- D. The bond between two hydrogen atoms within the same water molecule

39. Relatively how many other water molecules can a single water molecule form hydrogen bonds with?

A. 3

B. 1

C. 4

D. 2

40. Which of the following is not a physical property of water?

A. Tasteless

B. Odorless

C. Soundless

D. Colorless