

Biology 12 – Review Sheet

PLOs: Sections B1, B2, B4 (except nucleic acids and proteins) B9, B10 (Chapters 2, 3 and 4 from the text)

The following worksheet is intended to augment your revision for the upcoming unit test. It is essential that you understand all the learning outcomes listed in the sections listed above. Use the sample and released exam questions on the internet for practice.

http://www.bced.gov.bc.ca/exams/specs/grade12/bi/07_sample_questions.pdf
<http://www.bced.gov.bc.ca/exams/search/>

1) How do the inner membrane of the mitochondria and the nuclear envelope differ?

→ folded → smooth

2) What produces the molecules of which ribosomes are composed? What is the role of ribosomes?

→ nucleolus → rRNA
→ site of protein synthesis

3) Draw the structure of the glucose molecule.



4) Why do neutral fats not dissolve in water?

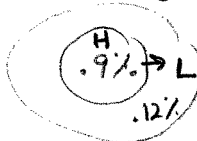
→ non-polar

5) Explain how **four** different factors would affect the rate of diffusion of molecules crossing a cell membrane.

- temp
- conc gradient also surface area
- size
- density

6) If a 0.9% solution is isotonic to a certain type of animal cell, the cell will lose mass if it is placed in which of the following liquids?

- A. 0.5% salt solution
- B. 0.9% salt solution
- C. 1.2% salt solution
- D. distilled (pure) water



7) Which of the part of a cell membrane requires the breakdown of ATP for the active transport of sodium ions?

protein pump (carrier)

8) Why do the heads of the phospholipids point out and the tails point in to each other?

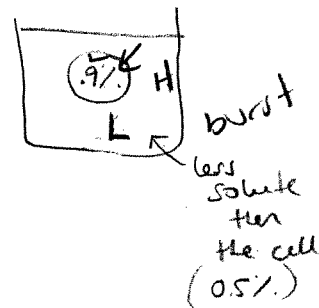
hydrophilic hydrophobic

9) Within the fluid mosaic model of the plasma membrane, what is the role of carrier and channel proteins? How are they similar, how are they different?

→ transport molecules across the membrane. both proteins
- one is like a tunnel
- one actually changes shape

10) If the red blood cells are taken from the body and placed in a hypotonic solution, what happens to the cells?

11) Solutions that cause water to leave cells by osmosis are called hypertonic.



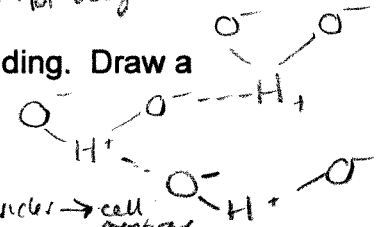
12) What is the function of vacuoles? \rightarrow hold water ions.

13) Lysosomes can be expected to be present in large numbers in cells which

- a) have cilia
- b) produce centrioles
- c) are actively dividing
- d) carry out phagocytosis \leftarrow bring in molecules for digestion

14) Describe how the polarity of water results in hydrogen bonding. Draw a diagram.

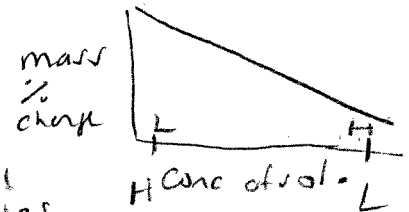
H^+ end attracted to O^- end



15) Explain how the endomembrane system is continuous.

Nucleus \rightarrow RER \rightarrow SER \rightarrow vesicles \rightarrow golgi \rightarrow vesicles \rightarrow cell membrane

16) Sketch a graph to show how the % change in the mass of a cell changes with the concentration of solution in which it's placed.



17) Compare exocytosis with endocytosis

out in

18) Compare facilitated diffusion with active transport.

protein NO ATP with conc. gradient vs protein ATP against conc. gradient

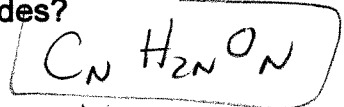
19) List three functions of lipids.

- cushion, energy storage, insulates, cell membrane, hormones

20) Differentiate between saturated and unsaturated fats in terms of their molecular structure.

NO double bond vs double bond \rightarrow causes bend at double bond

21) What is the general empirical formula for monosaccharides?



22) Hydrolysis of neutral fats could produce what?

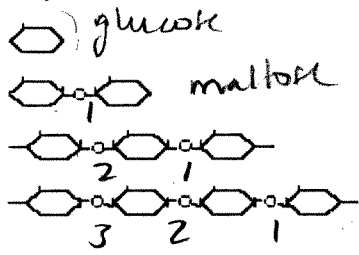
add $H_2O \rightarrow$ glycerol + 3 fatty acids

23) Which of the following is an animal carbohydrate?

- a) glycerol
- b) glycogen
- c) dipeptide
- d) cellulose

B

24) Which of the following diagrams could represent glucose? Maltose?



25) For the above diagram, how many water molecules would be required to hydrolyse the bottom three molecules into monomers?

= 6 total