Key

Grade 8 Science

Review for Test: Cell Structure, Function & Movement Across the Cell Membrane

Ask questions while you review!!!

Name: **Date of test:** **Thurs Nov 24 for 8-7, Mon Nov 28 for 8-3**

What to Bring: pencil, eraser

Topics on the Test:

8 01 Vocabulary - see vocabulary sheet

8 02 Life Functions – MR **C** GREEN (How do We Know Something is Alive?)

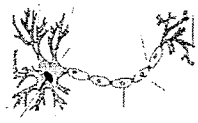
NOTE: C is for CELLS (not circulation). To be alive you must be made of cells. Some small organisms do not have circulation systems so it is not a life function.

8 03, 8 04 Cell Theory

8 05 Cell Structure & Function
- -animal cell organelles (structures and their functions)
- -plant cell organelles (structures and their functions)
- -difference between plant and animal cells organelles

8 06 Microscope – name of microscope parts
- total magnification
- field of view
- wet mounts

8 07 3 Types of Movement Across the Cell Membrane
- -Diffusion
- -Osmosis
- -Active Transport

8 09 Specialized Cells (ie nerve cell is shaped like  so that it can do its function

8 10 Organization of Multicellular Organisms (Cells → Tissues → Organs → Organ Systems)

8 08 Unicellular/Multicellular, 8 20 Similarities and Differences in Living Things

8 14 Respiratory System - Organ Systems Depend on Eachother (respiratory & circulatory)

INQUIRY

*3 types of variables
- controlled
- -independent (change on purpose)
- -dependent (see the effects of what you changed on purpose)

*how to read and record data in tables

*calculate % change (see labs)

Not as important

8 02 Life Functions 8 03 Cell Theory - 4 ideas 8 04 Cell Theory Development

Format of the Test:

Part A: Knowledge - knowing facts, labelling diagrams, remembering details

Part : Application & Problem Solving - joining ideas together in ways we did not do in class, thinking "outside the box"

Part C: Scientific Method (how we do Science) & Inquiry

-knowing how we do Science
(**hypothesis**, designing experiments, **measurement using tools like a microscope, calculations,** graphing, **analysis, conclusions**)

Practice Questions for the Test

These questions do not cover everything we studied. They are only example questions to give you an idea of what questions might be like on the test. You must still study all notes, quizzes, lab reports, calculations, etc. ANYTHING IN THE YELLOW BOOKLET IS ALSO TESTABLE.

Vocabulary (8 01)

Choose the most correct word from the word list below.

unicellular organ multicellular cell tissue

organ system

A group of cells that have the same structure and function tissue

Organisms that are one cell big unicellular

Smallest unit of an organism that can do all of the life functions cell

Organisms that need specialized cells because they are so big and complex multicellular

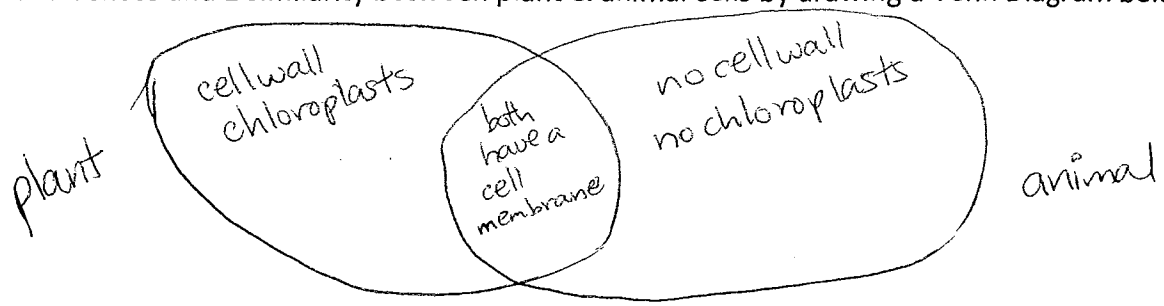
A group of tissues that work together to perform a certain function organ

A group of organs that work together to perform a major function (ie respiratory system)

organ system

Cell Structure & Function (8 05)

1) Describe 3 differences and 1 similarity between plant & animal cells by drawing a Venn Diagram below.



2) Describe two differences between a cell membrane and a cell wall.

cell membrane - allows substances through or not (controls movement)
- thick, protective

cellwall - has pores so movement can happen
- thin, very easy to pierce or burst

Unicellular/Multicellular (Specialized Cells & Organization) (8 08, 8 09, 8 10)

3) List the following in order from smallest to largest and give an example of each: organ, tissue, cell, organ system

Note: there are only 4 types of tissue: connective, epithelial (skin), nervous, muscular

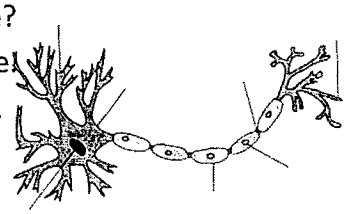
Smallest			Largest
cell	tissue	organ	organ system
nerve cell, blood cell	only 4 types: skin (epithelial), connective, muscular, nervous	lungs, heart	respiratory system or circulatory system

4) Multicellular organisms are much more complex than unicellular organisms. Their cells need to be specialized. Specialized means that they do a specific function

Give an example of a specialized cell. nerve cell, blood cell

5) Different cells have different functions and THEREFORE their structure is different.
Identify the cell illustrated to the right:
a) muscle cells
b) red blood cells
c) nerve cells
d) bone cells

6) Refer to the diagram below, which functions below matches its structure?



a) can contract which makes the fibres shorter and causes bones to move
b) collects calcium from food and allows for growth and repair for bones.
c) protects cells inside and reduces water loss.
d) carries electrical signals to make body parts move.

7) A unicellular paramecium might need a semipermeable membrane because

a) it might need to bring food inside of itself
b) it might need to pump water out of itself
c) both of the above

8) Which is ~~FALSE~~ TRUE? A unicellular paramecium

a) has to use ~~any~~ energy to let food diffuse into it F
b) has to use energy to let water move into it by osmosis F
c) needs to use energy to move food into it by active transport T

9) The organism that would be at higher risk of drying out if it had no water in its external environment is
a) a multicellular organism
b) a grade 8 bottle flipper
c) a unicellular organism

10) Compared to a multicellular organism, a unicellular organism
a) has an easier time diffusing oxygen in and out of its internal environment.
b) has a more difficult time diffusing oxygen into its cells.

Respiratory System (8 14)

Write the letter of the word in Column 2 on the blank beside its function in Column 1.

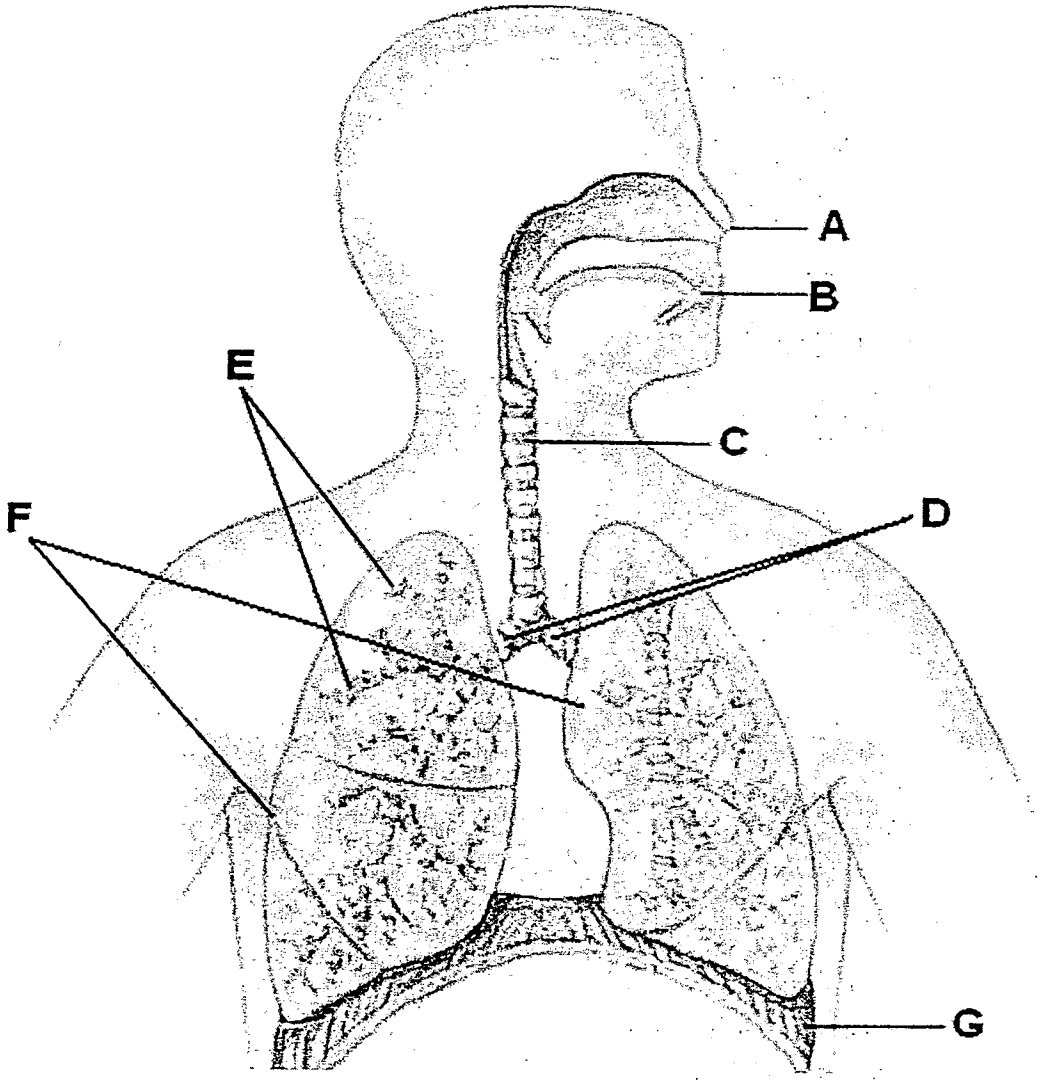
	Column 1	Column 2
E	1. Small air sacs at the tips of bronchiole tubes which exchange CO_2 and O_2	A. trachea
A	2. The tube(s) that carries air from your nose/mouth to your lungs	B. bronchi
C	3. Spongy, pink-colored organs of the respiratory system	C. lungs
D	4. The tube(s) that carry (ies) your food from your mouth to your stomach	D. esophagus
B	5. The tube(s) that carry(ies) oxygen and carbon dioxide from the end of your trachea to your lungs	E. alveoli
F	6. Small blood vessels that surround your alveoli and help exchange CO_2 and O_2	F. capillaries

Label the Respiratory System

Word bank

mouth
trachea
nose
bronchi
alveoli
lungs
diaphragm

A nose
B mouth
C trachea
D bronchi
E alveoli
F lungs
G diaphragm



The Respiratory System

Use the words in the box to fill in the blanks.

~~air~~	~~oxygen~~	~~inhale~~	~~exhale~~
~~lungs~~	~~trachea~~	~~respiratory~~	~~cough~~
~~carbon dioxide~~	~~yawn~~	~~bronchi~~	pharynx
~~hiccup~~	~~diaphragm~~	~~water vapor~~	~~nose~~
~~mouth~~	~~sneeze~~	~~blood~~	

All animals need ___oxygen___ to make energy from food. We get this oxygen from the ___air___ that we breathe. In order to get the oxygen into the blood where it can be transported to the rest of the body, the air travels through a system of organs called the ___respiratory___ system. (ie an organ system)

epiglottis video

When you ___inhale___, air enters the body through the ___nose___ or the ___mouth___. From there it passes through the ___trachea___, which forces air into the ___pharynx___ and food into the esophagus. The air travels down the trachea into two branching tubes called ___bronchi___ and then on into the ___lungs___.

In the lungs oxygen from the air enters the ___blood___. At the same time, the waste gas ___carbon dioxide___ leaves the blood and then leaves the body when you ___exhale___. Some ___water vapor___ also leaves the body when you exhale, which is why mirrors get foggy when you breathe on them. The ___diaphragm___ is the muscle that controls the lungs.

Sneeze video!

It is important to keep the respiratory system clear so oxygen can keep flowing into your body. If something gets in your nose and irritates it, you ___sneeze___. If something gets in your trachea or bronchi and irritates it, you ___cough___. If something irritates your diaphragm, you ___hiccup___. Finally, if the brain thinks you are not getting enough oxygen, then it forces you to ___yawn___.

INQUIRY

The table below shows the results of an experiment to find the effect of osmosis on potato cells.

- One cube of a potato was massed and placed in 500 mL of distilled water.
- One cube of a potato was massed and placed in 500 mL of water with 100 ~~mL~~ g of salt added to the solution.
- One cube of a potato was weighed and placed in 500 mL of water with 300 ~~mL~~ g of salt added to the solution.

Time (minutes)	Beaker 1 Distilled Water	Beaker 2 (500 mL & 100 ~~mL~~ g) water salt	Beaker 3 (500 mL & 300 ~~mL~~ g) water Salt
0	52 grams	59 grams	60 grams
15	52 grams	58 grams	58 grams
30	53 grams	54 grams	55 grams
45	54 grams	53 grams	51 grams
60	55 grams	50 grams	49 grams

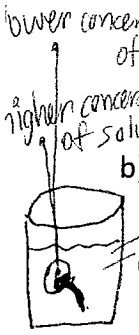
the saltier the water, the more water moves out of the cell!

a) What are the independent, dependent and controlled variables in this experiment?

i. Independent variable solutions / liquids
(change on purpose)

ii. Dependent variable mass of potato cube

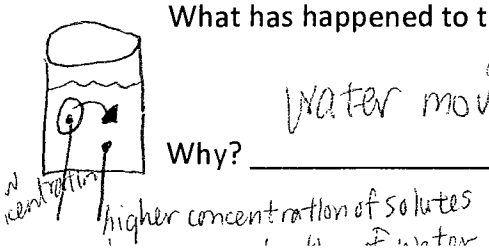
iii. Controlled variable size of beaker, size of potato, time left in solution



b) What has happened to the mass of the potato in water? increase (3g)
(use proper vocabulary)

Why? water moving by osmosis INTO cell ∴ cell must have more solutes than distilled water (pure water)

What has happened to the mass of the potato in salt solution? decrease (9g) (11g)
(use proper vocabulary)



Why? water moving by osmosis out of cell ∴ cell must have less solutes than salt water

Variables

For each of the following, identify

*2 controlled variables (to keep the experiment fair)

*independent variable

*dependent variable

Cell Parts and Their Functions (Jobs) (8 05)

1) Is the diagram below a plant cell or animal cell? plant (it has a cell wall)

2) What is an organelle? (do not just give an example of one. Give a definition when asked to describe what something is) a structure in a cell with a specific job (function)

3) Why does a plant cell need a chloroplast with chlorophyll in it? Be specific and use proper vocabulary. chloroplasts take sun's energy + change it into food (mitochondria will change that food to energy) that is the process of photosynthe

4) Write the letter of the organelle in Column 2 on the blank beside its function in Column 1.

	Column 1	Column 2
N	1. Makes energy in the cell.	G. cell membrane
O	2. Responsible for directing all the cell's activities	H. cell wall
M	3. Breaks down food and old cell parts.	I. chloroplast
P	4. Sac-like structure; stores water, nutrients, and wastes	J. cytoplasm
I	5. Photosynthesis occurs in this green plant organelle	K. endoplasmic reticulum
J	6. Jellylike substance that surrounds all the organelles	L. golgi body
G	7. A selectively permeable covering for the cell which holds the cell contents and allows nutrients and wastes to flow in or out of the cell	M. lysosome
L	8. Packaging center for the cell	N. mitochondria
H	9. Made of cellulose and helps provide rigidity to the cell	O. nucleus
K	10. Tube-like system that transports nutrients within cells	P. vacuole