

SNC2D Exam Review Questions

BIOLOGY

1. What is an organelle?

-organelle means "little organ"; it is a cell part eg. mitochondria

2. What is the difference between prokaryotes and eukaryotes? List the characteristics of both.

-**Prokaryotes**: no nucleus, unicellular, smaller in comparison, divides by binary fission, asexual reproduction, does not require oxygen, no membrane bound organelles, one circular chromosome

-**Eukaryotes**: nucleus, multicellular, larger in comparison, divides by mitosis and meiosis, asexual and sexual reproduction, requires oxygen, membrane bound organelles, many linear chromosomes

3. List the structure and function of the cell membrane, cytoplasm, nucleus, mitochondria, vacuoles, lysosomes, golgi bodies, cell wall, chloroplasts, ribosomes, endoplasmic reticulum, centrioles (plus any other organelles discussed in class)

cell membrane: controls what goes in and out of cell

cytoplasm: jelly-like substance, suspends organelles

nucleus: control centre of cell

mitochondria: powerhouse of cell; provides energy

vacuoles: storage site for water and waste

lysosomes: digest waste

golgi bodies: packages proteins, collects materials to be removed from cell

cell wall: protects and supports cell

chloroplasts: contain chlorophyll; site of photosynthesis

endoplasmic reticulum: transports proteins and materials throughout the cell

centrioles: play a role in cell division

Other:

Ribosomes: produce proteins

4. List the differences between plant and animal cells.

-**Animal Cells** = no cell wall, no chloroplasts, many small vacuoles, lysosomes, centrioles

-**Plant Cells** = cell wall, chloroplasts, few large vacuoles, no lysosomes, no centrioles

5. List each of the stages of mitosis and describe them. Be able to draw the main things that are happening in each stage.

Prophase: chromosomes condense and become visible

Metaphase: chromosomes line up in the middle of the cell (the equator)

Anaphase: sister chromatids get pulled apart

Telophase/Cytokinesis: cell divides into 2 daughter cells (each with 46 chromosomes)

*must be able to sketch

6. What is a cancer cell? How is it detected (what are the different screening methods)? How is it different from a normal cell? What are the two types of tumours?

Cancer Cell = uncontrolled cell division caused by several mutations to the DNA of a cell over a period of time

Detected/Screening Methods = self exams (eg. ABCDE), blood tests (eg. PSA test for prostate cancer), X-rays, Endoscopy

Different from a Normal Cell: normal cells spend a small amount of time in Mitosis and a larger amount of time in interphase; cancer cells do not spend enough time in interphase

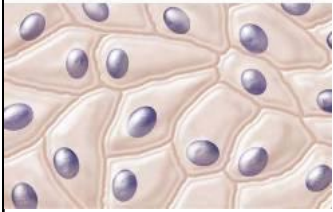
Types of tumours: benign (non-cancerous), malignant (cancerous)

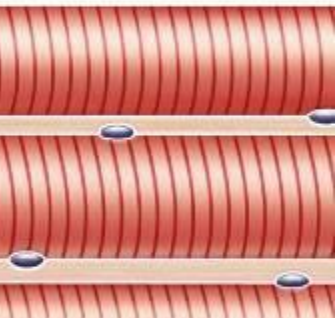
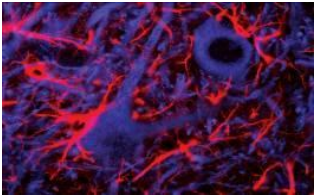
7. How does cancer spread? What is the term for this?

-cancer spreads by pieces of the tumour breaking off and getting into the bloodstream, once into bloodstream can travel to other parts of body and grow tumours there

-term is called metastasis (the development of secondary malignant growths at a distance from a primary site of cancer)

8. What does the term tissue mean? List the form, function and location of the following tissues: epithelial, connective, muscle, nerve. **A tissue is a group of related cells that perform a specific function.**

Tissue	Form	Function	Location
Epithelial epithelial tissue 	-sheets of tightly packed cells covering surfaces and lining internal organs	-protection from dehydration -reduce friction	eg. skin, lining of digestive organs
Connective connective tissue 	-various types of cells and fibres held together by liquid/solid/gel (known as a matrix)	-to support and insulate	eg. bone, tendons, blood
Muscle	-bundles of long cells called muscle fibres	-movement	eg. muscles that make bones move, heart

			
Nerve 	-long, thin cells with fine branches at the ends	-sensory, communication, coordination of body functions	eg. brain, nerves in sensory organs

9. List the following terms in order from **biggest to smallest**: cell , organelle, organ, molecule, tissue, organism, organ system.

organism - organ system - organ - tissue - cell

10. What is meant by the term specialization (as it relates to cells)?

-when cells specialize into cells that perform a specific function and have a specific shape related to that function

11. List all the body systems? What is the main function (brief description) of each system?

Musculoskeletal: made up of bones and skeletal muscle; supports the body, protects delicate organs, and makes movement possible

Nervous: The nervous system is the control center of the body, it includes the brain and spine (central nervous system) and nerves (peripheral nervous system)

Digestive: The function of the digestive systems is digestion and absorption. Digestion is the breakdown of food into small molecules, which are then absorbed into the body.

Circulatory: to transport oxygen and nutrients throughout the body and to remove waste

Respiratory: responsible for providing the oxygen we need and for removing the carbon dioxide produced as our bodies use energy for growth, repair and movement.

12. List the 3 main components of the circulatory system. What is the function of each component?

1. Blood - transports nutrients and materials throughout the body
2. Blood Vessels - contains blood
3. Heart - acts as a pump; pumps blood throughout the body

13. Describe the differences and similarities between arteries and veins.

Arteries: always go away from heart, usually carry oxygenated blood, thicker walls, pressure- filled therefore do not

have valves

Veins: always go towards the heart, usually carry deoxygenated blood, thinner walls, not pressure filled therefore need valves to keep blood flowing in one direction

14. List the main characteristics of Arteries and Veins. (direction of blood flow, blood pressure (high or low), type of blood, wall thickness, etc)

*see above question

15. What is the function of capillaries? How are capillaries related to arteries and veins?

-the capillaries are the site of gas exchange between the arteries and veins

-capillaries are tiny blood vessels that connect the arteries and veins

16. Explain the process of gas exchange in the alveoli and capillaries (which gases are moving, which direction they are moving and the structures that they move between).

-gas exchange occurs at the alveoli in the lungs and capillaries in the bloodstream (by lungs and body cells)

-at the lungs CO_2 goes into the alveoli from the capillaries and O_2 enters the capillaries

-at the body cells, CO_2 enters the capillaries and O_2 enters the body cells from the capillaries

17. List the main parts of the digestive system and be able to locate them on a diagram.

-nose, mouth, salivary glands, pharynx, esophagus, stomach, small intestine, large intestine, anus

accessory organs: pancreas, liver, gallbladder, appendix

18. List the main parts of the respiratory system and be able to locate them on a diagram.

-nose, mouth, pharynx, trachea, right/left bronchi, bronchioles, alveoli

19. Be able to discuss how the Digestive, Respiratory and Circulatory Systems interact with each other.

*refer to notes on the systems
