SNC2D(N) FINAL EXAM REVIEW

Length of Exam: 1.5 hrs

Attached: SCANTRON, periodic table, table of common ion names/formulas

Required Materials: calculator (no sharing allowed!), ruler, pencil, pen, eraser

PART A: Multiple Choice (35 marks)
PART B: Diagrams (25 marks)
PART C: Short Answer (45 marks)
PART D: Application Problems (21 marks)

TOTAL MARKS: 126

UNIT 1 – Cells, Tissues and Organs

1. Describe the structure and function of cell structures and organelles. Nucleus, cytoplasm, mitochondrion, chloroplast, Golgi apparatus (bodies), Endoplasmic reticulum, lysosome, vacuole, centrioles.
2. Label animal and plant cells.
3. Differentiate between photosynthesis and cellular respiration
4. Differentiate between animal and plant cells; prokaryotic and eukaryotic cells; stem cells.
5. Name and explain the phases of the cell cycle.
6. Name the phases of mitosis.
7. Describe what happens in each phase of mitosis.
8. What are the 4 different types of tissues?
9. What are the functions of each tissue type?
10. Organ systems- What is the major function of each?
11. What are the major organs and structures in the following organ systems: Skeletal, Nervous, Respiratory, Digestive and Circulatory?
12. Describe the process of digestion, respiration, and circulation. (includes structures and functions).
13. Organ systems work together to make up the organism. Give examples of interactions between organ systems.
14. Identify the tissues found in plants and their functions.

UNIT 2- CHEMISTRY

1. What information can be obtained from the atomic number? Mass number? Use an example.
2. Explain the how to correctly determine the number of cations & anions in ionic compounds. Use an example.
3. How does a positive ion form? Negative ion?
4. Draw a Lewis Dot diagram for a lithium and sulphur ion.
5. What are the charges and locations of the following: protons, neutrons, electrons.
6. How can you use the periodic table to identify the number of valence electrons for a particular element? Use an example.
7. How can you use the periodic table groups to identify the ionic charge of the elements in each group? What are the groups/families?
8. Compare and contrast elements and compounds. Give examples.
9. Compare and contrast between ionic and covalent bonds? Give an example for each.
10. Complete the following table.

Compound	**NH_3**	**$Mg(OH)_2$**	**Li_3PO_4**
Ionic or Covalent?			
Name			
Total number of atoms			

11. State the law of conservation of mass and how it relates to balancing equations.
12. What are the starting substances and final substances called in a chemical reaction?
13. List the signs of a chemical change.
14. Complete AND balance the equation below.

_____Ca + _____ HCl → +

15. State the 6 types of chemical reactions learned in this unit. Give an example of each.
16. State the 7 diatomic elements.
17. How can you identify an acid? A base? Give an example for each.
18. Describe properties of acids and bases.
19. Draw and label a pH scale.

20. Give the formula for the following compounds.

NAME	FORMULA
Sodium sulfide	
Aluminum sulfate	
Tin (II) iodide	
Fluorine gas	
Iodine heptachloride	
Dinitrogen tetroxide	

21. Identify the following reaction types:

a) $HCl + AgNO_3 \rightarrow HNO_3 + AgCl$ _____

b) $C_7H_{16} + 11O_2 \rightarrow 7CO_2 + 8H_2O$ _____

c) $P_4O_{10} + 6H_2O \rightarrow 4H_3PO_4$ _____

d) $3Fe + 4H_2O \rightarrow Fe_3O_4 + 4H_2$ _____

e) $2H_3PO_4 \rightarrow H_4P_2O_7 + H_2O$ _____

22. Write balanced chemical equations for the following reactions:

a) Aluminum reacting with oxygen in the air.

b) Copper (II) sulphate reacting with iron (III) hydroxide.

UNIT 3- OPTICS- FORMULAS WILL NOT BE GIVEN!

$$\frac{1}{f} = \frac{1}{d_0} + \frac{1}{d_i} \qquad M = \frac{h_i}{h_0} = -\frac{d_i}{d_0} \qquad n = \frac{c}{v}$$

1. Define bioluminescence, chemiluminescence, incandescence. Give examples.
2. What is the speed of light?
3. State the law of reflection (from a plane mirror). Draw a diagram to explain your answer.
4. What is the difference between transparent, translucent and opaque objects?
5. What is the difference between luminous and non-luminous?
6. What is the difference between reflection and refraction?
7. Compare and contrast virtual and real images (including Attitude)
8. What are the characteristics of a convex mirror image? Include a ray diagram in your response.
9. What are the image characteristics of a concave mirror? Draw a ray diagram.
10. What are the image characteristics of a diverging and converging lens? Draw a ray diagram.
11. What is a converging mirror also known as? Diverging mirror? WHY?
12. Use SALT to describe an image created from a plane mirror.
13. Describe how light refracts when going from more optically dense to less optically dense mediums and vice versa.
14. Draw ray diagrams and describe the characteristics (SALT) with an object reflecting off a concave mirror. When the object is located:
    a) On C b) between F and C c) on F, d) past C e) between F and the mirror.
15. Determine image characteristics for an object 2 cm high, placed in front of a converging lens with a focal length of 24 cm at a distance of 10 cm. SHOW ALL YOUR WORK!
16. Light travels from air into a diamond (n= 2.42). What is the speed of light in the diamond? SHOW WORK!

UNIT 4- CLIMATE CHANGE

1. Explain the greenhouse effect & the main greenhouse gase
2. List the evidence for climate change.
3. Describe some of the solutions we can take to reduce climate change.
4. Identify the factors that affect climate.