

SNC2D – Final Exam (100 Marks Total)

Grade: /100

Name:	Knowledge	/39
	Inquiry	/24
Signature:	Communication	/15
	Application	/22

Section 1 True/False (Knowledge)

Question	1	2	3	4	5	6	7	8	9	10
Answer										
Question	11	12	13	14	15	16	17	18	19	20
Answer										
Question	21	22	23	24	25	26	27	28	29	30
Answer										
Question	31	32	33	34	35	36	37	38	39	
Answer										

NOTE: FOR PART 1 WRITE YOUR ANSWERS IN THE TABLE ON THE FIRST PAGE OF THIS TEST*

NOTE: THERE IS A PERIODIC TABLE OF THE ELEMENTS FOR YOUR REFERENCE ON THE LAST PAGE OF THE EXAM*



NOTE: FOR PART 1 WRITE YOUR ANSWERS IN THE TABLE ON THE FIRST PAGE OF THIS TEST*

Part 1. Multiple Choice (Knowledge - 39 marks total)

Choose the correct response for each of the following questions. **Enter your answers in the table on page 1. Use capitalized letters (Use A, B, C, D NOT a, b, c, d)**

1. Which type of reaction is NaOH + HCl \rightarrow NaCl + H₂O?

- a) Synthesis
- b) Decomposition

c) Single displacement

d) Double displacement

2. Protons are

a) positively charged particles found outside the nucleus in an atom.

b) negatively charged particles found outside the nucleus of an atom.

c) neutral particles found in the nucleus of an atom.

d) positively charged particles found in the nucleus of an atom.

3. An atom with an atomic number of 38 and a mass number of 88 contains:

- a) 50 neutrons
- b) 50 electrons
- c) 38 neutrons
- d) 88 protons
- 4. A liquid with a pH of 6 is:
- a) neutral
- b) very acidic

c) very basicd) weakly acidic

5. Find the missing mass for the following equation:

 $2Mg + O_2 \rightarrow 2MgO$

mass of magnesium metal = 45.2 g mass of magnesium oxide = 66 g mass of oxygen =

a)	45.2 grams
b)	111.2 grams

c) 20.8 gramsd) 66 grams

- 6. What law predicts the outcome of question #5?
- a) Law of definite proportions
- c) Law of Conservative Mass

b) Law of gravity

d) Law of Conservation of Mass



7. What type of bond occurs when two atoms share electrons?

- a) Ionic
- b) Covalent

c) Metallic

- d) Permanent
- 8. Which one of the following observations provides certain evidence that a chemical change has occurred?
- a) A change of state takes place.
- c) There is a change in volume.

b) A new substance is formed.

- d) Heat is not given off.
- 9. Which of the following statements about the particles in a piece of silver is **incorrect**?
- a) All of the particles have the same number of protons.
- b) The particles are always moving.
- c) There are strong forces of attraction between the particles.
- d) Some particles have different numbers of protons.

10. When a negative ion is formed, an atom must:

a) lose an electron	c) gain an electron
b) lose a proton	d) gain a proton

- 11. The nucleus of an atom contains
- a) positive electrons and neutral neutrons.
- b) positive protons and neutral neutrons.
- c) negative electrons and neutral neutrons.
- d) negative electrons and negative neutrons.

12. What type of ion does an acid generate when it is dissolved in water?

- a) Hydroxide c) Nitrate b) Hydrogen d) Nitrite
- 13. Which of the following is **not** part of a neutralization reaction?

a) A salt	c) An indicator
b) An acid	d) A base
14. In an ionic bond	
a) no electrons are given or taken.	c) electrons are shared.
b) electrons are exchanged.	d) electrons are eliminated.
15. What is the pH of pure water?	
a) 7	c) 14
b) 0	d) Below 7



- 16. Which of the following statements is **incorrect** about cells?
- a) All living organisms are made of cells.
- b) The cell is the basic functional unit of all living organisms.
- c) All plants are made of cells but only certain types of animals are.
- d) All cells come from pre-existing cells.
- 17. In which order does mitosis occur?
- a) telophase, anaphase, metaphase, and prophase
- b) metaphase, prophase, telophase, and anaphase
- c) prophase, metaphase, telophase, and anaphase
- d) prophase, metaphase, anaphase, and telophase
- 18. The two halves of a copied chromosome (sister chromatids) line up in the middle of the cell during:
- a) Interphasec) Telophaseb) Metaphased) Anaphase
- 19. Animal cells are different from plant cells in that
- a) animal cells have cell walls and plant cells do not.
- b) plant cells have nuclei and animal cells do not.
- c) animal cells have mitochondria and plant cells do not.
- d) plant cells have cell walls and animal cells do not.
- 20. Which of the following represents the highest level of organization?
- a) Tissue c) Organ
- b) Cell

d) Nucleus

c) locomotive

21. Which of the following does not correctly pair an organ with its organ system?

- a) Brain / nervous system
- b) Heart / circulatory system
- c) stomach / digestive system
- d) small intestines / respiratory system
- 22. The lungs are part of the ______ system.
- a) digestive
- b) nervous d) respiratory

23. What special molecule is the "blueprint of life", which contains all of the information that a cell needs to survive and reproduce?

- a) Platelets c) DNA
- b) Protein d) Lipids



24. Which one of the following represents the sencountered from day to day?	set of environmental conditions
a) Climate	c) Temperature
b) Weather	d) Currents
25. What is the ultimate source of energy for p	lanet Earth?
a) Petroleum	c) Water
b) The Sun	d) Humans
26. Which method of heat transfer can easily o	perate in outer space?
a) Conduction	c) Radiation
b) Convection	d) Heat
27. Ocean currents serve to move what around	I the Earth?
a) Heat	c) Plankton
b) DDT	d) None of the above
28. The movement or transmission of thermal	energy through a substance is known as:
a) Radiation	c) Conduction
b) Refraction	d) Convergence
29. The critical angle of glass is 41°. Which of the reflection?	he following will result in total internal
a) 44°	c) 38°
b) 40°	d) 20.5°
30. A translucent materiala) absorbs the light rays it receives.b) transmits all the light rays it receives.c) transmits most of light rays it receives.d) reflects the light rays it receives.	
 31. Planets and moons are: a) Luminous b) Can either be luminous or non-luminous dep c) Non-luminous d) Semi-luminous 	pending on where the Sun is
32. The part of the electromagnetic spectrum v	ve can see is called the:
a) Invisible spectrum	c) Rainbow spectrum
b) Colour spectrum	d) Visible spectrum



33. Total internal reflection will occur if the inca) half the value of the critical angle.b) greater then the critical angle.c) the same as the critical angle.d) less then the critical angle.	ident angle is
34. The process that creates light by passing ana) Chemiluminescenceb) Fluorescence	electric current through gas in a tube is: c) An incandescent light bulb d) An LED
35. The speed of light is fastest in: a) Water b) Air	c) A vacuum d) Cold Air
 36. If the refractive index of water is n_w = 1.3, a m/s, what is the velocity of light in water? a) 1.5 x 10⁸ m/s b) 3.21 x 10⁸ m/s 	nd the velocity of light in air is 3 x 10 ⁸ c) 2.31 x 10 ⁸ m/s d) 1.9 x 10 ⁸ m/s
37. Plane mirrors produce a: a) Real image b) No image	c) Virtual image d) Hologram
38. A dime in a fountain will appear farther aw a) Reflection b) Optical phenomena	ay to your eyes because of: c) Refraction d) Total internal reflection
39. The best type of mirror to use in a parking g a) Concave	garage to see around corners is: c) Plane

b) Convex d) Broken



Part 2: Matching Section (T/I - 10 marks): /10

GRADE:

40. Place the correct letter from Section A beside the correct description from section B in the spaces provided below.

Section A

A. Radiation	B. Respiratory System	C. Cell membrane
D. Lysosome	E. Digestive System	F. Incandescent
G. Carbon dioxide	H. Vacuole	I. Stars

J. Blood Vessels

<u>Answers</u>	Section B
	The kind of light that is caused by an electrical current in a light bulb.
	This is responsible for storing nutrients and water in a cell.
	Chemical and physical breakdown of food is the major function of this
	organ system.
	This contains enzymes to digest materials in a cell.
	The most common luminous sources of light in the sky.
	Regulates what enters and leaves the cell.
	Transports blood, gases, and nutrients/wastes.
	Lungs, trachea, and blood vessels are the major organs of this system.
	A greenhouse gas that humans can control the emissions of.
	The transfer of energy by means of waves.



Part 3 Short Answer (32 marks total):

GRADE: /32

- 41. Compare the similarities and differences of the following, use specific examples. (4 marks each, Application 16 marks total):
- a) Animals and Plants Cells

b) Weather and climate

c) Acid and base

d) Natural Greenhouse effect and anthropogenic (human created) greenhouse effect

42. Complete the following tables.

a) Name each compound. (T/I - 5 marks)

Chemical Formula	Chemical Name
NaS ₂	
KClO ₃	
NO ₂	
CuSO ₄	
Mn ₃ P ₇	

b) Write the correct formula for each compound. (T/I - 5 marks)

Chemical Name	Chemical Formula
carbon monoxide	
iron (II) chloride	
sodium bicarbonate	
lithium hydroxide	
nickel (III) nitride	

43. Silver nitrate and sodium chloride react, producing silver chloride and sodium nitrate.

(Application – 3 marks)

- a) Write out a word equation for this reaction. (1 mark)
- b) Write out a balanced chemical equation for this reaction. (1 mark)

- c) What type of reaction is this? (1 mark)
- 44. Sodium hydroxide and nitric acid (hydrogen nitrate) react, producing sodium nitrate and water. (Application 3 marks)
- a) Write out a word equation for this reaction. (1 mark)
- b) Write out a balanced chemical equation for this reaction. (1 mark)
- c) What type of reaction is this? (1 mark)

Part 4: Long Answer & Calculations (19 marks total) GRADE:

45. There is a lot of debate in society about the greenhouse effect. Explain what the greenhouse effect is, what gases are involved, and the positive and negative effects of the greenhouse effect. (Communication - 5 marks)

/19



46. A convex lens has a focus length of 6 cm, and there is an object that is 12 cm from the lens. The object has a height of 4 cm. Use the lens and magnification equations to determine the location and size of the image. Show all your work. **(T/I - 4 marks)**

47. Explain why a cell must make a complete copy of its genetic information before it can start the process of mitosis. **(Communication - 5 marks)**



48. How has the knowledge of chemical substances and their reactions been applied to solve environmental challenges and how could this knowledge be used in the future to help protect our environment? **(Communication - 5 marks)**

The Periodic Table of the Elements

(223)	(226)	(227)	(261)	(262)	(263)	Bohrium (262)	(265)	(266)	(269)	(272)	(277)						
Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt									
87	88	89	104	105	106	107	108	109	110	111	112	113	114		- APRIABLES		- 0011000
Cs Cesium 132.90545	Battum 137.327	Lauthanum 138.9055	Hafnium 178.49	Ta Tantahan 180.9479	W Tungsten 183.84	Re Rhenium 186,207	Osmium 190.23	Ir trafium 192.217	Platinum 195.078	Au Gold 196.96655	Hg Mercury 200.59	Tl Thallium 204.3833	Pb Lead 207.2	Bi Biamath 208.98038	Polonum (209)	At Astatine (210)	Rn Radon (222)
55	56	57	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
Rb Ruhidium 85.4678	Strontiam 87.62	Y Yitrium 88.90585	Zr Zincomiam 91.224	Nb Niohium 92.90638	Mo Molybdenum 95,94	Tc Technetium (98)	Ru Ruthenium 101.07	Rh Rhodium 102.90550	Palladium 106.42	Ag silver 107.8682	Cadmium 112.411	In Indiam 114.818	Sn ^{Tin} 118.710	Sb Antimony 121.760	Tellurium 127.60	I Iodine 126.90447	Xe Xenon 131.29
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
K Potassium 39.0983	Ca Calcium 40.078	Scandium 44.955910	Ti Titanium 47,867	V Vanadium 50.9415	Cr Chromium 51,9961	Manganese 54.938049	Fe 55.845	Co Cobalt 58.933200	Ni Nickel 58.6934	Cu Copper 63,546	Zn Zinc 65.39	Gallium 69,723	Germanium 72.61	As Arsenic 74.92160	Selenium 78.96	Br Bermine 79.904	Krypton 83.80
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Na Sodium 22.989770	Mg Magnesium 24.3050											Al Alaminum 26.981538	Silicon 28.0855	Phosphorus 30.973761	S Sulfur 32.066	Cl Chlurine 35.4527	Ar Argon 39.948
11	12											13	14	15	16	17	18
Lithium 6.941	Be Berytlium 9.012182											В Вогов 10.811	C Carbon 12.0107	N Nitropen 14.00674	O Oxygen 15.9994	F Phorene 18.9984032	Ne Neon 20.1797
3	4											5	6	7	8	9	10
H Hydrogen 1.00794																	He Helum 4.003

58	59	60	61	62	63	64	65	66	67	68	69	70	71
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Cerium 140.116	Praseodymium 140.90765	Neodymium 144.24	Promethium (145)	Samarium 150.36	Europium 151.964	Gadolitium 157.25	Terbium 158.92534	Dysprosium 162.50	Bolmium 164.93032	Erbium 167.26	Thulium 168.93421	Viterbium 173.04	Lutztium 174.967
90	91	92	93	94	95	96	97	98	99	100	101	102	103
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr
Thorium 232.0381	Protactinium 231.03588	Utanium 238.0289	Neptunium (237)	Platonium (244)	Americium (243)	Curium (247)	Berkelium (247)	Californiam (251)	Einsteinium (252)	Fermium (257)	Mendelevium (258)	Nobelium (259)	Lawrencium (262)