

10F SCIENCE FINAL EXAM REVIEW KEY**CHEMISTRY:**

1. The number of protons in an atom can be determined from the **atomic number**.
2. Name 5 families on the periodic table.
 - **Alkali Metals**
 - **Alkanline Earth Metals**
 - **Chalcogens**
 - **Halogens**
 - **Noble gases**
3. The element lithium has an atomic number of 3 and a mass number of 7. How many neutrons does it have? **4**
4. How many valence electrons are in the outer orbit of sodium, a member of the alkali metals? **1**
5. What is a chemical family? **Column with a given name and similar properties.**
6. What is the charge on calcium when it forms an ion? **+2**
7. What is the charge that results when a halogen forms an ion? **-1**
8. What family is the most unreactive? Why? **Noble gases already have a full-outer shell of valence electrons.**
9. Explain the atomic model developed by these men.
 - a. Bohr **Planetary model – nucleus with electrons in orbits.**
 - b. Rutherford **Beehive – nucleus with electrons spinning randomly around.**
 - c. Dalton **Poolball – atom as hard indivisible mass, no subatomic particles.**
 - d. Thomson **Plum pudding – electrons stuck in positive mass.**
10. What is a subatomic particle? Give some information about them. **Electron, proton, neutron.**
11. Given the following formulas, how many of each element is in a molecule of that substance?
 - a) H_2O **H-2 O-1**
 - b) FeCl_3 **Fe-1 Cl-3**
 - c) $\text{C}_3\text{H}_7\text{OH}$ **C-3 H-8 O-1**
 - d) **2** C_2H_4 **C-4 H-8**
 - e) $\text{Ca}(\text{OH})_2$ **Ca-1 O-2 H-2**
12. Give an example of a physical change. A chemical change. **Melting ice : burning wood.**
13. What happens in a chemical reaction? **electrons transferred to make new compounds.**
14. What are the signs of a chemical reaction? **change in...colour, smell, energy, gas formation (bubbles), solid formation (precipitate).**

15. Give an example of an element, compound, homogenous mixture and a heterogeneous mixture.

Gold, sodium chloride, salt water, pizza.

16. What happens in a chemical reaction? **repeat.**

17. Show with an example the difference between a subscript and a coefficient.

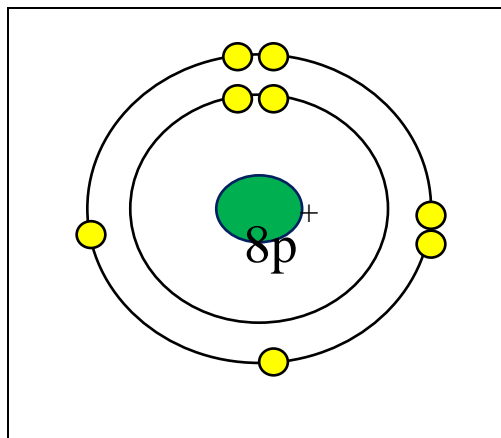
N_2 subscript, 2 C coefficient.

18. Explain what these words mean: Lustre, Malleability, Ductility, Viscosity, Solubility, Combustible

See notes.

19. Name the following elemental symbols: Ca, Mg, F, Ne, H, Li, Fe, Au, Al, Cu. **See Periodic Table.**

20. Draw a complete Bohr model for oxygen.

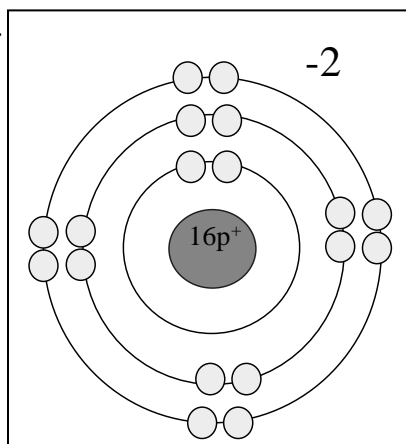


21. How do you find the number of neutrons? **Atomic mass – atomic number = neutrons**

22. How many electrons are allowed to a maximum in each orbit? **2,8,8,8**

23. What is the difference between a physical and a chemical change? **Physical is state change, chemical is new compounds with new properties.**

24. Draw and label a Sulphur ion.



Chemical symbol **S^{-2}**

Atomic **16**






$p^+:16$ $n^0:16$ $e^-:18$

25. Indicate whether each of the following is a physical or a chemical change. Explain

- a. Water boiling in a kettle. **Phy – state change**
 b. Fireworks exploding in the sky **Chem – new substance formed**
 c. Sugar dissolving in water. **Phy – state change (dissolved)**
 d. Pennies added to Nitric acid. **Chem – new substance formed**

26. Fill in these 5 chemical families. Alkali Metals, Alkaline Earth Metals, Chalcogens, Halogens, and Noble Gases. **See notes.**

27. Match the WHMIS symbols to their meanings:

a. 	E	1. Biohazardous infectious material.
b. 	B	2. Corrosive material.
c. 	A	3. Material causing immediate and serious toxic effects.
d. 	C	4. Flammable and combustible material.
e. 	D	5. Dangerously reactive material.

28. Complete this table.

*Note that the Mass Number is for the particular atom you are describing, not for all the examples of the element – *could be an isotope.*

Number of Protons in Atom	Number of Electrons in Atom	Number of Neutrons in Atom	Mass Number of Atom	Atomic Number of Atom	Element Name	Element Symbol
10	10	10	20	10	Neon	Ne
7	7	7	14	7	Nitrogen	N
12	12	12	24	12	Magnesium	Mg
15	15	16	31	15	Phosphorus	P
6	6	6	12	6	Carbon	C

REPRODUCTION:**Matching**

- | | | |
|------------------|----------|-------------------------|
| 1. Nucleus | D | A) makes stuff |
| 2. Cell membrane | E | B) makes energy |
| 3. Golgi | C | C) transports materials |
| 4. Ribosome | A | D) orders stuff |
| 5. Mitochondria | B | E) lets things in |

Multiple Choice

- Animal cells are different from plant cells in that
 - animal cells have a cell wall and plant cells do not.
 - plant cells have a nucleus and animal cells do not.
 - animal cells have mitochondria, plant cells do not.
 - plant cells have a cell wall, animal cells do not.**
- What must happen in a nucleus before it can undergo mitosis?
 - Grow
 - Double**
 - Change color
 - Disappear
- The sperm and egg must each contain _____ chromosomes.
 - 22
 - 23**
 - 24
 - 21
- Mitosis occurs in _____.
 - Plants
 - Humans
 - Monkeys
 - All of the above**
- Meiosis occurs in _____.
 - Animals
 - Plants
 - Clowns
 - All of the above**
- Mitosis _____.
 - Takes place only in brain cells
 - Is how cells reproduce and tissues grow**
 - Divides only the cell nucleus
 - Create cells that are different from each other
- Diploid cells have _____.
 - 23 pairs of chromosomes
 - 46 chromosomes
 - 23 chromosomes
 - A and B**
- Sexual reproduction involves _____ individuals.
 - One
 - More than one**
 - Three or more

9. A specialized cell for reproduction is.
- Gene
 - Genome
 - Gamete**
10. In any egg cell, the sex chromosomes is an ____.
- Y
 - X**
 - XY
11. Binary fission occurs in...
- bacteria**
 - animals
 - plants
12. Asexual reproduction does not occur in...
- plants
 - bacteria
 - starfish
 - bunnies**
13. Asexual reproduction provides for...
- lots of variation
 - some variation
 - little variation
 - no variation**
14. This question refers to Figure 1 below. The correct sequence of events is
- 1, 2, 3, 4, 5
 - 2, 3, 1, 4, 5**
 - 5, 4, 3, 2, 1
 - 4, 3, 2, 5, 1

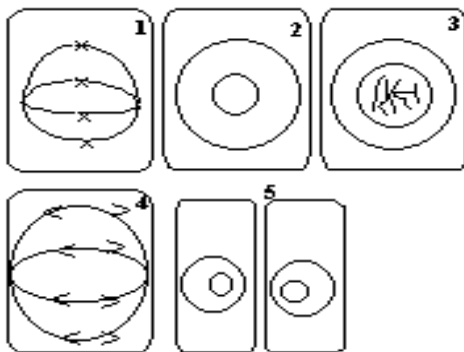


Figure 1

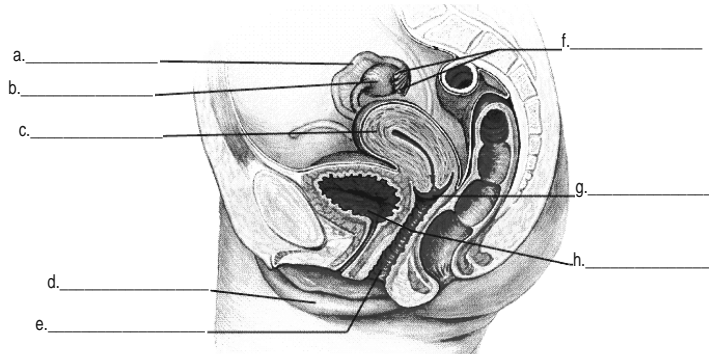
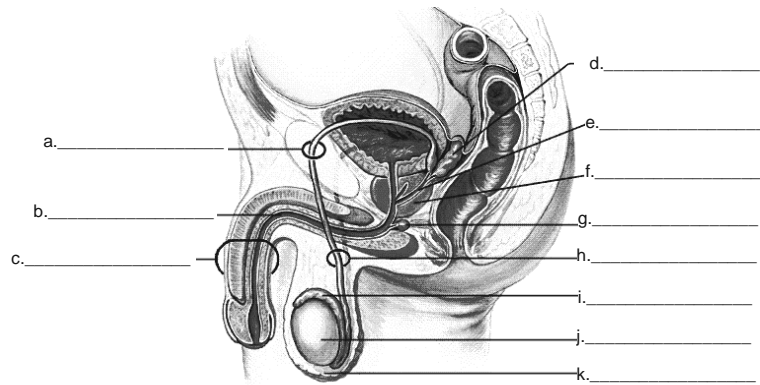
True or False

- Matching pairs of chromosomes are called Homologous pairs? **T**
- Haploid means having two sets of chromosomes? **F**
- Specialized organs to make specialized cells are called zygotes? **F**
- Meiosis occurs in the testis producing sperm with 23 chromosomes? **T**
- In both males and females you can have a Y chromosome? **F**
- Sperm is deposited in the birth canal which leads into the mouth of the Cervix? **F**
- The cell theory states that: all living things are made up of cells, cells are the basic function or units of life, all cells come from pre-existing cells, and most cells depend on each other to survive. **F**

Short answer

1. Please Label all the following parts of the Reproductive systems to your best ability.

See Notes.



2. Explain the following in your own words, in one short sentence. **See Notes**

Trait	hybrid	homozygous
heredity	dominant	heterozygous
genetics	recessive	genotype
Punnett Square	alleles	phenotype
X chromosome	Y chromosome	sex-linked trait

3. Draw a Punnett square showing a cross between a man, heterozygous for nose length, and a homozygous recessive woman – long nose is dominant (L)

	L	l
l	Ll	ll
l	Ll	ll

ELECTRICITY:**Multiple Choice**

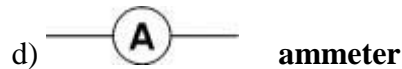
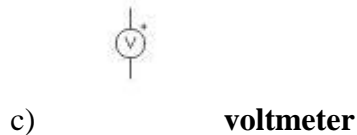
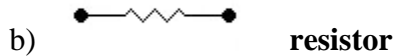
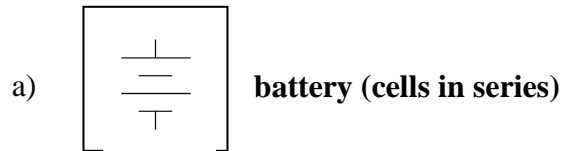
1. A path made directly from a material to the ground is called?
 - a. Bridge
 - b. Passage
 - c. Portway
 - d. grounding**
 2. A neutral object has?
 - a. all positive charges
 - b. an equal number of positive and negative charges**
 - c. all negative charges
 - d. has twice as many negative than positive
 3. Who named charges "positive" and "negative"
 - a. Ben Franklin**
 - b. J.I. Thomson
 - c. William Gilbert
 - d. Ptolemy
 4. Triboelectric charging produces what?
 - a. neutral charge
 - b. electricity
 - c. electric charge**
 - d. water
- An electroscope measures?
- a. the flow of current
 - b. the presence of charge**
 - c. the amount of resistance
5. Two positive charges will?
 - a. Repel**
 - b. Attract
 - c. do nothing
 - d. no way to know
 6. An insulator is?
 - a. a material that doesn't let current easily pass through it**
 - b. a material that lets current pass through it easily
 - c. any material that conducts electricity
 - d. most metal
 7. A charged object will do what with a neutral object?
 - a. Depends if the charge is positive or negative
 - b. Repel
 - c. Attract**
 - d. Do nothing
 8. If a rubber rod is rubbed with cat fur the rod?
 - a. stays neutral
 - b. becomes negatively charged**
 - c. becomes positively charged
 - d. there's no way to know
 9. The charge on an electron is?
 - a. Positive
 - b. Negative**
 - c. Neutral
 - d. can be A or B

10. A conductor is?
- a material that doesn't let current easily pass through it
 - a material that lets current pass through it easily
 - most/all metals
 - both Band C**
11. Induction is?
- the charging of objects by bringing two materials close together without touching**
 - the charging of objects by making two materials touch each other
 - the charging of objects by having only one material
 - has nothing to do with the charging of objects
12. If a glass rod is rubbed with silk, the electrons?
- are transferred from silk to glass rod
 - are transferred from glass rod to silk**
 - are transferred from glass rod to silk then from silk to glass rod
 - there is no transfer
13. What does $R = V/I$ stand for?
- Resistance= potential difference/ current**
 - Resistance= Voltage/ amperes
 - Current= Charge moving past a point/ time
14. When drawing schematics the _____ side terminal is positive
- Blue
 - Long**
 - Negative
 - Short
15. Ohms (Ω) measures _____
- voltage
 - resistance**
 - height
 - current
16. What is voltage?
- speed of electrons
 - energy of electrons**
 - amount of electrons
 - speed of electrons
17. What is the resistance for a TV that operates with a current of 4A when the voltage is 120V?
- $V/I = 120/4 = 30\Omega$**
 - $V/I = 120/4 = 30A$
 - $I/V = 120/4 = 30\Omega$
 - 60 cm

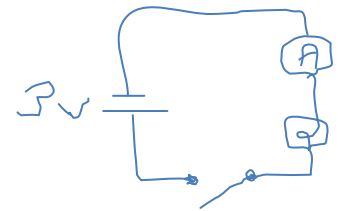
Short answer

- What causes a spark between a doorknob and your hands after you walk across a carpet?
- What is the difference between an insulator and a conductor?
- What was the fluid theory for electricity?
- Explain briefly the steps of induction with a positive rod / neutral ball, and the end results.
- Explain briefly the steps of conduction with a negative rod / neutral ball, and the end results.
- Explain the difference between series and parallel for cells and loads.
- What is Ohm's Law?
- What does an Ammeter measure? A voltmeter? Where would you place them in a circuit?

9. Label the following



10. Draw a series circuit with a 3V battery, a switch, an ammeter, and a lamp.



SPACE:

Multiple Choice

- A light year is a measurement of
 - distance.**
 - time.
 - speed.
 - brightness.
- The main function of a telescope is
 - to gather light.**
 - to magnify objects.
 - to form images.
 - to change the path of light rays.
- What are solar prominences?
 - Dark spots on the solar surface.
 - Large sheets of glowing gases bursting from the chromosphere.**
 - The region where nuclear fusion takes place.
 - The outer atmosphere of the Sun.
- The colour of a star depends on its
 - temperature.**
 - size.
 - distance.
 - position.
- What term is used to describe the actual amount of light given off by a star at a standard distance?
 - The spectrum.
 - The apparent magnitude.
 - The absolute magnitude.**
 - The actual magnitude

6. Which of the following instruments can be used to separate white light into its component colours?
- a photometer
 - a CCD camera
 - a spectroscope**
 - a refractor
7. Which of the following shapes is not characteristic of a galaxy?
- spiral
 - triangular**
 - elliptical
 - irregular
8. From the following list, choose the description that best fits a quasar.
- It emits up to 100 times more energy than a galaxy.**
 - It is always found in the spiral arms of galaxies.
 - It is dark material used in the formation of galaxies.
 - It is a component of most star clusters.
9. What object is most likely the birthplace of stars?
- Black hole.
 - Supernova.
 - Nebula.**
 - Neutron star.
10. Which of the following colours of light has the shortest wavelength?
- red
 - green
 - blue
 - violet**
11. Choose the most appropriate term for the study of the origin and changes of the universe.
- astronomy
 - astrology
 - cosmology**
 - cosmetology
12. The nuclear reaction on the sun that produces light uses the element _____.
- Oxygen
 - Helium
 - Carbon
 - hydrogen**
13. What type of galaxy is shown on the right?
- Spiral**
 - elliptical
 - irregular
 - barred spiral



16. The Milky Way is...
- The Sun
 - a nickname for Earth
 - a celestial object directed north overhead
 - The galaxy we live in that includes the Sun, and Earth**
17. The area between Mars and Jupiter is...
- Asteroid Belt**
 - Orion's Belt
 - Leo's Lane
 - All of the Above
18. How much time is there between full moons?
- a day
 - a month**
 - 3 months
 - a year
19. What does the sun give off?
- Heat
 - Light
 - Energy
 - All of the Above**
20. What is the planet closest to the sun?
- Earth
 - Pluto
 - Mercury**
 - Venus
21. What direction do celestial bodies move across the sky?
- North to South
 - West to East
 - Northeast to Southwest
 - East to West**
22. The order of planets in the solar system (from the sun) are as follows:
- Mercury, Venus, Jupiter, Earth, Mars, Saturn, Uranus, Neptune, Pluto
 - Mercury, Venus, Earth, Mars, Saturn, Jupiter, Neptune, Uranus, Pluto
 - Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune Pluto**
 - Mercury, Mars, Earth, Venus, Jupiter, Saturn, Uranus, Neptune, Pluto

Short Answer Questions

- Describe what Polaris is?
- What is the difference between geocentric and heliocentric?
- What is retrograde motion?
- Why did humans begin to analyze the solar system?
- What is red-shift and what does it tell us?
- What is a singularity?
- Describe the basic life cycle of a medium sized star.