Physical Science Name:

mr. e ~ 2023 Date:

Final Exam Study Guide

Honors &CP Ch 7-10,21

**Key Vocabulary**

**Ch. 7**

weight

Big bang

Law of Universal gravitation

Inverse-square law

neap tide

spring tide

tangential velocity

universal constant of gravitation (G)

**Ch. 8**

Horizontal component

Vertical component

Ellipse

Escape speed

Parabola

Projectile

Velocity vs acceleration

**Ch 8 (con’t)**

Tangential v

Satellite

Circular orbit

Elliptical orbit

Orbital period

**Ch. 9**

Absolute zero

calorie

Calorie/kilocalorie

Heat

1st law of thermodynamics

2nd law of thermodynamics

3rd law of thermodynamics

Specific heat capacity (c)

Temperature

Thermal E

Thermal expansion

**Ch 9 (con’t)**

entropy

contraction/expansion

conservation of E

**Ch. 10**

conductor/insulator

Conduction

Convection

Radiation

Boiling

Condensation Evaporation

Melting

Freezing

Sublimation

Desublimation/deposition

heat of fusion (Lf)

heat of vaporization (Lv)

triple point

solid/liquid/gas/plasma

fluid

absorber/emitter

warming process/ cooling process

**Ch. 21**

p+; e-; no

nucleons

atom

element

compound

Physical change Chemical change

Chemical reaction/ eq.

Coefficient

subscript

precipitate

chemical formula

reactant

Product

Lewis Dot Notation

Ion

Valence e-

Covalent bond

~~Synthesis rxn~~

~~Decomposition rxn~~

~~Single displacement rxn~~

~~Double displacement rxn~~

~~Combustion rxn~~

**\*Formulae & constants**

F ~m; F ~ 1/d

F = Gm1m2

Q = mcT

Qbefore = Qafter

d2

Q = mLf; Q = mLv

l l

**Central** **Concepts** (CP may pass over the \* items)

1. Newton most likely compared a falling apple to which ‘falling’ object?
2. What happens to Fg (grav. F) between two objects the further their gravitational centers move apart? The closer?
3. What does one call the force of earth’s gravity on you? “Your \_\_\_\_\_\_\_\_\_\_.”
4. Relate weight and mass to their respective SI units.
5. Relate changes in mass & distance to changes in Fg
6. Why do tides exist? (True—God made them, however I need you to explain scientifically why they occur).
7. Which heavenly body exerts a greater force on the earth? Which heavenly body is more responsible for tides? Why are your answers different?
8. When is the best tidal situation to dig for clams? What is the moon phase at that time? Which category of tide is it (neap or spring)?
9. Why do ponds exhibit no tides?
10. Projectiles: be able to identify trends of the horizontal and vertical components of an object's v as it rises & falls in a parabolic trajectory
11. When a bullet leaves the barrel, what is the only F acting on it? (Apply this to various situations)
12. When someone jumps, what is their a? always \_\_\_\_.
13. Projectiles: Relate angle fired to distance travelled; same d? Max d?
14. For complimentary projection angles, which takes longer to reach the ground?
15. Why doesn’t the moon fall to the Earth?
16. Elliptical orbits: relate position (nearness to focus/heavenly body to speed
17. How long does it take for a regular satellite to orbit the Earth?
18. In which direction does heat always flow (2nd law)
19. Relationship between rate of heating and specific heat capacity
20. Renewable vs. nonrenewable resources: which are which?
21. How does a thermometer actually work in that it “takes its own temperature”? What type of equilibrium is this demonstrating?
22. Distinguish between Thermal E vs Temperature. Bath vs boiling teaspoon…which has more/higher of each?
23. Thermal expansion (eg. Bridge, hole in metal plate, kettle)
24. What was the problem with our “Ice Cream Diet?”
25. Unique properties of water (Density, freezing); when is it most D? What happens if you cool or heat from there?
26. What is absolute zero? In oC or K? Vocab, vocab, vocab
27. Why don’t sparklers hurt too much when their sparks touch your skin?
28. \*Be able to find resulting T when two quantities of water at different T’s are mixed
29. Why do some surfaces feel colder than others to your feet even though they are at the same ambient T?
30. Relationship between a material being a good conductor and whether it is a good or poor insulator
31. Convection works only through which phases? What one word describes both?
32. Objects that radiate well, absorb well. (And vice versa) ….the converse is also true
33. Air that goes from a high P to a low P... does it cool or warm?
34. Does the T of water, let’s say, change as you boil it? Why not?
35. Thermodynamically, what does a refrigerator do?
36. Why is evaporation a cooling process? How is condensation a warming process?
37. Why does a hot dog pant? (I mean the animal, not the meal)
38. What happens to a b.p. when you add surface P? Why?
39. The beauty of a Thermos®. Which forms of heat transfer does it combat & how?
40. Define chemistry.
41. Contrast chemical & physical changes
42. Know key people (Mendeleev, Moseley, Bohr)
43. Vocab!
44. Be able to glean atomic info from a box from the Periodic Table
45. Be able to divine the number of valence e- and p+ and no from the Periodic Table
46. Be familiar with Lewis Dot notation
47. What are some clues that a chemical change has occurred?
48. ~~Be able to predict what type of covalent bond elements would share based on our "electrons to the party" method~~
49. Why balance chemical equations? What do you do as you balance them?
50. Be able to balance equations & ~~identify their reaction type~~