January 2018, Your First Regents Exam, some assistance…

1. This is a question you should be able to do by now.
2. We covered the models of the atom (Democritus to the Modern Theory) already as well.
3. This is parts of the Periodic Table, covered a while ago.
4. Periodic Table again.
5. Names to formulas, October. Use table E here for help.
6. Empirical formulas are one of the dopiest things I have to teach you, for a point on the test, but of little other value to a high school chemist. Think of reducing fractions, this is "reducing" formulas.
7. Vocabulary.
8. A formula and vocabulary too.
9. Bond polarity and molecular polarity too. Think about Linus and Pizzas.
10. Properties of groups on the Periodic Table.
11. One of my favorite one-liners. Look above the front white board for a hint.
12. Vocabulary, said Linus.
13. (ouch, they always have a 13!) A lot of symbols and words, go slowly, vocabulary.
14. Is it an element or compound (vocabulary with symbols)
15. KMT, about gases, is it a solid, liquid or gas?
16. Avogadro's Hypothesis, this question, in different forms, is ALWAYS on the exam.
17. This is kinetics, possibly tough since we didn't do this yet, but… look at the words, what do they mean?
18. We did 3 of these diagrams already, one is the correct answer. One is fake, so that's not the answer.
19. This is kinetics also, but you may get this one.
20. We did not do this yet, it's organic chem, but if you look at table Q, you probably can put your finger into the right box and prove to yourself that you are smart enough to figure things out.

21. This is type of reactions, and we have only learned 5 of about 16 different ones. Not a big deal, but a hard problem today. DR has ions that change partners, but not charges. Neutralization is similar to DR, but only has acids and bases, just switching partners. Redox (short hand) changes charges. Sublimation is not a chemical reaction, but you knew that!

22. Anodes (and cathodes) are battery parts, Redox again. LEO (the loss of electrons is oxidation) LEO is a REDCAT (reduction happens at the cathode). Do your best, don't worry now.

23. More redox, which I love. Voltaic cells are batteries, chemistry makes electricity. Electrolytic cells use electricity to force a chemical reaction to occur. You will learn that choices 2 and 4 are silly answers—in April.

24. Most Arrhenius acids are listed in Table L. They ALL start with the letter H for hydrogen.

25. One of the best labs of the year is coming soon, called acid base titration. A cool process, that will elicit laughter and learning in equal measure. I can't wait, neither can you.

26. Acid plus base makes for neither (they get neutralized).
Acid ions are H^{+1} and Base ions are OH^{-1}

27. One of the silliest questions on every regents exam, just guess, don't worry, we will cover this in the near future. It's tricky even with practice, don't worry.

28. The weird world of nuclear chem is coming soon too. One atom becomes another!
Not in "chemistry" but it's possible in "nuclear chemistry". (nuclear means in the nucleus).
This is really easy—when we practice the nuclear decay reactions, don't worry.

29. The nucleus remains out of control two questions in a row, deep breath, relax, guess.

30. We will cover this too another day. It's just words, this is easy enough to guess right.

31. Draw a picture of the circle nucleus with p^{+1} and n° inside the circle, then add the electron configuration, go slow, you should be able to do this one.

32. Electrons are ground state, or excited. If the electron configuration is on your Periodic Table, it's in the ground state. LOOK at the table. You will find 3 of these on the table, and one is not.

33. This is a hard one, because there is a lot of ways to do the math, and this is another one.
Go slowly, this is a question about average atomic mass and isotopes.

34. There are only a few groups possible, try them all until it makes sense. Great question.

35. Literally, make a chart and put all the numbers in the boxes, you will see what makes sense.

Group 17	EN Values	1st Ionization Energy	# Valence e-	# electron "shells"
F				
Cl				
Br				
I				

36. This is a simple moles to moles ratio problem (look under your table H).
37. Greatest difference in electronegativity is most polar, look at table S.
38. Look at table F, this is an annoying state education dept trick. We can't tell how much, but one of the compounds will not dissolve AT ALL, so that is the answer
39. We have done this.
40. Temperature is a measure of the kinetic energy. HOT = more kinetic energy.
41. Physical changes are phase changes. Here we are looking for new stuff forming (new compounds)
42. CH3COOH is the organic chem formula for vinegar or acetic acid (or ethanoic acid, the organic name).
43. Most ordered = solid, right?
44. This is a table I problem, proportion moles to energy.
45. Isomers are compounds with the same amount of atoms, but in a different shape, like two lego projects with the same exact pieces. A car and a boat are different, but they do have the same number of red, white, blue and yellow pieces. Some compounds can "share" the same chemical formulas, but are built differently.
46. My favorite, you can't know this, it's esterification because it makes an ester.
47. You know this I hope.
48. This is the pH scale, which we will see is a logarithm scale, like earthquakes and tornados. Each change in a whole number is a 10X change of strength. An acid with pH of say 4.5 is not terribly strong. An acid with ta pH of 5.5 is 10X weaker, because the amount of H^{+1} ions decreased by 10X too. (answer is 1)
49. We did cooling curves, put the GAS and LIQUID and SOLID letters G, L and S on the points they belong. Liquid starts at minute 7… solid starts at 9.
50. Rates of reaction is kinetics, but making more collisions makes for a faster reaction. Think.