

June 2014 Chemistry Regents Exam Multiple Choice Answers

1	4	Electrons charge is -1 , protons charge is $+1$, these are EQUAL but OPPOSITE
2	3	242 pm, LOOK this up on Table S. Radius is a physical property, don't ever guess.
3	2	Electrons are found in orbitals. Nucleus has protons and neutrons. Electrons are in zones, not paths.
4	4	Electrons give off spectra when the excited electrons return to the lower energy ground state.
5	2	HCO_3^{-1} is hydrogen carbonate. Polyatomic ions are on Table E. LOOK
6	2	Avg weights of atoms are weighted averages of all NATURALLY occurring isotopes, not man made ones
7	1	Halogens make halides. Halocarbons Table R include all group 17 atoms, Iodine is it.
8	2	Pure carbon, bonded differently allows you to marry (someone smart) with a pencil, since graphite = diamond, except for the bonding of the atoms, or crystal structure.
9	4	Percent comp by mass, the others are all formulas or details that cannot be inferred from the table
10	2	Sublimation is solid to gas directly, deposition is the reverse: gas to solid directly; both are PHYSICAL
11	2	Energy unleashed in nuclear reactions is VASTLY greater than chemical ones
12	3	"F" for fantastically high electronegativity value, the tendency to get electrons in a bonding situation.
13	1	These 2 compounds are NOT THE SAME, not at all
14	4	The molecule is nonpolar due to radial symmetry, the polar bonds are 'balanced' by shape.
15	4	Lower temp = lower average Kinetic energy, mass does not matter in "AVERAGE" KE
16	1	Chemical reaction needs new stuff to form, methane and oxygen make CO_2 and water (combustion)
17	4	Elements cannot be broken down by chemistry
18	3	LOOK table I, greatest $-\Delta H$. It's ammonia synthesis, with a -91.8 kJ/mole (negative ΔH = exothermic)
19	1	The only 2 liquids on the periodic table, at STP are Br and Hg
20	2	Definition of dynamic equilibrium: the rate of the forward reaction = the rate of the reverse reaction
21	1	Here, when bonds break energy is absorbed. (instead of when bonds form, energy is released).
22	3	The Universe is getting broken down, more entropy, energy way more spread out
23	4	Heat of reaction is another way to say ΔH .
24	3	Carbon is element 6, it has 6 protons (and six electrons). The atom with 6 protons IS carbon, no choice.
25	1	Saturated is ALKANE, carbon to carbon bonds must be single; Single bond = 2 electrons total

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26	2	In REDOX the transfer of electrons must be equal
27	3	#1,2, and 4 are all molecular compounds = NO IONS. #3 is an ACID, so it has loose ions in solution
28	2	NH ₃ is a base because it accepts the H ⁺¹ . In this dumb theory, water is an ACID because it donates an H ⁺¹
29	4	Must produce H ⁺¹ ions in solution, NaOH is a base, NaCl is neither acid or base, NH ₃ is a NONArrhenius base
30	3	K atoms can be stable or unstable.
31	4	Sodium = Na, isotopes have different MASS not different CHARGE. S = sulfur (and silly!)
32	2	Count 31 electrons in total. Ground state is 2-8-18-3 (LOOK)
33	3	Make a chart, do NOT do this in your head, or guess. It's easy if you make a chart
34	2	56 + (3 X 14) + (6 X 16) = 194g/mole
35	3	6:2 is the same as 3:1 This is NaOH to Al(OH) ₃ , it is NOT 2:6 or 1:3. The ORDER matters here
36	3	Choice 1 is decomposition, choice 2 is synthesis, and choice 4 is acid base neutralization
37	1	WRITE the formula, subtract, equals, divide, equals, multiply by 100, equals. 2 SF
38	2	Water has high BP (all water's properties) from strong HYDROGEN BONDING.
39	4	Greatest difference in electronegativity values
40	4	The longer, higher flat top shows the change from liquid to gas
41	1	Filtering requires something SOLID in water to be "caught" by the small holes of the filter. AgCl is INSOLUBLE
42	4	$q = mH_V$ $q = (100.g)(2260 \text{ J/g}) = 226,000 \text{ Joules} = 2.26 \times 10^5 \text{ Joules}$. Write FORMULA, DO MATH.
43	4	Inc in Temp = Inc in Kinetic Energy. Mass can't change, nor number of moles. Choice 3 is nuts! More collisions
44	2	Catalyst makes equilibrium faster, decrease pressure favors reverse (more moles gas), so does increase temperature
45	1	5 carbon atoms (pent), one double bond (alk ENE), where is that double bond (use smallest number)
46	1	Compound oxidation sums to zero. K is +1, oxygen is 4(-2) = -8. (+1) + (X) + (-8) = 0 So (X) = +7
47	2	pH 1 to pH 2 means LESS ACIDIC, by 10X. Each whole number pH change is a 10X change in acid ions
48	2	Blue. Thymol blue changes from yellow to blue from pH 8.0 → pH 9.6 Above pH 9.6 it's always BLUE
48	3	Isomers have same chemical formula. Choices 1 & 3 DON'T. Choice 2 is the SAME molecule. 3 = both C ₃ H ₈ O
50	1	I-131 is used to detect thyroid disease. Co-60 is used to TREAT disease. Most radioactive isotopes are BAD for us