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point. 93. Propane has weaker intermolecular forces than butane. The intermolecular forces in the butane are stronger than the intermolecular forces in propane. c E3 Scholastic Publishing Topic 8 - Acids, bases and salts 12. 4 13. 1 14. 4 15. 1 16. 4 17. 4 18. 2 19. 2 20. 3 21. 3 22. 1 23. 3 24. 1 25. 2 26. The pH of the drink is less than 7. Its pH is between 0 and 7. 27. green bromcresol 28. pH of 6. 29. salted water 30. bleach 31. blue 32. 1.0 x 10 M or 10 M -4 36. 1 37. 3 38. 4 39. 1 40. 3 41. 1 42. 2 43. (number of H) M (V) a - -2M (b) (V) b - -2M (a) (25) - (1) (3) (18.21) numerical configuration (may vary) M a - 1.09 M calculated result 44. H 2SO 4 - 2 NaOH -> Na 2SO 4 - 2 H 2O 45. Pink. Light pink. 46. 0.211 M 47. HNO 3 (aq) - NaOH(aq) -> NaNO3(aq) - H2O(l) 50. 4 51. 4 52. 2 53. 3 54. 3 55. 1 56. 3 57. KCl 58. CH 3COOH 59. Ba (OH) 2 60. Ba (OH) 2 61. High concentration of H or H 3O ion in the solution. 62. The aqueous solutions contain mobile ions. 63. H 2Se Hydrotelluric Acid HClO Hypochlorous acid HNO 2 nitrous acid Hl Hydroic Acid H 2C 2O 4 Oxalic Acid 64. 4 65. 1 66. 2 67. 3 68. 2 69. 4 70. 4 71. 2 72 pH [OH-] pOH a) 1.00 x 10 M H 12.0 1.00 x 10 M 2.00 -12 -2 b) 2.00 x 10 M H 11.0017 5.00 x 10 M 2.30 -3 -12 c) 3.76 x 10 M H 10.0 2.66 x 10 M 10.6 -11 -4 73. [H 3O+] [OH] pOH - a) pH - 3 1.0 x 10 M 1.0 x 10 M -11 -11 -3 b) pH - 5.9 1.3 x 10 M 7.7 x 10 M 8.1 -6 -9 c) pH - 9.8 1.6 x 10 M 6.3 x 10 M 4.2 -5 -10 Subject 9 - Kinetics and Balance 8 3 9. 4 10. 4 11. 3 12. 2 13. 4 14. 1 15. 1 16 and 17 (c) E3 Scholastic Publishing 18. As the concentration of the reacter increases, the reaction rate increases. The reaction rate decreases as the concentration of reactionary declines. 19. The increase in temperature increases the kinetic energy of the reacting particles. An increase in the temperature increases the frequency of The increase in temperature leads to an increase in the efficiency of collisions. 20. Increasing the concentration of HCl(aq) increases the reaction rate because the frequency of effective collisions will increase. 21. temperature, pressure, Zn surface, or amount of zinc 22. Concentration of HCl, HCl(aq), or [HCl(aq)] 25. 2 26. 1 27. 3 28. 4 29. 2 30. 3 31. 1 32. 2 33. 2 34. 2 35. 4 36. 1 37. 3 38. 80 kJ 39. The catalyst lowers the activation energy. The catalyst offers a different way of reacting. 40. 41. 281.75 kJ 2NO 2 (g) - 7H 2 (g) 42. 4 43. 2 44. 2 45. 1 46. 4 47. The solid has a lower entropy than the solid dissolved in water. The solid dissolved KNO 3 in water has a greater entropy than the solid itself. 48. The reactant is a solid, while the product contains a gas. 51. 1 52. 3 53. 4 54. 2 55. 4 56. 3 57. 1 58. 4 59. 3 60. 2 61. 4 62. 4 63. 1 64. The concentration of H will increase. 65. 0.73 mol/L or -0.73 mol/L 66. Their concentrations remain the same. Stay consistent. 67. The concentration of H 2 will decrease or decrease. 68. 3 69. 1 70. 3 71. 1 72. 1 [XY 2] 2 73. K eq - ----- 74. K sp - [Pb] [NO 3 -] - 2 2 [X 2] [Y 2] (c) E3 Scholastic Publishing [HCl] [OH] [Y] [Z] 2 3 4 2 75. K eq - ----- 76. K eq - ----- [Cl 2] 2 [W] [X] 3 [H] [CO 3 -] [NH 4 +] [OH] - 2 - 2 77. K a - ----- 78. K b - ----- 79. K w - [H+] [OH-] [H 2CO 3] [NH 4OH] Subject 10 - Organic Chemistry 1 2 2. 3 4. 4 5. 1 6. 4 7. 2 8. 4 9. 3 10. 2 11. 4 27. 2 28. 2 29. 1 30. 4 31. 2 32. 3 33. 4 34. 3 35. 3 36. 1 37. 1 38. 4 39. 2 40. 4 1C nH 2n-2 42. They contain multiple covalent bonds. 43. pentyne They have double and triple bonds. 44. H O H H 45. H H H H O I I I I H - C - H - H - C - C - O H I H H 47. 1 48. 2 49. 2 50. 1 51. 4 52. 2 53. 54. 18 electrons 55. halide or 56. Cyclobutane and butene have the same molecular formula, but their structural formulas are different. Cyclobutane has the same molecular formula as butene, but its structure is different. 66. 1 67. 3 68. 1 69. 3 70. 3 71. 2 72. 1 73. 1 74. 2 75. 2 76. alkene 77. 1,2-dibromopropane 78. addition 79. organic acid 80. 81. ethyl methanate 82. Polymerization H O H I H - C - O - C - H methyl ethanoate 83. ester 84. saponification I I H H Subject 11 - Redox and electrochemistry 2. 2 3. 2 4. 1 5. 1 6. 4 7. 2 8. 3 9. 1 10. 2 11. CO 2 12. 5 13. It contains a K and a Cl - The sum of the positive and negative costs is zero. 22. 4 23. 1 24. 3 25. 2 26. 1 27. 4 28. 3 29. 2 30. 1 31. 4 32. 2 33. 4 6th Cr - 34. 3 35. 2 36. 2 37. 2N -> N 2 - 38. 4th -> Cr 2- 3- 0 39. The number of protons remains the same. 40. Zn, Zinc 41. 2H - 2nd -> H 2 C) Scholastic Editions E3 42. The number of electrons lost is the same as the number of electrons gained. It's the same thing. 54. 1 55. 4 56. 3 57. 2 58. 1 59. 1 60. 3 61. 2 62. 3 63. 2 64. 4 65. voltaic cell. Galvanic cell. 66. zinc-covered nail copper copper rod, Zn to Cu 67. Zn -> Zn - 2nd 68. Phosphoric acid provides the H ion that is needed. 2 - 69. Batter, Energy Source 70. Na -> Na - 71. 2 72. 4 73. 1 74. 4 75. 2 76. 1 77. Cu -> Cu - 2nd 2nd - 78. Iron has been oxidized because it is more reactive than copper. Fe is more responsive than Cu. 79. Copper is less reactive than iron. 80. Any element from Li to Na on the J Cu table is less likely to react with acidic water. 81. The presence of a salt bridge. The presence of a voltmeter (V). Two cells. Two beakers. 82. The number of moles of electrons lost and gained is the same. The equal moles of electrons are lost and won. 83. 4 84. 2 85. 4 86. 3 87. 3 88. 1 389. 3 90. a) Fe - 2Ag -> 2Ag - Fe - 2 - 2 b) anode: Fe c) oxidation: Fe -> Fe - 2nd- cathode: Ag reduction: Ag - e -> Ag - d) -1.24 V e) spontaneous Subject 12 - Nuclear Chemistry 7 2 8. 2 9. 3 10. 3 11. 3 12. 2 13. 3 14. 4 15. 2 16. The positive nucleus of the targeted atom will repel the positive charge of the alpha particle. The nucleus and an alpha particle have the same charge, and will regrow. A neutron can penetrate the nucleus more easily than an alpha particle. 17. S-32 has the same amount of neutrons and protons. The neutron/proton ratio in S-32 is 1.1. 26. 3 27. 4 28. 1 29. 3 30. 2 31. 1 32. 4 33. 2 34. 1 143 35. Ba 36. plutonium-239 fissioned releases more energy than methane combustion. 58 4 37. alpha disintegration, He α 38 years old. 146 39. Pb-206 is a stable atom. 2 4 40. alpha disintegration, He α 41 years old. 0 amu, zero 44. 4 45. 3 46. 2 47. 1 48. 2 2 49. 3 50. 1 51. 2 53. 1 54. 1 2 55. 1 56. 3 57. 1 58. 17,145 years 14 0 14 59. The N-16 half-life is very short. 60 C -> n Very little, if any, N-16 will be left after a very short time. 6 -1 7 . c) E3 Scholastic Publishing 61. Kill bacteria in food. Use in nuclear power plants to generate electricity. Dating fossils and rocks. Diagnosis of medical conditions. 62. I-131 decomposes at a faster rate than Cs-131. 63. 100 g I-131 has a much shorter half-life than Cs-131. There will be no more I-131s to pose a risk to people Subject 13 - Safety and Laboratory Measures 1 2 2. 1 3. 1 4. 3 5. 1 6. 2 7. 4 8. 3 9. 1 10. 3 11. 1 12. 4 13. Rinse the arm with golden water for a long time. 14. three, 3 15. M aV a - M bV b M a '25.0' (0.150)(18.5) 2.775 M a' ----- '0.111 M 25 mass 129.5 g 16. Density ----- - 8.75 g/cm 3 3 volume 14.8 cm 19.5 17. mass of tin - \$129.5 g - 19.5 g% Tin ----- x 100 - 15.1% 129.5 Subject 1 Regents Practice 1 1 2. 2 3. 3 4. 4 5. 1 6. 1 7. 1 8. 3 9. 4 10. 2 11. 2 12. 3 13. 2 14. 14. 15. 3 16. sublimation 17. Heat flows from the air into the bottle to the dry ice. From air to ice. 18. 19. Temperature: above 293K Temperature: higher pressure: below 1.2 atm Pressure: lower 20. The number of gas molecules in the A-cylinder is the same as the number of gas molecules in cylinder B 21. q - (800. g)(4.18 J/g °C)(20.50C - 12.50C) (800)(4.18)(8) 22. The heat was transferred from the surrounding area to the water in the bottle. The water absorbed the energy from the surrounding area. 23. The average kinetic energy of water molecules at 7 a.m. is lower than the average kinetic energy of c) E3 Scholastic Publishing water molecules at 15 .m The average kinetic energy of molecules is greater at 15 .m 24 percent. 16 minutes or 16 minutes 25 minutes. 90-2 C o Subject 2 Regents Practice 1 2 2. 3 4. 2 4. 1 5. 1 6. 2 7. 4 8. 1 9. 2 10. 3 11. 3 12. 2 13. 1 14. 4 15. 2 16. 4 17. 3 18. 2 19.3 20. 4 valence electrons 4 e- 21. As the number of atomics increases, the number of electron shells increases. Each successive element has one more electron shell. 22. Ga Gallium Element 31 23. White phosphorus has fewer atoms per cm. 3 In Indium Element 41 Red has more. 24. As the number of atomic numbers increases, electronegativity increases. 25. If Silicon Element 14 Electronegativity increases from left to right. Electronegativity increases. Subject 3 Regents Practice 1 3 2. 2 3. 4 4. 1 5. 2 6. 3 7. 8. 1 9. 3 10. 1 11. 3 12. 3 13. 3 14. 1 15. 3 16. 2 17. 4 18. 1 19. 1 20. Different colors of light are produced when electrons return from higher energy states to lower energy states. Light energy can be emitted when the electrons of excited atoms return to the lower shells. Electrons release energy as they move towards the state of the ground. 21. The wavelengths of the spectral lines of element Z are independent of the sample mass. All the atoms in element Z have the same configuration of electrons in the state of the ground. The intensive properties of an element remain constant. 22. Not all wavelengths of element A are indicated in the wavelengths of the mixture. The mixture has no spectral line at 700 nm. 23. Arsenic atoms and antioime atoms each have 5 valence electrons. One ace atom and one Sb atom both have five outermost electrons. same number of valence e-24. Acceptable answers include, but are not limited to: 25. (62.93 u) (0.6917) - (64.93 u)(0.3083) Subject 4 Regents Practice 1 1 2. 2 3. 3 4. 2 5. 4 6. 4 7. 1 8. 3 9. 4 10. 2 11. 4 12. 4 13. 1 14. 4 15. 4 16. 2 17. 3 18. 3 19. 4 20. 3 21. 3 22. 3 23. 2 24. 25. At standard pressure, the NH 3 has a higher boiling point than the CF 4. The CF 4's melting point is lower. c) Scholastic E3 26. A 2-propanol molecule is polar because it has an asymmetrical distribution of the load. The distribution of fees is uneven. The positive charge center and the negative charge center do not coincide. 27. hydrogen bond dipole-dipole 28. There is a greater increase in the difference in a co-obligation than in a CH bond. The CO bond is more polar because the electronegativity difference for a CO bond is 0.8, and the electronegativity difference for a CH bond is 0.4. The CH obligation has a smaller difference. The COMMANDANT is 0.8 and the CH is 0.4 subject 5 Regents Practice 1 4 2. 3 3. 2 4. 2 5. 4 6. 3 7. 4 8. 3 9. 4 10. 2 11. 4 12. 1 13. 2 14. 3 15. 4 16. 3 17. 1 18. 4 19. The products are different substances with different properties from the repressive ones. There is a loss and gain of electrons by substances in the reaction. 20. 2Al(s) - 3CuSO 4 (aq) -> Al 2 (SO 4) 3 (aq) - 3Cu(s) 21. unique replacement redox 22. 3.81 g 23. Cu 25 Subject 6 Regents Practice 1 1 2. 1 3. 1 4. 3 5. 1 6. 3 7. 3 8. 2 9. 3 10. 4 11. 3 12. 13. 4.0 x 10 mol or 0.0040 mol -4 14. 0.030 mol. There is no need to show significant figures. 15. H 2O 16. 34g/mol x 17 3 ----- x 100 or (20)(0.03) 18. decomposition, redox 20 Subject 7 Regents Practice 1 3 2. 4 3. 2 4. 3 5. 2 6. 1 7. 3 8. 1 9. 3 10. 1 11. 1 12. 1 13. 2 14. 1 15. 3 16. 4 17. 2 18. 78 degrees Celsius to 80 degrees Fahrenheit 19. The solution that contains 1.25 NaCl moles has a lower freezing point. lower for the first higher for the solution with 0.75 mol The 0.30 M solution has a higher freezing point than the 0.50 M solution. This solution has a lower f.p. 21. 20. unsaturated solution 22. As the temperature rises, the solubility of NH 4Br(s) in H 2O increases and the solubility of NH 3(g) in H 2O decreases. NH 4Br becomes more soluble and NH 3 becomes less soluble. 23. 210. g Subject 8 Regents Practice 1 1 2. 2 3. 1 4. 1 5. 3 6. 4 7. 2 8. 2 9. 4 10. 2 11. 4 12. 3 13. 4 14. 1 15. 1 16. 3 17. 3 18. 4 19. 10 20. 21. KCl ten times K Cl - 10 times ClK (c) E3 Scholastic Publishing 22. (0.026 M) (50.0 mL) - M B (38.5 mL) (0.026)(50) ----- ----- M B 38.5 Subject 9 Regents Practice 1 4 2. 3 3. 3 4. 1 5. 1 6. 2 7. 2 8. 2 9. 1 10. 4 11. 4 12. 3 13. 3 14. 2 15. 4 16. 3 17. 1 18. 2 19. 4 20. A lower concentration of oxygen gas decreases the number of effective collisions between O 2 molecules and CH 4 molecules. 21.B 22. The product end (right) of your diagram should be lower at the re-reacting end (left). 23. The rate of chemical reaction increases because reacting molecules move faster and collide with more kinetic energy. The increase in temperature causes more frequent collisions. As molecules acquire more kinetic energy, the likelihood of effective collisions increases. More reactive molecules collide with enough energy. 24. The concentration of the clod ion decreases. [ClO] decreases. lower concentration of CJO. less than a CLA The container must be closed so that no matter can enter or exit, thus distributing the balance. If the container is opened, Cl 2 gas escapes. Maintain the concentration of reactionators and products constant. 26. The forward reaction rate is equal to the rate of reverse reaction. They're the same. Equal Subject 10 Regents Practice 1 2 2. 2 3. 3 4. 3 5 3 6 1 7 2 8 1 9 3 10 1 1 2 12 4 13 1 14 4 15 1 16 2 17 2 18 3 19 4 20 2 21 22. The two molecules have the same molecular formula, but have different structural formulas. The two molecules are composed of 5 carbon atoms and 12 hydrogen atoms, but differ in the arrangement of their atoms. 23. The molecule in diagram B has only one carbon-carbon bond. There are no multiple bonds between carbon atoms. It is impossible to add more H-atoms to C atoms because all C-C bonds are simple. 24. 25. covalent bonds and ion bonds 26. ester or esters polar and nonpolar single and double (c) E3 Scholastic Publishing 27. saponification 28. alkene 29. addition alkenes halogenation bromination Topic 11 Regents Practice 1 1 2. 3 3. 2 4. 1 5. 1 6. 4 7. 3 8. 3 9. 3 10. 1 11. 2 12. 4 13. 1 14. 1 15. The zinc atoms of the electrode are oxidized to zinc ions in the solution, decreasing the mass of the electrode. Zinc atoms become Zn (aq). 2. Atoms become ions dissolved in water. Zn's atoms lose electrons, producing ions in solution. 16. Electrons flow from the zinc electrode to the iron electrode through the wires and voltmeter. The e-flow is from Zn to Fe in the external circuit. from anode to cathode 17. The salt bridge allows the ion to migrate between the half cells. The salt bridge prevents the polarization of the half cells maintains electrical neutrality 18. Silver atoms lose electrons and become silver ions in the solution. Some of Ag's atoms become Ag+ ions. Silver atoms are oxidized with silver ions. 19. The cell needs electrical energy for the non-spontaneous reaction to occur. The energy source causes the oxidation of certain atoms ag(s). 20. Nor (s) nickel key 21. Zinc is more reactive than iron, and iron is more reactive than copper. The order of decreasing activity is Zn, Fe, Cu. Copper is the least active and zinc is the most active. 22. Fe - 2nd -> Fe 23. e-electrons - 2 24. The number of Cu oxidation changes to 0. 2. The oxidation state of the iron changes from zero to 2. The oxidation numbers change during the reaction because the electrons are transferred. 25. Magnesium is more active than hydrogen, but copper is less active than hydrogen. On Table J, Mg is above H 2, and Cu is below H 2. Subject 12 Regents Practice 1 2 2. 3 3. 1 4. 4 5. 1 6. 2 7. 4 8. 3 9. 2 10. 1 11 3 12. 3 13. 2 14. 4 15. 3 16. 2 17. 3 18. 3 19. 4 20. 3 21. Fusion produces more energy per gram of reaction. The fusion process produces less radioactive waste. The fusion reaction material is more easily c) E3 Scholastic Publishing 22. 23. The nuclides used for fusion have smaller atomic masses than the nucleides used for fission. The nucleides used in fission are much more massive. The fusion particles are lighter. 1 24. n 25. 15.813 years 15.8 u 0 26. Gamma radiation has a greater increase in Power. Beta particles have a lower penetrating power. 27. Nuclear radiation is harmful to all living cells. Radioisotopes can cause genetic mutations. Treatments can cause stomach problems, such as nausea. 28. 3.5 mg part 29. 206 Pb lead-206 Pb-206 82 30. Polonium-210 is used to eliminate static electricity in machines. eliminates lens dust from the camera 59 0 59 1 e Co 31. Fe -> Energy 32. /6 or 0.0625 26 -1 27 January 2017 Regents Review Part A and Part B-1 Allow 1 credit for each correct answer. Part A 1 1. 9..... 3..... 17..... 4..... 25..... 3..... 2..... 1..... 10..... 4..... 18..... 4..... 26..... 2..... 3..... 2..... 11..... 3..... 19..... 1..... 27..... 4..... 4..... 12..... 4..... 20..... 4..... 28..... 4..... 5..... 4..... 13..... 2..... 21..... 2..... 29..... 3..... 6..... 1..... 14..... 3..... 22..... 4..... 30..... 3..... 7..... 3..... 15..... 3..... 23..... 2..... 8..... 3..... 16..... 1..... 24..... 3..... Part B-1 31..... 1..... 36..... 3..... 41..... 3..... 46..... 4..... 32..... 3..... 37..... 4..... 42..... 1..... 47..... 3..... c) E3 Scholastic Publishing 33 1. 38..... 4..... 43..... 2..... 48..... 3..... 34..... 1..... 39..... 1..... 44..... 4..... 49..... 3..... 50..... 1..... Part B-2 Allow a total of 15 credits for this part. The student must answer all questions from this part. 51 [1] Allow 1 credit. Acceptable answers include, but are not limited to: arsenic atoms and antioime atoms each have 5 valence electrons. One ace atom and one Sb atom both have five outermost electrons. same number of valence e-52 [1] Allow 1 credit. Acceptable answers include, but are not limited to: Ar argon element 18 53 [1] Allow 1 credit. Acceptable answers include, but are not limited to: An electron in the first shell has less energy than an electron in the third shell. The electron in the third shell has a higher energy. 3 shell 1 shell st rd 54 [1] Allow 1 credit. Acceptable answers include, but are not limited to: The 0.30 cm3 graphite sample has fewer carbon atoms than the 0.30 cm3 diamond sample. The sample of has more atoms. more C atoms in Diamond 55 [1] Allow 1 credit. Acceptable answers include, but are not limited to: 56 [1] Allow 1 credit. Acceptable answers include, but are not limited to: 57 [1] Allow 1 credit for 48.0% or for any value of 48%, inclusive. 58 [1] Allow 1 credit. Acceptable responses include, but are not limited to: The rate of chemical reaction increases because the reacting molecules move faster and collide with more kinetic energy. The increase in temperature causes more frequent collisions. c) E3 Scholastic Edition As molecules acquire more kinetic energy, the likelihood of effective collisions increases. More reactive molecules collide with enough energy. 59 [1] Grant 1 credit for showing that the potential energy of products is less than the potential energy of the repressive. 60 [1] Allow 1 credit for 2.3 L or any value from 2.29 L to 2.3 L, inclusive. 61 [1] Allow 1 credit. Acceptable answers include, but are not limited to: Temperature: higher /increase Pressure: drop/decrease Temperature: above 298 K Pressure: below 1.0 atm 62 [1] Allow 1 credit. Acceptable answers include, but are not limited to: H (aq) H 3O hydrogen ion hydronium - 63 [1] Allow 1 credit for 4 or four. 64 [1] Allow 1 credit. Acceptable answers include, but are not limited to: 0.80 M 8.0 x 10 M .8 M -1 -65 [1] Allow 1 credit. Acceptable answers include, but are not limited to: Several tests can improve the accuracy of the results. Each test may have errors greater than or below the acceptable value. Therefore, an average value may be more accurate. The results can be reproducible. Several trials help to undo random errors. Part C Allow a total of 20 credits for this part. The student must answer all questions from this part. 66 [1] Allow 1 credit. Acceptable responses include, but are not limited to: from water vapour to dry ice from H 2O(g) to CO 2(s) from water to CO 2 67 [1] Allow 1 credit. Acceptable responses include, but are not limited to: The potential energy of H 2O(g) molecules is higher than the potential energy of H 2O(l) molecules. Water vapour has more PE. There is less EPs in liquid water. 68 [1] Allow 1 credit. Acceptable answers include, but are not limited to: The dry ice block with less mass contains less thermal energy. There is more thermal energy in the 2.0 kg block. 69 [1] Allow 1 credit. Acceptable responses include, but are not limited to: c) E3 Scholastic Publishing The particles are evenly distributed throughout the cooling liquid mixture. There is a uniform distribution of molecules in the solution. Water and ethylene glycol molecules mix evenly. All particles are evenly distributed. 70 [1] 1 credit. Acceptable answers include, but are not limited to: water molecules and ethylene glycol molecules are both polar. Water and glycol have similar polarities. 71 [1] Allow 1 credit for any value from 21% to 23%, inclusive. 72 [1] Allow 1 credit. Acceptable answers include, but are not limited to: 3200 mL 3.2 x 10 mL 3 73 [1] Allow 1 credit. Acceptable responses include, but are not limited limited In ethene, there is a double link between the two carbon atoms, which makes the compound unsaturated. More H atoms can bind with C. a C-C atoms Two carbons share four electrons. 74 [1] Allow 1 credit. Examples of responses to 1 credit 75 [1] Allow 1 credit. Acceptable responses include, but are not limited to: CH 3CH 2OH has 2 carbon atoms, 6 hydrogen atoms, and 1 oxygen atom, while CH 3CHO has 2 carbon atoms, 4 hydrogen atoms, and 1 oxygen atom. They do not have the same number of atoms H. different molecular formulas 76 [1] Allow 1 credit. Acceptable responses include, but are not limited to: carboxylic acids organic acids 77 [1] Allow 1 credit for 3 mol or three mol. 78 [1] Allow 1 credit. Acceptable answers include, but are not limited to: the pH pH value of the pH of the soil pH 79 [1] Allow 1 credit for blue. c) E3 Scholastic Publishing 80 [1] Allow 1 credit for 5 or 5 or 5. 81 [1] Allow 1 credit. Acceptable answers include, but are not limited to: The salt bridge allows the ions to flow between the two half cells. It maintains the electrical neutrality of the solutions. prevents the polarization of half cells 82 [1] Allow 1 credit. Acceptable answers include, but are not limited to: magnesium atoms lose electrons and become magnesium ions in the solution. Some Mg atoms oxidize into Mg ions, decreasing the mass of electrodes. 2. Atoms become watery mg ions. 2-83 [1] Allow 1 credit. Acceptable answers include, but are not limited to: 84 [1] Allow 1 credit for 43 protons and 56 neutrons. 85 [1] Allow 1 credit. Acceptable answers include, but are not limited to: 1 0.0625 6.25% August 16, 2016 Regents Review Part A and Part B-1 Allow 1 credit for each correct answer. Part A 1 1. 9..... 4..... 17..... 2..... 25..... 4..... 2..... 3..... 10..... 4..... 18..... 4..... 26..... 3..... 3..... 11..... 2..... 19..... 1..... 27..... 1..... 4..... 4..... 12..... 3..... 20..... 4..... 28..... 3..... 5..... 1..... 13..... 3..... 21..... 3..... 29..... 2..... 6..... 2..... 14..... 2..... 22..... 1..... 30..... 2..... 7..... 2..... 15..... 3..... 23..... 2..... 8..... 3..... 16..... 3..... 24..... 4..... Part B-1 31..... 3..... 36..... 3..... 41..... 3..... 46..... 3..... 1..... 32..... 1..... 37..... 2..... 42..... 1..... 47..... 4..... 33..... 3..... 38..... 2..... 43..... 3..... 48..... 4..... 34..... 2..... 39..... 1..... 44..... 3..... 49..... 3..... 35..... 4..... 45..... 1..... 50..... 1..... Part B-2 Allow a total of 15 credits for this part. The student must answer all questions from this part. (c) E3 Scholastic Publishing 51 [1] Allow 1 credit for CH 2. The order of the elements may vary. 52 [1] Allow 1 credit for any value from 78g to 82g inclusive. 53 [1] Allow 1 credit. Acceptable answers include, but are not limited to: boiling point boiling temperature 54 [1] Allow 1 credit. Acceptable answers include, but are not limited to: Average kinetic energy decreases. The average KE goes down. 55 [1] Allow 1 credit. Acceptable answers include, but are not limited to: freezing the solidification liquid to solid 56 [1] Allow 1 credit. Acceptable answers include, but are not limited to: Two substances react to produce a substance. This product is formed by chemically combining two substances. Two molecules produce a more complex molecule. A compound is formed from two compounds. 57 [1] Allow 1 credit. Acceptable answers include, but are not limited to: halogenide halogenide halogenalkane halide 58 [1] Allow 1 credit. Acceptable answers include, but are not limited to: Molecular formulas for both compounds are the same, but the structural formulas are different. The two molecules have the same number of C atoms and the same number of H atoms, but have a different arrangement from the atoms. The two compounds are C 3H 6, but have different structures. Both compounds are C 3H 6, but we have a ring and we have a double bond. 59 [1] Allow 1 credit for 240. K. There is no need to show significant figures. 60 [1] Allow 1 credit. Acceptable answers include, but are not limited to: The radius of a fluoride ion is greater than the radius of a fluoride atom. The F radius is 37 hours larger than the radius of an F atom. - Atom F is 6 p.m., F is 133 h. - Atom F is smaller. 61 [1] Allow 1 credit. Acceptable answers include, but are not limited to: A lithium atom loses its second shell electron, so that lithium-ion has a single electron shell. A lithium-ion has one less electron. The li atom has 3 electrons and the Li ion has 2 electrons. A Li ion has one less electron. 62 [1] Allow 1 credit. Points positions may vary. Examples of responses to 1 credit: c) E3 Scholastic Publishing 63 [1] Allow 1 credit. Acceptable answers include, but are not limited to: As the elements of period 2 are considered from left to right, the atomic radius generally decreases. The atomic radius descends with the exception of Neon. The atomic radius is getting smaller. 64 [1] Allow 1 credit. Acceptable answers include, but are not limited to: In this reaction, uranium is changing to other elements. Different elements are formed. One element becomes two new elements. Two atoms are formed with different atomic numbers from the U-235. 65 [1] Allow 1 credit. Acceptable answers but are not limited to: 41 Nb 97 Nb-97 niobium-97 97 Part C Allow a total of 20 credits for this part. The student must answer all questions from this part. 66 [1] Allow 1 credit. Acceptable answers include, but are not limited to: Fe oxide in the presence of Cu ions. 2. Iron is a metal more active than copper. Cu ions act as an oxidizing agent. 2nd Fe is above Cu on Table J. 67 [1] Allow 1 credit. Acceptable answers include, but are not limited to: 5 x 10 mol 0.0005 mol -4 68 [1] Allow 1 credit. Acceptable answers include, but are not limited to: ' 2H (aq) - 2nd -> H 2(g) - 2H - 2nd -> H 2 - 2nd - 2h -> H 2 - ' 1 69 [1] Allow 1 credit. Acceptable answers include, but are not limited to: Increasing the concentration of HCl(aq). Increase the temperature. 70 [1] Allow 1 credit. Acceptable answers include, but are not limited to: Solute: Solnt: H 2O Solute Water: NaCl Sodium Chloride (c) E3 Scholastic Publishing 71 [1] Allow 1 credit. Acceptable answers include, but are not limited to: 72 [1] Allow 1 credit. Acceptable answers include, but are not limited to: The solution in the beaker 4 has a greater ability to drive an electric current, as it has a greater concentration of watery ions than the solution in the beaker 1. There are fewer charged particles free to move around in the beaker 1. There are more ions in beaker 4. 73 [1] Allow 1 credit. Acceptable answers include, but are not limited to: The higher the concentration of ions, the higher the boiling point of the solution. The boiling point is lower with fewer dissolved particles. The boiling point rises with more watery ions. 74 [1] Allow 1 credit. Acceptable answers include, but are not limited to: From 0 to 2 From 0 to 2 - From zero to two 75 [1] Allow 1 credit. Acceptable answers include, but are not limited to: The number of moles of lost electrons is equal to the number of moles of electrons gained. The number of moles is the same. e- lost - e-won. 76 [1] Allow 1 credit. Acceptable answers include, but are not limited to: Risk: Mercury is toxic. Advantage: Mercury batteries are miniature. Risk: Harmful to human Advantage: generating electricity 77 [1] Allow 1 credit for yellow. 78 [1] Allow 1 credit for OH or hydroxide. - 79 [1] Allow 1 credit for 2 or two. 80 [1] Allow 1 credit for 0.86 M or 0.862 M. 81 [1] Authorize 1 carbon credit or C. 82 [1] Authorize 1 credit. Acceptable answers include, but are not limited to: fermentation (c) E3 Scholastic Publishing 83 [1] Allow 1 credit. Acceptable answers include, but are not limited to: a double carbon-carbon bond in an ethene molecule. The molecules in the compound contain a multiple C-C bond. More H atoms can be added to the molecule. Each molecule has C - C. 84 [1] Allow 1 credit. Acceptable answers include, but are not limited to: Functional group of alcohol, -OH, allows hydrogen hydrogen ethanol molecules, so ethanol has a higher boiling point than ethene. The boiling point of ethene is weaker because its intermolecular forces are weaker than the intermolecular forces in alcohol. The IMF for ethanol is stronger. 85 [1] Allow 1 credit. Examples of responses to 1 credit: June 2016 Regents Review Part A and Part B-1 Allow 1 credit for each correct answer. Part A 1 4. 9..... 2..... 17..... 3..... 25..... 2..... 2..... 3..... 10..... 4..... 18..... 4..... 26..... 1..... 3..... 2..... 11..... 3..... 19..... 3..... 27..... 4..... 4..... 12..... 2..... 20..... 2..... 28..... 3..... 5..... 1..... 13..... 1..... 21..... 3..... 29..... 3..... 6..... 2..... 14..... 1..... 22..... 1..... 30..... 4..... 7..... 15..... 2..... 23..... 3..... 8..... 2..... 16..... 4..... 24..... 3..... Part B-1 31..... 1..... 36..... 3..... 41..... 2..... 46..... 2..... 32..... 3..... 37..... 2..... 42..... 1..... 47..... 2..... c) E3 Scholastic Publishing 33 4..... 38..... 3..... 43..... 4..... 48..... 2..... 34..... 3..... 39..... 2..... 44..... 2..... 49..... 4..... 35..... 1..... 40..... 3..... 45..... 4..... 50..... 2..... Part B-2 Allow a total of 15 credits for this part. The student must answer all questions from this part. 51 [1] Allow 1 credit. The position of the electrons may vary. Examples of responses of 1 credit 52 [1] Allow 1 credit for H 2(g) - Cl 2(g) -> 2HCl(g). Allow credit even if the coefficient 1 is written in front of H 2(g) and/or Cl 2(g). 53 [1] Allow 1 credit. Acceptable responses include, but are not limited to: iodine has stronger intermolecular forces than chlorine. The forces between Cl 2 molecules are weaker. Dispersal forces are stronger on I 2. The molecules of I 2 attract more. 54 [1] Allow 1 credit. Acceptable answers include, but are not limited to: Na oxidizes easily in the presence of air. Sodium reacts with chlorine to form NaCl. Sodium forms compounds. 55 [1] Allow 1 credit of 980C. 56 [1] Authorize 1 credit. Acceptable answers include, but are not limited to: When water freezes, it expands, making H 2O(s) less dense than H 2O(l). The distance between H 2O molecules is greater in the phase The density of liquid water is higher. The density of the ice is lower. 57 [1] Allow 1 credit. Acceptable answers include, but are not limited to: hydrogen bonding H bonding bonding 58 [1] Allow 1 credit. Acceptable answers include, but are not limited to: 1.13 x 105 J 113,000 J 113,000 J 59 [1] Authorize 1 credit. Acceptable answers include, but are not limited to: (c) E3 Scholastic Publishing 60 [1] Allow 1 credit for 2.0 mol. There is no need to show significant figures. 61 [1] Allow 1 credit for red. 62 [1] Allow 1 credit. Acceptable answers include, but are not limited to: 1.0 x 10 M 1 x 10 M 0.000 M M -5 -5 -63 [1] Allow 1 credit. Acceptable responses include, but are not limited to: the volume of pressure times for the first three tests is constant at 0.412. As the volume increases, the pressure decreases proportionally. There is no change for P X V. P 1V 1 - P 2V 2 - P 3V PV - constant 64 [1] Allow 1 credit for 0.300 atm. There is no need to show significant figures. 65 [1] Allow 1 credit. Acceptable answers include, but are not limited to: The average distance between helium atoms is smaller in test 1 than in test 3. In test 3, the atoms are further apart. The separation is greater in trial 3. The atoms are closer in test 1. The smaller the volume, the closer the gas molecules are. Part C Allow a total of 20 credits for this part. The student must answer all questions from this part. 66 [1] Allow 1 credit. Acceptable responses include, but are not limited to: covalent and ion polar ion and polar and ion covalent 67 [1] Allow 1 credit. Acceptable answers include, but are not limited to: argon Ar element 18 68 [1] Allow 1 credit. Acceptable answers include, but are not limited to: The radius of a potassium ion is smaller than the radius of a potassium atom. The radius of the atom is larger. K ions are smaller. K-69 [1] Allow 1 credit. Acceptable answers include, but are not limited to: (c) E3 Scholastic Publishing 172 mg - 170. mg ----- x 100 170. mg 2(100) 170 70 [1] Allow 1 credit for CH 2O. The order of the elements may vary. 71 [1] Allow 1 credit. Acceptable answers include, but are not limited to: Photosynthesis is an endothermic reaction because light energy is absorbed. The term energy is on the left side of the equation. ΔH is positive. The reaction requires light. 72 [1] Allow 1 credit. Acceptable answers include, but are not limited to: The configuration represents an energy state higher than the soil state of sodium, 2-8-1. Not all 11 electrons are in their lowest possible energy levels. A second shell electron moved towards the fourth A lower shell electron is shown in a higher shell. 73 [1] Allow 1 credit. Acceptable responses include, but are not limited to: When strontium electrons in an excited state move to a lower energy state, specific amounts of energy are emitted. Energy is emitted when electrons from higher electron shells move to lower electron shells. Light from specific wavelengths is emitted when electrons fall to lower energy levels. Lower, from higher shells to lower shells. 74 [1] Allow 1 credit. Acceptable answers include, but are not limited to: Find the

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