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| Problem | Resources | Answer | Rubric |
| 1.66 | Text P.15  Class website ppt slide1 | 5.50⁰ | **5pts total**  4pts – equation/method for temp. conversion  1pt – answer |
| 1.67 | Text P.17  Class website ppt slide2 | -----C6H6(l)  [https://d30y9cdsu7xlg0.cloudfront.net/png/7669-200.png](https://thenounproject.com/term/test-tube/7669)  ----H2O(l)  ----Hg(l) | **2pts total**  1.5pt – ½ pt each correct alignment of density values  ½ pt complete sketch |
| 1.72 | Class website ppt slide3 | 244 g H2SO4 | **5pts total**  4pts – calculation method  1pt – answer |
| 1.75 | Class website ppt slide4 | 0.018 mm | **6pts total**  5pts - calculation method  1pt - answer |
| 2.87 a & b | Text P.45  Class website ppt slide5 | a) As, p=33, n=41  b) I, p=53, n=74 | **3pts total**  ½ pt - each correct element  ½ pt - each correct p  ½ pt – each correct n |
| 2.90 | Text P.47  Class website ppt slide6 | 207 amu | **3pts total**  2 pts – calculation method  1 pt - answer |
| 2.98 | Text P.54-67  Class website ppt slide7 | a) Nickel (II) Oxide, Ni2+  b) Manganese (IV) Oxide, Mn4+  c) Chromium (III) Oxide, Cr3+  d) Molybdenum (VI) Oxide, Mo6+ | **4pts total**  – ½ pt each correct name  – ½ pt correct charge |
| 2.102 | Text P.54-67  Class website ppt slide7 | a) Sodium Chloride  b) Sodium Hydrogen Carbonate  c) Sodium Hypochlorite  d) Sodium Hydroxide  e) Ammonium Carbonate  f) Calcium Sulfate | **3 pts total**  – ½ pt each correct name |
| 2.104 | Text P.54-67  Class website ppt slide7 | a) CaS, Ca(HS)2  b) HBr, HBrO  c) AlN, Al(NO2)3  d) FeO, Fe2O3  e) NH3, NH4+  f) K2SO3, KHSO3  g) Hg2Cl2, HgCl  h) HClO3, HClO4 | **8pts total**  – ½ pt each correct formula |
| 2.105 a & b | Text P.54-67  Class website ppt slide8 | a)  [Image result for cyclohexane](https://www.google.com/url?url=https://socratic.org/questions/how-does-the-structure-of-benzene-differ-from-the-cyclohexane-structure&rct=j&frm=1&q=&esrc=s&sa=U&ved=0ahUKEwiz2f683NrMAhWj7YMKHdJmA0cQwW4IGDAB&usg=AFQjCNFQ_5Vqj0bqgiEvE1K33On2rbe8xQ)  b)  [Image result for hexane](https://www.google.com/url?url=https://myorganicchemistry.wikispaces.com/Hexane&rct=j&frm=1&q=&esrc=s&sa=U&ved=0ahUKEwjs96rp3NrMAhVL_IMKHW-YB9AQwW4IGjAC&usg=AFQjCNEuuJ64xLyb-M0kal8gH_jvvd3uEQ)  Straight chain allows 3 H’s on each end of chain. | **3pts total**  – 1pt cyclic structure  – 1pt straight chain  –1pt explanation |
| 3.82 | Text P.88  Class website ppt slide9 | NH3  > (NH2)2CO > NH4NO3 > (NH4)2SO4 | **5pts total**  – 1pt each correct % composition calculation method & answer  – 1pt correct order |
| 3.87 a | Text P.95-97  Class website ppt  slide10 | a) C10H18O | **5pts total**  –4pts correct calculation method  –1pt correct empirical formula |
| 3.99 a, b,  & c--only C2H2 | Text P.102-105  Class website ppt  slide11 | a) 2C2H2 + 5O2 🡪 4CO2 + 2H2O  b) LR = O2  c) C2H2 remaining = 6.7g | **7pts total**  –1pt correctly balanced equation  –3pts calculation method(s) correctly determines LR  –3pts calculation method(s) correctly determines C2H2 remaining |
| 4.92 | Text P.124-128  Text P.125 Solubility  Rules  Class website ppt  Slide12 | Q1 – precipitate is CdS(s)  Q2 – Na+(aq) & NO3- (aq) remain in soln.  Q3 – net ionic eq. Cd2+(aq) + S2-(aq) 🡪 CdS(s) | **7pts total**  -1pt correct balanced eq. w/ correct physical states  –½ pt each correct ion remaining in solution  –3.5pt correct complete ionic equation  –1.5pt correct net ionic equation |
| 5.98 a | Text P.182-184  Class website ppt  Slide13 | a) 3.27x103 J | **3pts total**  –1.5pts correct calculation method  –1pt answer  - ½ pt correct sig figs |
| 6.15 a,b,c | Text P.212-215  Text P.213 EMS  Diagram  Class website ppt  Slide14 | a)  =3.0x1013 s-1  b)  = 5.5x10-7 m or 550 nm  c) part a – outside of visible range  part b – w/in visible range | **5pts total**  a) – 1pt correct calculation method, 1pt answer  b) – 1pt correct calculation method, 1pt answer  c) – ½ pt each, correctly assess whether w/in visible light range |
| 6.73 a, b, c | Text 234-243  Class website ppt  Slide15 | a) 2p6 is missing from configuration  b) 2s22p3 is already included in [Ne]  c) 3p64s2 is missing from configuration | **3pts total**  –1pt each correction |
| 7.45 a,b,c,d,e | Text P.264-270  Text P.268 IE Diagram  Class website ppt S16 | a) Ar c) Co e) Te  b) Be d) S | **2.5pts total**  – ½ pt each |
| 7.48 a , b | Text P.269  Class website ppt S17 | a) 1s2 2s2 2p6 3s2 3p6 4s2 3d1= Cr3+  No, [Ar] 4s2 3d1  b) 1s2 2s2 2p6 = N3-  Yes, [Ne] | **3pts total**  – 1 pt each correct configuration  – ½ pt yes/no ion configuration matches noble gas configuration |
| 8.88 a | Text P.316  Class website ppt S18 | FC = 1 | **3.5pts total**  –1.5pts correct Lewis structure  –2pts correct formal charge calculation |
| 9.79 b , c | Text P.362  Class website ppt S19 | b) 2 , 2   c) 3 , 1  | **4pts total**  – 1pt each correct Lewis structure  – ½ pt each correct , ½ pt each correct  |
| 10.91 | Text P.426 Gas Laws  Class website ppt S20 | 3.3 mm3 | **4pts total**  – 1pt correct gas law  –2pts correct calculation method  – 1pt answer |
| 10.93 | Text P.426 Gas Laws  Class website ppt S20 | 5.7x10-4 atm | **4pts total**  – 1 pt correct gas law  – 2pt correct calculation method  – 1 pt answer |
| 11.56 a | Text P.456-458  Class website ppt S21 | 50.0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -  L  G  S  1.0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -  0.0 -  -230 -180 -130 -80 | **3pts total**  – 1pt graph correctly proportioned  – ½ pt each Triple Point, Critical Point, MP, FP |
| 13.24 a | Text P.541 diagram  Class website ppt S22 | a) 25 g | **3pts total**  – 2pts correct calculation method  - 1pt answer |
| 13.89 a | Text P.144, 543  Class website ppt S23 | 1.25x10-4 mol/L | **3pts total**  –2pts calculation method  – 1pt answer |
| 13.69 a | Text P.549-551  Class website ppt S24 | a) FP = -115.2⁰C  BP= 78.8⁰C | **4pts total**  – 1pt each correct ∆Tf & ∆TB calc  – 1pt each correct FP calc & BP calc |
| 14.7 | Text P.594  Class website ppt S25 | 1- Reactant  2- Activation Energy (Ea)  3- Total Energy of Reaction (∆E or ∆H)  4- Product | **2pts total**  – ½ pt each component identified |
| 15.14 a, b | Text P.630-632  Class website ppt S26 | a) K = [O2]3/[O3]2 , homogeneous  b) K = 1/[Cl2]2, heterogeneous | **3pts total**  – 1 pt each correct expression  – ½ pt each identify homo/hetero |
| 16.39  1st row only …do not complete entire chart | Text P.708 equations  Class website ppt S27 | 1st row: H+ = 7.5x10-3 M  OH- = 1.3x10-12 M  pH = 2.12  pOH = 11.88  acidic | **7pts total**  –2pts each calculation method for OH-, pH, pOH  –1pt acidic/basic |
| 17.6 | Text P.731,733,734, 736, 737  Class website ppt S28 | a) ii  b) iii  c) i  d) iv | **2pts total**  – ½ pt each |