**Student:**

**Date:**

| **Outcomes** | **R** | **D** | **C** | **A** | **Changed Outcomes** |
| --- | --- | --- | --- | --- | --- |
| **Unit i – Integrated Skills** |
| **GCO 2 (Skills)**Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively, and for making informed decisions. |
| 1. 1.0 define and delimit problems to facilitate investigation
 | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 2.0 design an experiment identifying and controlling major variables | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 3.0 state a prediction and a hypothesis based on available evidence and background information | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 4.0 identify the theoretical basis of an investigation and develop a prediction and a hypothesis that are consistent with the theoretical basis | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 5.0 develop appropriate sampling procedures | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 6.0 implement appropriate sampling procedures  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 7.0 use instruments effectively and accurately for collecting data | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 8.0 estimate quantities | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 9.0 compile and organize data, using appropriate formats and data treatments to facilitate interpretation of the data | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 10.0 use library and electronic research tools to collect information on a given topic | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 11.0 select and integrate information from various print and electronic sources or from several parts of the same source  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 12.0 select and use apparatus and materials safely  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 13.0 demonstrate a knowledge of WHMIS standards by selecting and applying proper techniques for handling and disposing of lab materials  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 14.0 describe and apply classification systems and nomenclatures used in the sciences  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 15.0 identify limitations of a given classification system and identify alternative ways of classifying to accommodate anomalies  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 16.0 compile and display evidence and information, by hand or computer, in a variety of formats, including diagrams, flow charts, tables, graphs, and scatter plots  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 17.0 identify and explain sources of error and uncertainty in measurement and express results in a form that acknowledges the degree of uncertainty  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 18.0 identify and apply criteria, including the presence of bias, for evaluating evidence and sources of information   | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 19.0 provide a statement that addresses the problem or answers the question investigated in light of the link between data and the conclusion  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 20.0 explain how data support or refute the hypothesis or prediction  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 21.0 identify and correct practical problems in the way a technological device or system functions  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 22.0 communicate questions, ideas, and intentions, and receive, interpret, understand, support, and respond to ideas of others  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 23.0 select and use appropriate numeric, symbolic, graphical and linguistic modes of representation to communicate ideas, plans and results  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 24.0 synthesize information from multiple sources or from complex and lengthy texts and make inferences based on this information  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 25.0 develop, present, and defend a position or course of action, based on findings  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| **Unit 1 – Stoichiometry** |
| **GCO 1 (STSE)**Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively, and for making informed decisions.  |
| 28.0 explain the roles of evidence, theories, and paradigms in the development of scientific knowledge  | [ ]  [ ]  | [ ]  | [ ]  | [ ]  |       |
| 29.0 explain how a major scientific milestone revolutionized thinking in the scientific communities  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 30.0 analyze and describe examples where scientific understanding was enhanced or revised as a result of the invention of a technology  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 34.0 compare processes used in science with those used in technology | [ ]  | [ ]  | [ ]  | [ ]  |        |
| 35.0 analyze society’s influence on scientific and technological endeavours |  |  |  |  |       |
| 41.0 identify various constraints that results in trade-offs during the development and improvement of technologies  | [ ]  | [ ]  | [ ]  | [ ]  |        |
| 42.0 identify and describe science-and technology-based careers related to the science they are studying | [ ]  | [ ]  | [ ]  | [ ]  |       |
| **GCO 3 (Knowledge)**Students will construct knowledge and understandings of concepts in life science, physical science, and Earth and space science, and apply these understandings to interpret, integrate, and extend their knowledge. |
|  26.0 write and name the formulas of ionic and molecular compounds, following simple IUPAC rules  | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  27.0 define molar mass and perform mole-mass inter- conversions for pure substances | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 31.0 explain solubility, using the concept of equilibrium | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  32.0 define the concept of equilibrium as it pertains to solutions | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  3 33.0 explain the variations in the solubility of various pure substances, given the same solvent | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  36.0 use the solubility generalizations to predict the formation of precipitates | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  37.0 identify mole ratios of reactants and products from balanced chemical equations | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  38.0 perform stoichiometric calculations related to chemical equations | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  39.0 predict how the yield of a particular chemical process can be maximized | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 40.0 identify various stoichiometric applications | [ ]  | [ ]  | [ ]  | [ ]  |       |
| **Unit 2 – From Structures to Properties** |
| **GCO 1 (STSE)**Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology.  |
|  61.0 analyze and describe examples where technologies were developed based on scientific understanding | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  62.0 analyze from a variety of perspectives the risks and benefits to society and the environment of applying scientific knowledge or introducing a particular technology | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  63.0 analyze examples of Canadian contributions to science and technology | [ ]  | [ ]  | [ ]  | [ ]  |       |
| **GCO 3 (Knowledge)** Students will construct knowledge and understandings of concepts in life science, physical science, and Earth and space science, and apply these understandings to interpret, integrate, and extend their knowledge. |
|  33.0 explain the variations in the solubility of various pure substances, given the same solvent  | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  43.0 illustrate and explain the formation of covalent bonds | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  44.0 explain the structural model of a molecular substance in terms of the various electron pairs that define it | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  45.0 illustrate and explain hydrogen bonds and van der Waals’ forces | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  46.0 identify and describe the properties of molecular substances | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  47.0 describe how intermolecular forces account for the properties of molecular compounds | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 48.0 illustrate and explain the formation of ionic bonds | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  49.0 explain the structural model of an ionic substance in terms of the various bonds that define it | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  50.0 identify and describe the properties of ionic substances | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  51.0 describe how ionic bonding accounts for the properties of ionic compounds | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  52.0 relate the properties of a substance to its structural model of ionic compounds | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 53.0 illustrate and explain the formation of metallic bonds | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  54.0 identify and describe the properties of metallic substances | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  55.0 describe how metallic bonding accounts for the properties of metals | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 56.0 relate the properties of a substance to its structural model | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  57.0 describe the process of dissolving, using concepts of intramolecular and intermolecular forces | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  58.0 determine the molar solubility of a pure substance in water | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  59.0 explain the effect of solutes on the melting point of solid water, using intermolecular forces | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 60.0 classify ionic, molecular, and metallic substances according to their properties  | [ ]  | [ ]  | [ ]  | [ ]  |       |
| **Unit 3 – Organic Chemistry** |
| **GCO 1 (STSE)**Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology. |
|  62.0 analyze from a variety of perspectives the risks and benefits to society and the environment of applying scientific knowledge or introducing a particular technology | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  65.0 explain how a major scientific milestone revolutionized thinking in the scientific communities | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  66.0 explain how scientific knowledge evolves as new evidence comes to light | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  72.0 provide examples of how science and technology are an integral part of their lives and their community | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  73.0 debate the merits of funding specific technological endeavours and not others | [ ]  | [ ]  | [ ]  | [ ]  |       |
| 75.0 describe and evaluate the design of technological solutions and the way they function using scientific principles | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  76.0 analyze natural and technological systems to interpret and explain their structure and dynamics  | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  77.0 identify various constraints that result in the trade- offs during the development and improvement of technologies | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  79.0 distinguish between scientific questions and technological problems | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  80.0 evaluate the design of a technology and the way it functions, on the basis of a variety of criteria that they have identified themselves | [ ]  | [ ]  | [ ]  | [ ]  |       |
| **GCO 3 (Knowledge)**Students will construct knowledge and understandings of concepts in life science, physical science, and Earth and space science, and apply these understandings to interpret, integrate, and extend their knowledge.  |
| 64.0 explain the large number and diversity of organic compounds with reference to the unique nature of the carbon atom | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  67.0 classify various organic compounds by determining to which families they belong, based on their names or structures | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  68.0 write the formula and provide the IUPAC name for a variety of aliphatic compounds | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  69.0 define isomers and illustrate the structural formulas for a variety of organic isomers | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  70.0 write the formula and provide the IUPAC name for a variety of aromatic compounds | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  71.0 write the formula and provide the IUPAC name for a variety of hydrocarbon derivatives | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  74.0 write and balance chemical equations to predict the reactions of selected organic compounds | [ ]  | [ ]  | [ ]  | [ ]  |       |
|  78.0 describe processes of polymerization and identify some important natural and synthetic polymers  | [ ]  | [ ]  | [ ]  | [ ]  |       |