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| **D.1.U1** | * Define “essential” as related to dietary nutrients. * Define “non-essential” as related to dietary nutrients. |

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| **D.1.U2** | * State the difference between a vitamin and a mineral. * List two example essential minerals. |

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| **D.1.U3** | * Define vitamin. * Compare the properties of water soluble and fat soluble vitamins. * List two example water soluble vitamins and two example fat soluble vitamins. |

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| **D.1.U4** | * Outline the concept of “conditionally essential” using amino acid examples. |

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| **D.1.U5** | * Outline the effect of protein deficiency malnutrition on children and adults. |

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| **D.1.U6** | * Outline two causes of malnutrition. |

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| **D.1.U7** | * Describe how hormones and the appetite control center regulate a desire to eat. |

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| **D.1.U8** | Define hypertension.   * List risk factors associated with type II diabetes. * State symptoms of type II diabetes. * List cardiovascular effects of type II diabetes. |

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| **D.1.U9** | * Explain loss of muscle mass during starvation. |

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| **D.1.A1** | **Production of ascorbic acid by some mammals, but not others that need a dietary**  **supply.** |

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| **D.1.A2** | Outline the genetic cause of phenylketonuria.   * List consequences of phenylketonuria if untreated. * State how phenylketonuria is treated. |

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| **D.1.A3** | * Explain the relationship between vitamin D, calcium, osteomalacia and skin cancer. |

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| **D.1.A4** | * List symptoms associated with anorexia nervosa. * Outline the effect of anorexia nervosa on heart muscle tissue. |

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| **D.1.A5** | Outline factors that indicate that dietary cholesterol may not be the exclusive cause of  the correlation between blood plasma cholesterol levels and risk of coronary heart disease. |

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| **D.1.S1** | Explain how a calorimeter can be used to determine the energy content in food.   * Calculate the energy content of a food sample using calorimetry data. |

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| **D.1.S2** | **Use of databases of nutritional content of foods and software to calculate intakes**  **of essential nutrients from a daily diet.** |

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| **D.1.**  **NOS** | **Falsification of theories with one theory being superseded by another—scurvy was**  **thought to be specific to humans, because attempts to induce the symptoms in laboratory**  **rats and mice were entirely unsuccessful.** |

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| **D.2.U1** | * Describe when the secretion of digestive juices must be controlled. * State to mechanisms by which secretion of gastric juices is controlled. |

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| **D.2.U2** | * Define alimentary canal. * Contrast endocrine glands with exocrine glands. * Label a diagram of an exocrine gland with the following terms:  secretory cells, lumen,   duct, secretory vesicles, basement membrane and acinus.   * Discuss the relationship between the structures of an exocrine gland cell and the * function of the cell. * State the name and location of three exocrine glands associated with the   alimentary canal.   * State the composition of saliva, gastric juice and pancreatic juice. |
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| **D.2.U3** | * Using a flow chart or concept map, diagram the interactions between nervous   and hormonal mechanisms that regulated the secretion of gastric juices. |

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| **D.2.U4** | * Outline three roles of acid in the stomach. |

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| **D.2.U5** | * Outline the role of the following structures of villi epithelial cells:  tight junctions,   microvilli, mitochondria, pinocytic vesicles, proteins imbedded on the apical  surface and proteins imbedded on the basal surface. |

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| **D.2.U6** | * List benefits of fibre in a healthy diet. * State the relationship between food fibre contents and rate of transit through   the large intestine. |

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| **D.2.U7** | * Define dietary fibre. * State two examples of dietary fibre. * Define egestion. * List materials that are egested from the body. |

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| **D.2.A1** | * State the role stomach mucus. * State the cause of ulcer and acid reflux. * Outline the role of the H+, K+ -ATPase protein pump in the production of an * acidic stomach. * Outline the use, function and effect of proton pump inhibitors to treat gastric   disease. |

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| **D.2.A2** | * Outline the cause and consequences of cholera infection. * Explain the effect of cholera toxin on intestinal cells. |

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| **D.2.A3** | * Define stomach ulcer. * Outline evidence that suggest *Helicobacter pylori* infection has a role in stomach   ulcer and stomach cancer. |

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| **D.2.S1** | * List three features that can be used to identify exocrine gland cells as viewed   in electron micrographs.   * List four features that can be used to identify villus epithelium cell as viewed   in electron micrographs. |

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| **D.2.**  **NOS** | * Describe how William Beaumont was able to determine the role of the stomach in * chemical digestion of food. |