I have extracted the mark scheme for the questions from the Cambridge IGCSE™ Combined Science exam paper (0653/42), Paper 4 Theory (Extended) from February/March 2023. I will now combine this information with the questions you provided earlier.

**Question 1:**

1. **(a) (i)** Draw label line and letter X to identify part containing ovules.
   * **Mark Scheme:** Ovary labelled. [1 mark]
2. **(a) (ii)** Describe two features showing the flower is adapted for insect pollination.
   * **Mark Scheme:** Any two from: anther inside flower/stigma/reproductive organs inside flower; large/long petals. [2 marks]
3. **(b)** Describe how pollen grain Y is adapted for insect pollination.
   * **Mark Scheme:** Spikes (to stick to insect). [1 mark]
4. **(c)** Complete sentences to explain plant's response to light.
   * **Mark Scheme:** Shoot tip; distribution/spread; elongation. [3 marks]
5. **(d) (i)** Explain why plants are at the first trophic level.
   * **Mark Scheme:** Any two from: producers; make their own food; reference to photosynthesis; do not consume other life forms. [2 marks]
6. **(d) (ii)** Explain why not all energy in plants is transferred to the next level.
   * **Mark Scheme:** Any two from: lost as heat/respiration; not all (parts of) plant are eaten; not all is digested/energy remnants in faeces. [2 marks]

**Question 2:**

1. **(a)** Name positive and negative electrodes.
   * **Mark Scheme:** (Positive) anode AND (Negative) cathode. [1 mark]
2. **(b)** Explain why lamp lights up only above 501 °C.
   * **Mark Scheme:** Needs to be molten/in liquid form; so that ions move/ions do not move in solid. [2 marks]
3. **(c) (i)** Complete symbol equation for electrolysis reaction.
   * **Mark Scheme:** Pb and Cl2; (l) (l) (g). [2 marks]
4. **(c) (ii)** Describe formation of lead from lead(II) chloride at negative electrode.
   * **Mark Scheme:** Lead (ions) gain electrons (from negative electrode); (lead ions) form (lead/metal) atoms/are discharged/gains two electrons. [2 marks]

**Question 3:**

1. **(a) (i)** Write S where student is slowing down on graph.
   * **Mark Scheme:** S on any point on curved section of graph. [1 mark]
2. **(a) (ii)** Write X where speed changes from accelerating to constant on graph.
   * **Mark Scheme:** X reasonably accurately marked at t = 20 s and s = 3 m/s. [1 mark]
3. **(a) (iii)** Find how long student takes to stop after applying brakes.
   * **Mark Scheme:** 10 s. [1 mark]
4. **(b)** Explain why total energy transferred is more than useful work done on bicycle.
   * **Mark Scheme:** Energy lost/wasted as thermal energy/heat. [1 mark]
5. **(c)** Calculate kinetic energy of bicycle and student at 3.0 m/s.
   * **Mark Scheme:** Mass of bicycle = weight ÷ g / m = 150 ÷ 10 = 15 kg; Total mass of rider + bicycle = 60 + 15 = 75 kg; (KE =) ½ mv²; ½ x 75 × 9 = 338 (337.5) J. [4 marks]

**Question 4:**

1. **(a)** Complete the definition of enzymes.
   * **Mark Scheme:** Catalysts. [1 mark]
2. **(b) (i)** Identify which enzyme is from an organism that can live in the Arctic Ocean.
   * **Mark Scheme:** A. [1 mark]
3. **(b) (ii)** Explain effect of 80 °C on enzyme C's activity.
   * **Mark Scheme:** Enzyme denatured; active site changes shape; substrate no longer fits (into active site). [3 marks]
4. **(c)** Complete Table 4.1 showing enzymes in human alimentary canal.
   * **Mark Scheme:** Amylase; (breaks down starch into simple sugars); (Protease) (breaks down) protein (into) amino acids; Lipase; (breaks down fats into fatty acids and glycerol). [3 marks]
5. **(d)** State use of starch in plants.
   * **Mark Scheme:** Storage. [1 mark]

**Question 5:**

1. **(a)** Name solute and solvent in aqueous magnesium sulfate.
   * **Mark Scheme:** Solute: Magnesium sulfate; Solvent: Water. [2 marks]
2. **(b) (i)** Describe overall energy change when magnesium sulfate dissolves.
   * **Mark Scheme:** Endothermic overall; Energy needed to break bonds in solute is more than energy released when new bonds form. [2 marks]
3. **(b) (ii)** State name of energy change represented by arrow A.
   * **Mark Scheme:** Energy needed to break bonds in solute OR bond-breaking energy OR lattice energy. [1 mark]
4. **(b) (iii)** Describe what happens during energy change represented by arrow A.
   * **Mark Scheme:** Bonds between ions in solid broken OR lattice breaks down. [1 mark]
5. **(c)** Complete Table 5.1 for reactions involving magnesium or magnesium compounds and dilute acid.
   * **Mark Scheme:** (Magnesium) hydrochloric/sulfuric acid; (Magnesium oxide) hydrochloric/sulfuric acid; (Products formed) Hydrogen; Water. [4 marks]

**Question 6:**

1. **(a) (i)** Describe change in physical state of snow as it warms up.
   * **Mark Scheme:** Melts OR turns to water/liquid. [1 mark]
2. **(a) (ii)** State temperature at which this change happens.
   * **Mark Scheme:** 0 °C. [1 mark]
3. **(b)** Write type of radiation from Sun that damages skin.
   * **Mark Scheme:** Ultraviolet / UV. [1 mark]
4. **(c)** Explain why ray of light changes direction on entering ice.
   * **Mark Scheme:** Light slows down OR refractive index changes OR enters denser medium. [2 marks]
5. **(d)** Calculate speed of waves based on wave frequency and wavelength.
   * **Mark Scheme:** Frequency = 40 ÷ 25 = 1.6 Hz; Speed = frequency × wavelength = 1.6 × 2 = 3.2 m/s. [4 marks]

**Question 7:**

1. **(a) (i)** State letter identifying pulmonary artery.
   * **Mark Scheme:** A. [1 mark]
2. **(a) (ii)** State letter of blood vessel with valves and reason.
   * **Mark Scheme:** B; prevents backflow of blood. [1 mark]
3. **(a) (iii)** Describe how blood is pumped through the heart from vessel D to A.
   * **Mark Scheme:** Blood enters right atrium through D; passes through valve to right ventricle; pumped through A to lungs. [2 marks]
4. **(b)** Explain how blockage in coronary artery affects heart function.
   * **Mark Scheme:** Less oxygen to heart muscle; affects aerobic respiration / energy release; may cause heart muscle to die / heart attack. [3 marks]

**Question 8:**

1. **(a)** Name homologous series containing propane.
   * **Mark Scheme:** Alkanes. [1 mark]
2. **(b)** Describe features showing propane is saturated and ethene is unsaturated.
   * **Mark Scheme:** Propane: single bonds only; Ethene: contains a double bond. [2 marks]
3. **(c) (i)** Deduce formula of compound reacting with ethene to make ethanol.
   * **Mark Scheme:** Water / H2O. [1 mark]
4. **(c) (ii)** Explain why ethanol is not a hydrocarbon.
   * **Mark Scheme:** Contains oxygen (as well as hydrogen and carbon). [1 mark]
5. **(d)** Complete dot-and-cross diagram for ethene.
   * **Mark Scheme:** Correct representation of outer shell electrons and double bond. [2 marks]
6. **(e)** Suggest chemical test to distinguish between propane and ethene.
   * **Mark Scheme:** Bromine water; Propane: no change; Ethene: turns from orange to colorless. [2 marks]

**Question 9:**

1. **(a)** State circuit arrangement for lamps Q and R.
   * **Mark Scheme:** Parallel. [1 mark]
2. **(b) (i)** Calculate total resistance of circuit.
   * **Mark Scheme:** V = IR, R = V/I; 6.4 ÷ 1.28 = 5.0 Ω. [3 marks]
3. **(b) (ii)** Show current reading on ammeter 2 is 0.43 A.
   * **Mark Scheme:** Current in parallel = total current ÷ number of branches; 1.28 ÷ 3 = 0.43 A. [3 marks]
4. **(c)** Complete circuit diagram for changed circuit.
   * **Mark Scheme:** Correct placement of variable resistor and voltmeter across lamp R. [3 marks]

This completes the combination of questions and their respective mark schemes from the specified IGCSE Combined Science exam paper.