I have gathered the mark scheme information for each question from the Cambridge IGCSE™ Environmental Management Paper 1 (Theory), October/November 2021 (0680/12). Here is the combination of each question with its corresponding answer key and marks allocation:

**Section A:**

1. **Photosynthesis in Green Plants:**
   * (a) Complete a diagram of the photosynthesis process.
     + Answer: Clockwise from top: carbon dioxide, sunlight, oxygen, water. (2 marks)
   * (b) State the name of the green pigment in the leaves of green plants.
     + Answer: Chlorophyll. (1 mark)
   * (c) State the name of the process in plants that uses glucose.
     + Answer: Respiration. (1 mark)
   * (d) Explain why crop yield increases when plants are grown in greenhouses.
     + Answer: One mark for named factor and one mark for linked explanation (e.g., controlled environment, higher temperatures, adding carbon dioxide, managed water supply, control of pests, supply of nutrients). (2 marks)
2. **Farmland Photograph:**
   * (a) Circle the type of agriculture shown in the photograph.
     + Answer: Commercial arable. (1 mark)
   * (b) State two other methods of increasing crop yield besides improving irrigation methods.
     + Answer: Any two from crop rotation, fertilisers, insect control, weed control, fungi control, GMOs, mechanisation. (2 marks)
   * (c) State two ways of damaging soil by the mismanagement of irrigation.
     + Answer: Any two from waterlogging, drying out/compaction, soil erosion, salinisation, leaching. (2 marks)
3. **Cholera Prevention Health Campaign:**
   * (a) Explain how the prevention tips can reduce the spread of cholera.
     + Answer: Any three from safe water, wash hands with soap, vaccination, keep cooking areas clean. (3 marks)
   * (b) Suggest why there are more outbreaks of cholera in less economically developed countries (LEDCs) than in more economically developed countries (MEDCs).
     + Answer: Any two from less effective sanitation, fewer sources of clean water, less access to medical care/vaccinations, different economic priorities, less awareness, larger number of informal settlements. (2 marks)
4. **High Population Density in a City:**
   * (a) Suggest two reasons for high population density in a city.
     + Answer: Any two from large population and limited land, economic reasons, employment, safety, better access to medical facilities/education, better infrastructure. (2 marks)
   * (b) State two strategies for managing the population size of a country.
     + Answer: Any two from availability of contraception, access to health care, improved education on family planning, education of women/careers, examples of pronatalist or antinatalist policies (e.g., taxation/legislation). (2 marks)

**Section B:**

1. **Limestone Quarry Photograph:**
   * (a)(i) State the name of the type of mining shown in the photograph.
     + Answer: Surface/opencast/open-pit/open-cut. (1 mark)
   * (a)(ii) Explain the impacts of this mine on the local environment.
     + Answer: Any three from air pollution, noise pollution, habitat loss, loss of biodiversity, dust pollution, water pollution. (3 marks)
   * (a)(iii) Describe how limestone rock is formed.
     + Answer: Limestone is a sedimentary rock formed by sedimentation, accumulation of shell material, compaction, over a long time period. (2 marks)
   * (a)(iv) Suggest factors that affect the decision of a mining company to open a new mine.
     + Answer: Any three from availability/ease of extraction, accessibility, environmental impact assessment, supply and demand, supply of labour. (3 marks)
   * (b)(i) Identify the year with the greatest difference between cement production and consumption in India between 2013 and 2018.
     + Answer: 2016. (1 mark)
   * (b)(ii) Describe the trend in consumption of cement in India between 2013 and 2018.
     + Answer: Consumption is increasing, relevant quoted data e.g., from 244 to 296 million tonnes/21% increase. (2 marks)
   * (b)(iii) Calculate the predicted cement production in million tonnes for 2019.
     + Answer: 4.5% of 298 = 13.41, (298 + 13.41 =) 311.41/311/311.4. (2 marks)
2. **Sea Water and Mineral Ions:**
   * (a)(i) Complete a bar chart to show 3.5g of sulfate ions per kilogram of sea water.
     + Answer: Correct plotting of 3.5. (1 mark)
   * (a)(ii) Calculate the total mass of chloride and sodium ions in one kilogram of sea water.
     + Answer: (19 + 11 =) 30 g. (1 mark)
   * (b)(i) Describe the distribution of major marine fish populations shown on a map.
     + Answer: Any three from along the equator, mainly coastal, west coast of Africa, west coast of South America, east coast of Asia, east coast of North America, west coast of North America. (3 marks)
   * (b)(ii) Describe strategies for managing the harvesting of marine fish populations.
     + Answer: One mark for strategy and one mark for associated description, any two strategies from net types/mesh size, quotas, closed seasons, protected areas/reserves, conservation laws, international agreements. (4 marks)
3. **Water Scarcity in Australia:**
   * (a)(i) Suggest reasons for water scarcity in Australia.
     + Answer: Any two from lack of rainfall/high rate of evaporation, lack of rivers/lakes/water sources, overpopulation, water pollution, inaccessible/frozen/permeable rock, agriculture, climate change, poor management/water wastage. (2 marks)
   * (a)(ii) Suggest reasons for areas with no data available on the map.
     + Answer: Any two from no research yet been done, very low population, inaccessible, not a priority. (2 marks)
   * (b) State one impact of drought.
     + Answer: Any one from death of organisms, decline in crop yields, starvation, soil erosion, desertification, decrease in air quality, increased risk of wildfires. (1 mark)
   * (c) Suggest the benefits and limitations of strategies for managing the impacts of water scarcity (desalination, reservoirs, emergency water supplies).
     + Answer:
       1. Desalination: Benefits and limitations. (2 marks)
       2. Reservoirs: Benefits and limitations. (2 marks)
       3. Emergency water supplies: Benefits and limitations. (2 marks)
4. **Vehicle Emissions:**
   * (a)(i) Calculate the difference in carbon monoxide emissions between hybrid and petrol engines.
     + Answer: 0.2 – 0.3 = -0.1 g/km. (1 mark)
   * (a)(ii) Determine which engine type causes the most harm to the environment.
     + Answer: Diesel, due to the highest emissions of particulates and nitrogen oxides. (1 mark)
   * (a)(iii) Plot a bar chart of carbon dioxide emissions for each engine type.
     + Answer: Correct plot for each type. (3 marks)
   * (b) Suggest ways that governments can encourage the use of electric vehicles.
     + Answer: Any two from tax incentives, subsidies, free parking spaces, charging points, reduced tolls, legislation. (2 marks)
   * (c) Explain why reducing carbon dioxide emissions is of global importance.
     + Answer: Any two from causes global warming, climate change, ocean acidification, loss of biodiversity, health impacts, economic impacts. (2 marks)
5. **Nuclear Power:**
   * (a) Explain how the source of heat energy in a nuclear power station is different from that in a fossil fuel power station.
     + Answer: Nuclear power: heat from nuclear fission. Fossil fuel: heat from burning coal/oil/gas. (2 marks)
   * (b) Present data on uranium production in a suitable table.
     + Answer: Correct table with countries and percentages. (2 marks)
   * (c) Suggest why people are concerned about over two-thirds of the world’s uranium production coming from only three countries.
     + Answer: Any two from supply security, political instability, market control, price manipulation, environmental impacts, ethics. (2 marks)
   * (d) Discuss the statement regarding the future of power stations and nuclear power in relation to climate change and world demand.
     + Answer: A balanced discussion covering both positive and negative aspects, with any two points for and against. (4 marks)