I will now combine the questions from the Cambridge IGCSE™ Environmental Management exam paper (0680/13), Paper 1 Theory from October/November 2021, with their respective mark schemes.

**Question 1:**

**1. (a)** Describe what is happening at this constructive plate boundary.

* **Mark Scheme:** Any three from: convection currents move plates; two plates moving away/divergent; molten magma rises to fill the gap; magma becomes lava; underwater mountains/volcanoes/new land/sea floor spreading; shield volcanoes can form along the edge of the boundary. [3 marks]

**1. (b)** Describe the impacts of an earthquake on people living near a plate boundary.

* **Mark Scheme:** Any three from: damage to buildings and infrastructure; fire; tsunamis; landslides; loss of land/habitats; water-related disease; loss of life; trauma; financial losses; homelessness/relocation/evacuation. [3 marks]

**Question 2:**

**2. (a) (i)** State the name of the type of national population policy promoted by the campaign.

* **Mark Scheme:** Pronatalist. [1 mark]

**2. (a) (ii)** Suggest two other strategies to increase the national birth rate.

* **Mark Scheme:** Any two from: tax advantages; free schooling; subsidized housing; social reward e.g. medal; free/subsidized healthcare for families. [2 marks]

**2. (b)** Suggest reasons why death rates are lower in some countries than in others.

* **Mark Scheme:** Any two from: availability of medicine/vaccines; availability of healthcare/doctors/hospitals; availability of clean/safe water; availability of food; lower infant mortality. [2 marks]

**Question 3:**

**3. (a)** State one chemical responsible for ozone depletion.

* **Mark Scheme:** Chlorofluorocarbons/CFCs. [1 mark]

**3. (b)** State one impact of ozone depletion on people.

* **Mark Scheme:** Any one from: skin cancer; cataracts. [1 mark]

**3. (c)** Describe a strategy to reduce ozone depletion.

* **Mark Scheme:** Any one from plus one description: international agreement and policies, so unified/coordinated approach; CFC replacement/banning, so less emissions; taxation, encourages the change to better solutions. [2 marks]

**Question 4:**

**4. (a)** State two strategies used to manage the number of fish caught at sea.

* **Mark Scheme:** Any two from: net types e.g. (larger) mesh size/mesh shape; introduce/reduce quotas; closed seasons; protected areas/reserves; conservation laws; international agreements. [2 marks]

**4. (b) (i)** State two other benefits of farming marine fish species.

* **Mark Scheme:** Any two from: better able to meet demand; consistent supply/controlled; easier to control predators/disease; more profitable; provides cheap protein; employment; easier/more efficient/safer to catch; no bycatch. [2 marks]

**4. (b) (ii)** Suggest one problem associated with farming marine fish species.

* **Mark Scheme:** Any one from: water pollution/effluent; increase risk of disease (due to stock density); (increased) use of antibiotics required/risk of antibiotic resistance; possibility of escape. [1 mark]

**Question 5:**

**5. (a) (i)** State which soil has the larger content of mineral particles.

* **Mark Scheme:** Sandy soil. [1 mark]

**5. (a) (ii)** Suggest which soil has better drainage and give reasons.

* **Mark Scheme:** Sandy soil; larger particle size/lower clay content allows water to pass through more easily/less water holding capacity. [2 marks]

**5. (a) (iii)** Suggest the benefits of having organic matter in soil.

* **Mark Scheme:** Any two from: increases nutrient content; provides habitat for organisms; increases water retention; helps structure of soil/prevents erosion; source of carbon. [2 marks]

**5. (b) (i)** State the name of the mineral ion represented by K.

* **Mark Scheme:** Potassium. [1 mark]

**5. (b) (ii)** Calculate the total mass of nitrate ions in the bag of fertiliser.

* **Mark Scheme:** 20% of 50 kg; 10 kg. [1 mark]

**5. (b) (iii)** Suggest reasons why farmers use fertilisers with different ratios of N : P : K.

* **Mark Scheme:** Any two from: different plants have different requirements; different stages of growth require different nutrients; soil types require different nutrients; environmental conditions may affect the need for certain nutrients. [2 marks]

**Question 6:**

**6. (a)** Complete the sentences about how malaria is spread.

* **Mark Scheme:** Vector; female; parasite; human. [4 marks]

**6. (b)** Describe two other strategies to control malaria.

* **Mark Scheme:** Any two from: use of bed nets/mosquito nets; insect repellent; clear stagnant water; introduce fish to eat larvae; indoor residual spraying; anti-malarial drugs; public health education. [4 marks]

**6. (c)** Suggest whether draining swamps is an effective strategy to control malaria.

* **Mark Scheme:** Any three from: yes, fewer breeding sites for mosquitoes; no, can't drain all water sources; no, impacts other livelihoods like rice farming; no, expensive/difficult to implement; yes/no, other methods may be more/less effective. [4 marks]

**Question 7:**

**7. (a) (i)** Complete the bar chart to show the percentage of species threatened in the sharks and rays group.

* **Mark Scheme:** Correct placement of 31%. [1 mark]

**7. (a) (ii)** Calculate the number of species threatened with extinction.

* **Mark Scheme:** 27% of 98,149; 26,500 (rounded to nearest whole number). [1 mark]

**7. (a) (iii)** Suggest why the number of species threatened with extinction may increase in the future.

* **Mark Scheme:** Any three from: increased habitat destruction; climate change; overfishing/overhunting; pollution; invasive species; human population growth; reduced genetic diversity. [3 marks]

**7. (a) (iv)** Describe how zoos can help the conservation of species.

* **Mark Scheme:** Any two from: breeding programs; education/raising awareness; research; reintroduction programs; habitat preservation; genetic diversity. [2 marks]

**7. (b) (i)** Describe the distribution of forest areas around the world.

* **Mark Scheme:** Any three from: mainly in tropics/equatorial regions; in both northern and southern hemispheres; large areas in South America, Africa, and Southeast Asia; limited areas in North America and Europe; none in deserts/arctic regions. [3 marks]

**7. (b) (ii)** Describe how trees prevent soil erosion.

* **Mark Scheme:** Any two from: roots hold soil together; canopy/leaves reduce impact of rain; reduces surface runoff; increases water infiltration. [2 marks]

**7. (b) (iii)** Describe causes of deforestation.

* **Mark Scheme:** Any two from: logging; agriculture; urbanization; mining; infrastructure development; fires. [2 marks]

**Question 8:**

**8. (a)** Plot a bar chart of energy consumption in 2017 for the six resources shown in the table.

* **Mark Scheme:** Correctly plotted bars for each resource as per data. [4 marks]

**8. (b) (i)** Complete the table to show the total energy consumption in 2007.

* **Mark Scheme:** Sum of individual resources; 389.5 MTOE. [1 mark]

**8. (b) (ii)** Suggest two reasons for the change in total energy consumption between 2007 and 2017.

* **Mark Scheme:** Any two from: population growth; industrial growth; increased standards of living; conservation efforts; shift to renewable energy sources. [2 marks]

**8. (b) (iii)** Suggest reasons for the small change in nuclear energy consumption.

* **Mark Scheme:** Any two from: high cost of nuclear plants; environmental/safety concerns; long construction times; stable demand for nuclear energy. [2 marks]

**8. (c)** Suggest why energy consumption in an MEDC is usually greater than in an LEDC.

* **Mark Scheme:** Any two from: higher standard of living; more industrialization; more technology/infrastructure; colder climates requiring heating. [2 marks]

**Question 9:**

**9. (a) (i)** Calculate the annual amount of extraction in 1900.

* **Mark Scheme:** 62 billion tonnes ÷ 8; 7.75 billion tonnes. [1 mark]

**9. (a) (ii)** Suggest reasons why modern mining needs to be sustainable.

* **Mark Scheme:** Any two from: to ensure resources for future generations; to reduce environmental damage; to avoid depletion of resources; to maintain biodiversity. [2 marks]

**9. (a) (iii)** Describe strategies for the sustainable use of minerals.

* **Mark Scheme:** Any three from: recycling; using alternatives; using less material in products; efficient extraction methods; restoration of mining sites; regulation and monitoring of mining activities. [3 marks]

**9. (a) (iv)** State two strategies for restoring landscapes damaged by mineral extraction.

* **Mark Scheme:** Any two from: reforestation; creating wetlands; reshaping land; removing pollution; returning topsoil; creating wildlife habitats. [2 marks]

**9. (b)** Discuss whether everyone should be pleased with a new quarry being opened.

* **Mark Scheme:** Balanced argument with reasons, covering both positive and negative aspects of opening a new quarry, such as environmental impact, economic benefits, employment opportunities, and impact on local community. [6 marks]

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