S1 Science Practice Paper (Set 4): biodiversity, food webs, sound and light, moon phases and seasons, the water cycle and energy

S1 Science | Time: 60 minutes | Total: 100 marks | 22 questions

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Section A: Biodiversity and Classification (16 marks)

Read the passage above and answer the questions.

1. (a) How many kinds of living things were recorded in the survey, and how many of them were insects? (4 marks)

2. (b) How does the number of insect kinds in the leaf litter differ from that on the sunny grassland? (4 marks)

3. (c) According to the teacher, what three levels does biodiversity include? (4 marks)

4. (d) From the data, which two groups have the fewest kinds, and how many does each have? (4 marks)

Section B: Food Web and Energy Flow (16 marks)

Read the passage above and answer the questions.

5. (a) From the passage, write two complete food chains. (4 marks)

6. (b) Which trophic level(s) does the egret occupy in this food web? (4 marks)

7. (c) If the producers make 12 000 kJ a year and one tenth passes on at each step, how much energy reaches the fiddler crabs? (4 marks)

8. (d) Why is there usually less energy at higher trophic levels? (4 marks)

Section C: Sound and Light (16 marks)

Answer the questions below and show your working.

9. (a) A person shouts in a valley and hears the echo 2.5 s later. If the speed of sound is 340 m/s, how far is the rock face? (4 marks)

10. (b) Sunlight takes about 500 s to reach the Earth. If light travels at 3 x 10^8 m/s, how far is the Sun from the Earth? (4 marks)

11. (c) State two features of the image formed by a plane mirror. (4 marks)

12. (d) Why can two astronauts in space not talk to each other directly? (4 marks)

Section D: Moon Phases and Seasons (16 marks)

Read the passage above and answer the questions.

13. (a) About how many days pass from new moon to full moon? (5 marks)

14. (b) Why does the Earth have seasons? (5 marks)

15. (c) Using the passage, calculate the number of hours of daylight in Hong Kong on 21 June. (6 marks)

Section E: Water Cycle and Water Quality (16 marks)

Read the passage above and answer the questions.

16. (a) Name three main processes in the water cycle and explain each in one sentence. (5 marks)

17. (b) Calculate the percentage by mass of suspended solids in the river sample. (5 marks)

18. (c) What does filtration remove, what does distillation remove, and which method gives purer water? (6 marks)

Section F: Energy and Data Analysis (20 marks)

Read the passage above and answer the questions.

19. (a) Calculate the electricity used by the hall in one month in kWh. (5 marks)

20. (b) Using your answer above, what is the electricity cost for one month? (5 marks)

21. (c) Name two renewable energy sources and one limitation of each. (5 marks)

22. (d) From the data, by how many percentage points did the coal share fall between 2015 and 2023, and what is the relative decrease? (5 marks)

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