S2 ICT Practice Paper: Algorithms and Flowcharts, Programming and Tracing, Web Page Structure and Hyperlinks, Database Records and Fields, Video File Size Calculations, Digital Literacy and Network Use (100 marks)

S2 | Information and Communication Technology | Time: 75 minutes | Total: 100 marks | 24 questions

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Section A Algorithms and Flowcharts

Part A: 4 marks each, 16 marks in total.

1. What is an algorithm? State three essential features of an algorithm. [4]

2. In a flowchart, what do a parallelogram, a diamond and a rectangle represent? [4]

3. Write the decision steps of a flowchart for "display pass if the mark is 60 or above, otherwise display fail". [4]

4. Why can one problem have more than one correct algorithm? Give one example. [4]

Section B Programming and Tracing

Part B: 4 marks each, 16 marks in total.

5. What is the difference between a variable and a constant? Give one everyday example of each. [4]

6. A program sets total to 0, then adds every integer from 1 to 10 into total. Find the value of total after the loop. [4]

7. A program sets total to 0, then for each integer from 1 to 5 adds its square into total. Find the value of total after the loop. [4]

8. In a program, what are the quotient and remainder when 47 is divided by 7? Explain the difference between integer division and the remainder operation. [4]

Section C Web Page Structure and Hyperlinks

Part C: 4 marks each, 16 marks in total.

9. In the basic structure of a web page, what does the head part hold and what does the body part hold? [4]

10. State two elements an anchor used as a hyperlink to the Hong Kong Observatory website should contain. [4]

11. Heading tags run from level one to level six; how many levels are there, and why does a page usually use only one level-one heading? [4]

12. Why should images carry alternative text (alt text)? Give two benefits. [4]

Section D Database Records and Fields

Part D: 4 marks each, 16 marks in total.

13. In a database, what do a record, a field and a primary key mean? [4]

14. A class data table has 5 columns and 20 records. How many field values are stored in the whole table? [4]

15. A filter "class = 2A" returns 7 of 20 records. Find the number of records not returned. [4]

16. Why should the same student name not be stored repeatedly in several tables? Give two reasons. [4]

Section E Video File Size Calculations

Part E: 4 marks each, 16 marks in total.

17. A video has resolution 1280 x 720, frame rate 30 fps and colour depth 24 bits. Find the data per second in bits. [4]

18. Using the same video, if it lasts 60 seconds, how many bytes does the uncompressed file hold? [4]

19. Using the same file, what is its size in GB to two decimal places, taking one billion bytes as 1 GB? [4]

20. If the same video is compressed at a ratio of 12 to 1, what is its size in MB to one decimal place, and what is the cost of compression? [4]

Section F Digital Literacy and Network Use

Part F: 5 marks each, 20 marks in total.

21. What is open source software, and how does it differ from freeware? [5]

22. Before reposting another person photo online, what should you check? State two practices. [5]

23. To protect an online account, what should be avoided when setting a password? State three points. [5]

24. What is the 3-2-1 backup rule, and why should a backup be kept at another location? [5]