S2 ICT Practice Paper (Set 2): binary and hexadecimal, spreadsheet functions, computer hardware, networks and information security

S2 Information and Communication Technology | Time: 60 minutes | Total: 100 marks | 22 questions

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Section A: Binary and Encoding (16 marks)

Answer all questions and show your working.

1. (a) Convert the binary number 10110110 to a decimal number and list the place value of each bit.

2. (b) Convert the hexadecimal number 2F to decimal, and write the decimal number 47 as an 8-bit binary number.

3. (c) In ASCII the decimal value of the character A is 65. State the decimal values of C and c, and say how much the upper-case and lower-case letters differ.

4. (d) In UTF-8 a Chinese character usually takes 3 bytes. A short passage has 40 Chinese characters. How many bytes does it take, and how many KB is that, taking 1024 bytes as 1 KB? Give the answer to 2 decimal places.

Section B: Spreadsheet Formulas and Functions (16 marks)

The questions below refer to a spreadsheet. The scores of five students are stored in B2, B3, B4, B5 and B6.

5. (a) The five scores are 78, 85, 62, 90 and 70. State the results of =SUM(B2:B6) and =AVERAGE(B2:B6).

6. (b) Write a suitable function formula to count how many students scored 75 or above, and state its result.

7. (c) Explain the difference between a relative reference and an absolute reference, and state what happens to B1 and to B1 when a formula is copied from C2 to C3.

8. (d) Write an IF formula that shows Pass when the score in B2 is 60 or above, and Fail otherwise.

Section C: Computer Hardware and Storage (16 marks)

Answer all questions.

9. (a) Compare RAM and ROM in terms of volatility, whether data can be written, and main use.

10. (b) A computer has 8 GB of memory. Taking 1 GB as 1024 MB and 1 MB as 1024 KB, how many MB and how many KB is 8 GB?

11. (c) A 24-bit colour image is 1024 x 768 pixels and each pixel takes 3 bytes. How many bytes and how many KB does it take before compression?

Section D: Networks and the Internet (16 marks)

Answer all questions.

12. (a) Explain the difference between a local area network (LAN) and a wide area network (WAN), and give one example of each.

13. (b) A web address is https://www.school.edu.hk/form/index.html. State its protocol, domain name, path and file name.

14. (c) Explain the difference between HTTP and HTTPS, and name the technology HTTPS uses to protect data in transit.

15. (d) A 24 MB file is downloaded over an 8 Mbps connection. Taking 1 MB as 8 Mb, what is the minimum time needed in seconds?

Section E: Information Security and Copyright (16 marks)

Answer all questions.

16. (a) List three common features of a phishing email and suggest two ways to protect yourself.

17. (b) Explain the 3-2-1 backup rule and how backups help against ransomware.

18. (c) A student uses an image found online for a school magazine cover. State two copyright points to note.

Section F: Integrated Task (20 marks)

The school IT club is running a coding day and needs an online registration form plus a spreadsheet summary. Answer the questions below.

19. (a) List four fields for the form and state a suitable validation rule for each.

20. (b) Suppose classes are in C2:C21 and fees in D2:D21. Write two formulas that count the number of applicants and total the fees.

21. (c) Describe three steps to publish the form on the Internet and collect the data, and state one essential security consideration.

22. (d) A classmate claims that data is safe once a password is set. Give one counter-argument and explain why.

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