

## INFORMATION AND COMMUNICATION TECHNOLOGY

### PAPER 1 (SECTION A)

8.30 am – 10.30 am

(2 hours for both Sections A and B)

#### INSTRUCTIONS

1. Read carefully the instructions on the Answer Sheet. After the announcement of the start of the examination, you should first stick a barcode label and insert the information required in the spaces provided. No extra time will be given for sticking on the barcode label after the 'Time is up' announcement.
2. When told to open this book, you should check that all the questions are there. Look for the words '**END OF PAPER**' after the last question.
3. All questions carry equal marks.
4. **ANSWER ALL QUESTIONS.** You are advised to use an HB pencil to mark all the answers on the Answer Sheet, so that wrong marks can be completely erased with a clean rubber. You must mark the answers clearly; otherwise you will lose marks if the answers cannot be captured.
5. You should mark only **ONE** answer for each question. If you mark more than one answer, you will receive **NO MARKS** for that question.
6. No marks will be deducted for wrong answers.

Not to be taken away before the  
end of the examination session

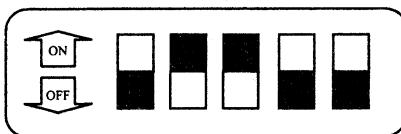
**There are 40 questions in this paper. Choose the most suitable answers.**

1. In a DBMS, a database designer designs a form for a clerk to use to enter data. Why does he choose to design a form?
  - A. Multimedia files can be imported.
  - B. It simplifies the user interface.
  - C. More data can be entered at the same time.
  - D. The data entry uses less system computation time.
  
2. A public library is going to digitise a collection of valuable antique books. What is the major benefit of digitisation?
  - A. The library can destroy the books to save storage space.
  - B. More people can easily access the books.
  - C. It promotes good ergonomic practices.
  - D. It improves the protection of intellectual property.
  
3. In data processing, a clerk in a school types in the examination marks of students from a mark sheet into a computer system. Then he prints out the marks. What should he do next?
  - A. Destroy the mark sheet.
  - B. Sort the students by mark.
  - C. Find the student with the highest mark.
  - D. Check the printout against the mark sheet.
  
4. Mary uses a utility program to group the following 100 document files and combine them into a file named ALL.ZIP, and sends an email with this file. Why does she do this?

D001.DOC  
D002.DOC  
D003.DOC  
...  
D100.DOC      }      →      ALL.ZIP

  - (1) It is easier to send and receive the documents.
  - (2) The file size of the email is smaller.
  - (3) The files become cross-platform.
  - A. (1) and (2) only
  - B. (1) and (3) only
  - C. (2) and (3) only
  - D. (1), (2) and (3)
  
5. Arthur inserts a video clip in a presentation file and sends an email with the file to Betty. When Betty opens the file, there is only text and the video is missing. Why?
  - A. The video is infected with a computer virus and has been removed by an antivirus program.
  - B. The presentation file is password-protected.
  - C. Linking instead of embedding is used when inserting the video in the presentation file.
  - D. The video is in MP4 format instead of AVI format.

6. A combination lock consists of 5 separate switches. Each switch can be set to either the 'ON' or 'OFF' state. The lock can only be unlocked when all 5 switches are set to the correct switch states.



How many different combinations of switch states does this lock have?

- A. 5
- B. 10
- C. 25
- D. 32

7. The following two worksheets, WA1 and WA2, in a spreadsheet file are used to store the test results of Secondary 1 students in a school.

WA1

	A	B	C
1	Name	CHINESE	ENGLISH
2	Ada	96	52
3	Amy	87	69
⋮	⋮	⋮	⋮
240	Mary	50	60

J	K
MATHEMATICS	Average
45	64.3
60	72.0
⋮	⋮
70	60.0

WA2

	A	B
1		Average
2	Amy	72.0
3	Zoey	80.0

In order to find the average scores of Amy and Zoey on WA2, a VLOOKUP formula is entered into B2 and then copied into B3. What is the cell range used in the formula?

- A. WA2!\$A2:\$B3
- B. WA1!\$A2:\$K240
- C. WA2!A\$2:B\$3
- D. WA1!A\$2:K\$240

8. Which operations are performed by the following SQL command?

```
SELECT * FROM EXAM WHERE CLASS='1A' ORDER BY SCORE DESC
```

- (1) Sorting
- (2) Counting
- (3) Filtering
- (4) Updating

- A. (1) and (3) only
- B. (1) and (4) only
- C. (2) and (3) only
- D. (2) and (4) only

9. In a data transmission system, a parity check is applied. One of the following received codes is invalid. Which one is it?
- A. 0101 0101
  - B. 1000 0100
  - C. 1111 0001
  - D. 0000 0011

10. The following table in a database stores the information on employees.

NAME	SEX	DATE OF BIRTH	PHONE
KELLY	F	18/10/1988	91234567
IVAN	M	20/11/1989	99887766
JADE	F	22/10/1990	98761234

Why are the employees' dates of birth instead of their ages stored?

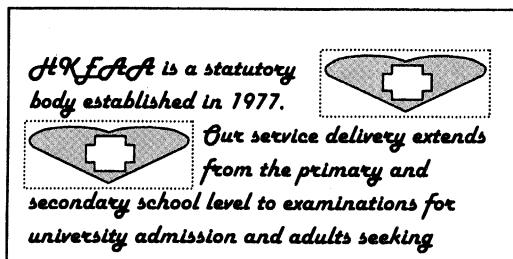
- A. The employees' privacy can be better protected.
- B. Less memory is required for the storage.
- C. No data update is required.
- D. The related SQL queries are simpler.

11. With 8-bit two's complement representation, which of the following operations can produce an overflow error?
- (1) Addition of two positive integers
  - (2) Addition of two negative integers
  - (3) Addition of a positive integer and a negative integer
- A. (1) and (2) only
  - B. (1) and (3) only
  - C. (2) and (3) only
  - D. (1), (2) and (3)

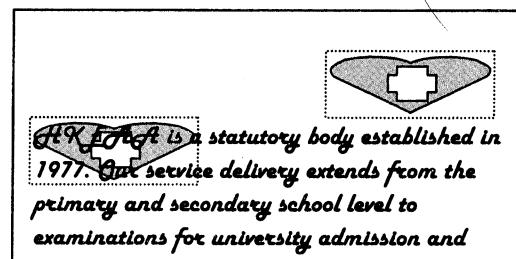
12. When editing page numbers and hyperlinks in a document, which of the following statements is correct?
- A. A browser must be open when clicking the hyperlinks.
  - B. The page numbers are printed as footnotes.
  - C. The hyperlinks facilitate the reading of the document.
  - D. The page numbers must start from 1.

13. Which of the following features in presentation software can control the transition of slides?
- (1) Action button
  - (2) Hyperlink
  - (3) Slide layout
- A. (1) and (2) only
  - B. (1) and (3) only
  - C. (2) only
  - D. (3) only

14. Eliza edits a document with two images. The final outcome is not as expected, as shown below.



Expected outcome



Final outcome

What feature in the word processor should Eliza use to correct this?

- A. Object grouping
  - B. Paragraph formatting
  - C. Paragraph alignment
  - D. Text wrapping
15. Ms Wong works in a publishing company and has to create the following three documents.
- (1) payment receipt
  - (2) electronic book
  - (3) template of a sales report

For which document(s) should she adopt the PDF format instead of the DOC format?

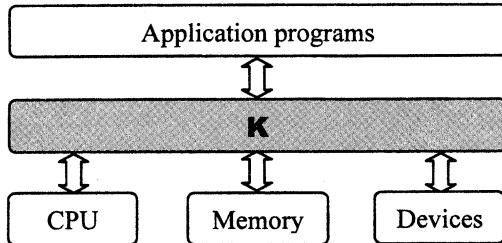
- A. (1) only
  - B. (1) and (2) only
  - C. (2) and (3) only
  - D. (1), (2) and (3)
16. Cathy uses 'what-if' analysis in a spreadsheet to solve a problem. Which of the following statements about the analysis is correct?
- A. The 'what-if' analysis involves different data sets.
  - B. The 'what-if' analysis involves different descriptions of the problem.
  - C. The problem involves a database file.
  - D. The problem involves a document file.
17. Which of the following operations will enlarge the icons and text displayed on a visual display unit?
- A. Reduce the number of colours displayed.
  - B. Increase the number of colours displayed.
  - C. Reduce the screen resolution.
  - D. Increase the screen resolution.
18. Peter upgrades his desktop computer with a touch screen. Why?
- A. This is a good ergonomic practice.
  - B. Many operating systems support touch screens.
  - C. A touch screen can be installed easily.
  - D. A touch screen allows for easier hand eye coordination than a keyboard.

19. A supermarket uses thermal printers instead of dot-matrix printers to print receipts. What are the major reasons for using thermal printers?

- (1) Less printing noise
- (2) Shorter printing time
- (3) More durable receipts

- A. (1) and (2) only
- B. (1) and (3) only
- C. (2) and (3) only
- D. (1), (2) and (3)

20. The following diagram shows a basic computer system.



What is **K** responsible for?

- (1) Controls devices through device drivers.
- (2) Manages memory.
- (3) Increases the number of application programs.
- (4) Schedules the running of processes.

- A. (1), (2) and (3) only
- B. (1), (2) and (4) only
- C. (1), (3) and (4) only
- D. (2), (3) and (4) only

21. The 64-bit version of an operating system is better than the 32-bit version because

- A. the processing power of the CPU is higher.
- B. the operating system can address more memory locations.
- C. fewer program errors will occur.
- D. the data transfer rate of RAM is higher.

22. In an instruction fetch cycle, which of the following registers are involved?

- (1) Accumulator
- (2) Memory Data Register (MDR)
- (3) Memory Address Register (MAR)

- A. (1) and (2) only
- B. (1) and (3) only
- C. (2) and (3) only
- D. (1), (2) and (3)

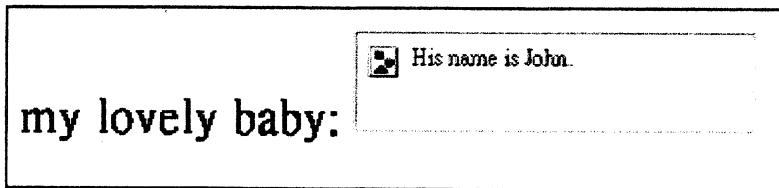
23. A charity organisation wants to donate laptop computers to the children in developing countries for elearning. With a limited budget, only one item in the original specifications can be upgraded, as shown below. Which of these is the most appropriate?

<u>Original specifications</u>	<u>Upgrade items</u>
A. No network card	802.11n network interface card
B. Built-in graphics card	graphics card with 2G RAM
C. Dual-core CPU	Quad-core CPU
D. DVD disc drive	Blu-ray disc drive

24. A search engine can automatically return the search results related to the country in which the computer is located. Which of the following discloses this location information?

- A. The network interface card
- B. The bandwidth of the connection
- C. The operating system
- D. The Internet Service Provider

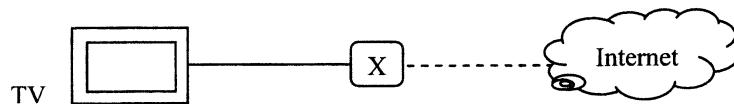
25. Fiona creates a web page to show a photo of her child. In a web browser, the photo cannot be displayed, as shown below.



What is the possible mistake she has made?

- A. Adopted improper text format.
  - B. Used an incorrect filename for the photo.
  - C. Missed some HTML tags.
  - D. Inserted a frame that is too large.
26. A company develops an internal email system. It adopts HTML format instead of plain text for the email because
- A. the email size is smaller.
  - B. browsers can open the email.
  - C. text formatting can be applied.
  - D. the POP protocol can be used.
27. In an email system, what is the use of IMAP and SMTP?
- A. IMAP and SMTP are application programs that regulate email transmission.
  - B. IMAP and SMTP are the part of the operating system that manages email resources.
  - C. IMAP and SMTP are utility programs that improve the efficiency of email transmission.
  - D. IMAP and SMTP are sets of rules that determine how email is transmitted.

28. In the following diagram, X is a device for transmitting high definition videos received from the Internet to the TV using streaming technology.



Which of the following specifications are necessary in X?

- (1) 2TB hard disk
  - (2) 8GB flash memory
  - (3) Audio output
  - (4) HDMI output
  - (5) VGA output
- A. (2) and (4) only  
B. (3) and (5) only  
C. (1), (2) and (3) only  
D. (1), (4) and (5) only
29. Which of the following is a function of a switch?
- (1) Connects computers to form a LAN.
  - (2) Controls the network traffic in a network.
  - (3) Joins two networks.
  - (4) Connects a LAN to the Internet.
- A. (1) and (2) only  
B. (3) and (4) only  
C. (1), (2) and (4) only  
D. (2), (3) and (4) only
30. Dry run the following algorithm.

```
X ← 1
Y ← 20
while X < Y
    output 'A'
    X ← X + 2
    Y ← Y - 2
```

How many character 'A's are displayed?

- A. 5
- B. 6
- C. 10
- D. 20

31. In the following algorithm, what input value of B will generate a run-time error?

```
input B
A ← 2
C ← 2
D ← square root of (B × B - 4 × A × C)
output D
```

- A. -4
- B. 2
- C. 4
- D. 5

32. The following two pseudo code segments are used for searching.

S1	S2
<pre>J ← 1 while J &lt;= 10000     if st = N[J]         Found ← J     J ← J + 1</pre>	<pre>Flag ← 0 J ← 1 while J &lt;= 10000 and Flag = 0     if st = N[J]         Found ← J         Flag ← 1     J ← J + 1</pre>

When comparing the execution times of the two segments, which of the following statements is correct?

- A. S1 is generally faster.
- B. S2 is generally faster.
- C. They are more or less the same.
- D. The comparison cannot be determined.

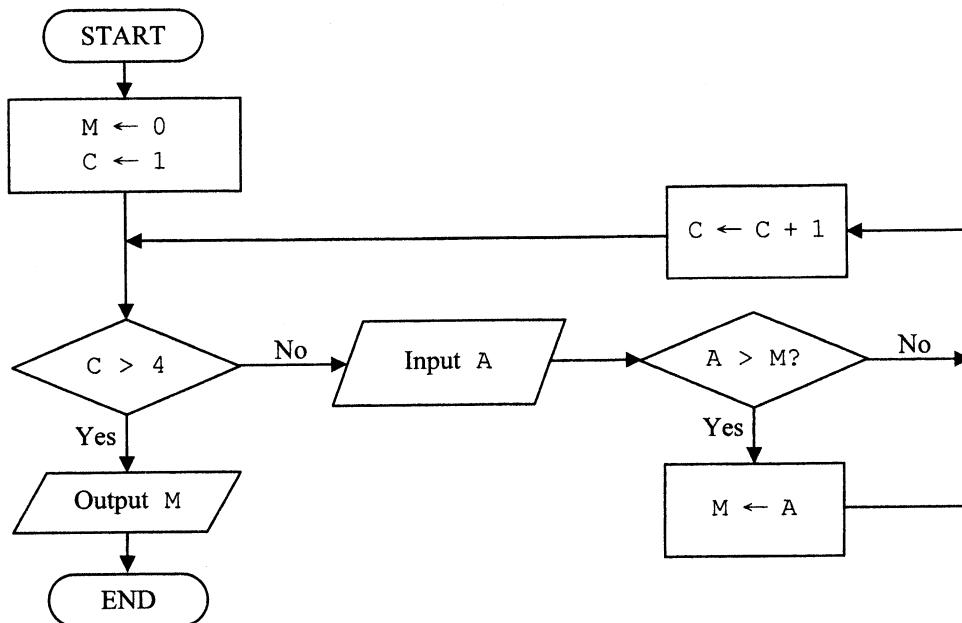
33. What is the major advantage of using an array in algorithm design?

- A. The modular approach can be used in the design.
- B. It is useful in iteration design.
- C. The size of an array is flexible.
- D. The memory used is less.

34. Which of the following statements about open source software is correct?

- A. Open source software is written by open source programming languages.
- B. Open source software is executed in open source operating systems.
- C. The source code can be copied, modified and redistributed freely.
- D. Private companies cannot use open source software to make a profit.

35. The following flowchart illustrates an algorithm that outputs the maximum value of four input numbers.



The algorithm cannot produce the correct result for one of the following sets of input numbers. Which set?

- A. 0, 0, 0, 0
- B. -8, 7, 6, -3
- C. -2, -5, -4, -6
- D. 0, -1, -5, -9

36. When Peter tries to change the password of his computer account, the following screen is shown.

Change password	
Current password: <input type="text"/>	
New password: <input type="text"/>	
Re-enter new password: <input type="text"/>	
<input type="button" value="Save"/>	<input type="button" value="Cancel"/>

What is/are the use(s) of 'Current password'?

- (1) It improves the password strength.
  - (2) It minimises typing errors.
  - (3) It prevents other people from changing the password.
- A. (1) and (2) only
  - B. (1) and (3) only
  - C. (2) only
  - D. (3) only

37. Which of the following can reduce the threats from using social networking web sites?

- (1) Block or ignore people that you do not know or trust.
- (2) Use default privacy settings to restrict access.
- (3) Only disclose the name and address in the account.

- A. (1) only
- B. (2) only
- C. (1) and (3) only
- D. (2) and (3) only

38. In a company, all URLs browsed through the office computers are recorded by a proxy server. Which of the following statements is correct?

- A. The URLs should be recorded during office hours only.
- B. The records should be checked by authorised staff only.
- C. The records are the digital property of the staff.
- D. The company has committed a computer crime.

39. For the sake of their health, users should take a rest after every hour of computer use. A software company wants to improve its word processing software to include this ergonomic feature. When a user uses the software for an hour, the software should

- (1) display an alert message on the screen.
- (2) send an alert email to the user.
- (3) shut down the computer automatically.

- A. (1) only
- B. (2) only
- C. (1) and (3) only
- D. (2) and (3) only

40. Peter uses peer-to-peer file sharing software to download a commercial application program. His friends advise him not to install it. Why?

- (1) His action will create a digital divide.
- (2) The application program may be spyware.
- (3) He may infringe copyright law.

- A. (1) only
- B. (2) only
- C. (1) and (3) only
- D. (2) and (3) only

**END OF PAPER**

Please stick the barcode label here.

Candidate Number

**INFORMATION AND COMMUNICATION TECHNOLOGY**  
**PAPER 1 (SECTION B)**  
**Question-Answer Book**

8.30 am – 10.30 am  
(2 hours for both Sections A and B)  
This paper must be answered in English

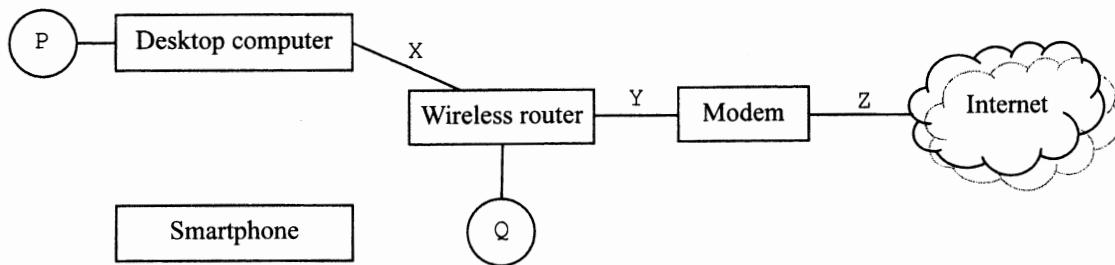
**INSTRUCTIONS**

- (1) After the announcement of the start of the examination, you should first write your Candidate Number in the space provided on Page 1 and stick barcode labels in the spaces provided on Pages 1, 3 and 5.
- (2) **ANSWER ALL QUESTIONS.** Write your answers in the spaces provided in this Question-Answer book. Do not write in the margins. Answers written in the margins will not be marked.
- (3) Supplementary answer sheets will be supplied on request. Write your Candidate Number, mark the question number box and stick a barcode label on each sheet, and fasten them with string **INSIDE** this book.
- (4) No extra time will be given to candidates for sticking on the barcode labels or filling in the question number boxes after the 'Time is up' announcement.
- (5) The last page of this question-answer book contains a list of SQL commands and spreadsheet functions which you may find useful.



**Answer all questions.**

1. John wants to set up a local area network with a desktop computer, a smartphone and a printer at home, as shown below:



- (a) (i) John connects the printer to the network at P instead of Q. What is the advantage and disadvantage of this?

Advantage: \_\_\_\_\_

\_\_\_\_\_

Disadvantage: \_\_\_\_\_

\_\_\_\_\_

- (ii) The printer is equipped with RAM and ROM. When John prints a document, what will the RAM and ROM store?

(1) RAM \_\_\_\_\_

(2) ROM \_\_\_\_\_

(4 marks)

- (b) (i) Suggest **two** possible ways to link up the desktop computer and the smartphone.

\_\_\_\_\_

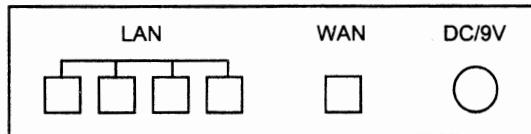
\_\_\_\_\_

- (ii) X and Z are two different cables. What is the major difference in functional characteristic between them?

\_\_\_\_\_

(3 marks)

- (c) The rear part of the router is shown in the diagram below. Mark 'X' and 'Y' on the diagram to indicate where the cables X and Y should be connected.



(2 marks)

Please stick the barcode label here.

- (d) Someone suggests that John build a Domain Name System (DNS) to improve his network services. John disagrees with this suggestion.

- (i) What network service does a DNS mainly provide?

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- (ii) Do you agree with John's view? Explain briefly.

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(2 marks)

Answers written in the margins will not be marked.

Answers written in the margins will not be marked.

Answers written in the margins will not be marked.

2. Janice is planning the annual Charity Run for her school. She uses graphics software to create a map with the route of the Charity Run and posts it on the school's web site.

- (a) Janice decides to store the map as MAP.JPG instead of MAP.BMP. Give one benefit of her decision.

(1 mark)

- (b) Janice sets up an email client program on her computer to help her in organising the Charity Run.

- (i) Suggest **two** protocols for receiving email that Janice may use.

(1) \_\_\_\_\_

(2) \_\_\_\_\_

Janice's friend, Alan, sends her an email with the following information.

To:	Janice
Cc:	Betty
Bcc:	Charles
Subject:	Route of Charity Run

- (ii) Janice finds that the email client program classifies Alan's email as spam. What does she need to do to prevent this happening again?

\_\_\_\_\_

- (iii) Upon reading Alan's email, Janice tries to reply to all the email accounts involved. Who will receive her email?

\_\_\_\_\_

(4 marks)

- (c) Janice keeps a lot of videos and pictures of the annual Charity Runs of the past few years on her notebook computer.

- (i) The notebook computer is equipped with a solid-state drive (SSD) instead of a general hard disk. Give **two** benefits to Janice of using a SSD.

\_\_\_\_\_

Please stick the barcode label here.

- (ii) Janice uploads the videos and pictures to the school's web site and the web site includes a statement '© All rights reserved'. If the statement were removed, would the school own the copyright of the web site? Explain briefly.

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(4 marks)

- (d) To promote the Charity Run, Janice writes an article in the school newsletter and inserts the following code for linking to the school's web site.



- (i) Give one advantage of using this code over a bar code.

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- (ii) What is the benefit of using this code in the school newsletter?

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- (iii) Describe another kind of use of this code.

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(3 marks)

Answers written in the margins will not be marked.

Answers written in the margins will not be marked.

Answers written in the margins will not be marked.

3. Amy, Billy and Charles work in different offices in a company. Read their conversation about using computers and answer the questions below.

**Amy:** Charles, your office does not have a good ergonomic environment.

**Billy:** Charles, you have installed a Bit Torrent (BT) program on your computer. You should delete it.

**Charles:** No, I will still keep the BT program and use it.

**Amy:** Charles, we installed the same anti-virus software at the same time but only your computer is infected.

- (a) Give **two** possible features of the setup of Charles' office that could easily lead to eye strain when using the computer.

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(2 marks)

- (b) Billy and Charles have different views on the use of the BT program.

- (i) Give a reason to support Billy's recommendation.

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- (ii) Give a reason to support Charles' decision.

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(2 marks)

- (c) Why is only Charles' computer infected? Give **two** possible reasons.

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(2 marks)

**Charles:** The operating system of my computer uses Unicode instead of Big-5 code and GB code.

**Billy:** Unicode only includes around 20,000 Chinese characters.

**Amy:** Not any more. As of September 2012, Unicode includes more than 110,000 characters.

- (d) (i) To represent a set of 20,000 characters using binary code, what is the minimum number of bits required? Show your calculation.

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- (ii) Referring to Amy's comment, do the 110,000 characters include traditional and simplified Chinese characters only? Explain briefly.

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(3 marks)

Amy, Billy and Charles go to a public library and want to use workstations.

**Amy:** There is an empty seat but the workstation has not been logged out.

**Charles:** The email account has not been logged out. There is a coupon attached to the email. Let me print it so we can use it.

**Billy:** The security of the workstations is very low. Secure Sockets Layer (SSL) should be used.

- (e) Describe two illegal offences that Charles would do if he accessed the email and printed the coupon.

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(2 marks)

- (f) Can SSL prevent Charles from accessing the email account mentioned above? Explain briefly.

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(2 marks)

4. Sarah is a librarian in a secondary school. She uses a table in a database, LOAN, to store the book circulation records.

LOAN

Field name	Type	Description
STUID	Character	Student's identity code
TRANID	Character	Transaction number
BOOKID	Character	Identity code of the book
LOANDATE	Date	Date of Loan
DUEDATE	Date	Due Date
RETDATE	Date	Date of Return
FINE	Integer	Fine for late return

(a) (i) Suggest a primary key for LOAN. \_\_\_\_\_

(ii) Suggest a validation check on each of the following fields.

DUEDATE \_\_\_\_\_

FINE \_\_\_\_\_

(3 marks)

(b) Sarah executes a SQL command on LOAN with four records, as shown below.

SELECT STUID, COUNT(\*) FROM LOAN GROUP BY STUID

STUID	TRANID	BOOKID	LOANDATE	DUEDATE	RETDATE	FINE
20101001	20130001	123456789	02/01/2013	16/01/2013	17/01/2013	2
20101001	20130002	234567891	06/01/2013	20/01/2013	30/01/2013	5
20101001	20130003	345678912	08/01/2013	22/01/2013	09/01/2013	0
20102002	20130004	456789123	19/01/2013	02/02/2013	22/01/2013	0

What is the output?

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(2 marks)

Sarah extracts some data from the database and stores it in a worksheet, as shown below. The total fine for late returns for each student is stored in column D.

1	STUID	Name	Form	Total Fine (\$)	Email?	Summary	
						Form	Result
2	20121001	Wong Siu Man	1	2			
3	20121002	Chan Tai Man	1	10			1
4	20112001	Lee Sai Man	2	12			2
5	20113008	Ng Wai Keung	2	12			3
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
160	20102002	Ho Chung Man	3	0			

Answers written in the margins will not be marked.

Answers written in the margins will not be marked.

- (c) (i) Sarah wants to send a reminder email to the students whose fines total more than \$10. She uses column E to store 'Y' if the email is needed, and 'N' otherwise. She enters a formula into E2 and then copies it to the other cells in column E. Write the formula in E2.

- 
- (ii) Sarah enters the following formula into H3 and then copies it into H4 : H5 so as to calculate the sum of all fines in each form.

=SUMIF (C2:C160, \$G\$3, \$D\$2:\$D\$160)

Correct the formula in H3 below.

=SUMIF ( \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ )

(3 marks)

- (d) Sarah copies the worksheet into a document in a word processor by creating a dynamic link. For each of the following actions, is there any change in the worksheet? If yes, describe the change briefly.

- (i) Delete the content in A1 of the worksheet in the document and save the document.

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- (ii) Delete the worksheet in the document and save the document.

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(2 marks)

- (e) Sarah creates a presentation file with hyperlinks and multimedia elements and posts it on the school's web site. A student downloads and opens the file. He finds some technical problems regarding the hyperlinks and multimedia elements. Describe two possible technical problems.

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(2 marks)

Answers written in the margins will not be marked.

5. A department store gives its members a bonus card. In a month, a member, Mary, has 10 transactions with the bonus card and the amounts are stored in  $T[1]$ ,  $T[2]$ , ...,  $T[10]$ .

- (a) Complete the following algorithm, ALG1, to calculate the total amount, TOTAL, that Mary has spent.

**ALG1**

```

TOTAL ← [ ]  

I ← 1  

While I [ ] 10 do  

    TOTAL ← [ ]  

    I ← I + 1

```

(3 marks)

The department store has a sales promotion. Every month, members do not have to pay the transaction with the lowest amount among the first 10 transactions in which the bonus card was used.

- (b) (i) Complete the following algorithm, ALG2, to find the transaction with the lowest amount for Mary.

**ALG2**

```

M ← 1  

J ← 1  

While J <= 10 do  

    If T[M] [ ] T[J] do  

        M ← J  

    J ← J + 1

```

- (ii) Could the second line of ALG2 be changed to ' $J \leftarrow 2$ '? Explain briefly.

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(2 marks)

- (c) In this sales promotion, ALG3 is used to calculate the actual payment, PAYMENT, for Mary. ALG3 includes ALG1 and ALG2. Complete ALG3.

**ALG3**

Execute \_\_\_\_\_

Execute \_\_\_\_\_

PAYMENT ← \_\_\_\_\_

(3 marks)

(d) The department store has another sales promotion. The 20 members with the highest total spending each month can enjoy 20% off all year round. A computer application system is used to find these 20 members.

(i) Should the system be a single-user system or a multi-user system? Explain briefly.

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(ii) Should the system be a batch processing system or a real-time system? Explain briefly.

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(4 marks)

Answers written in the margins will not be marked.

Answers written in the margins will not be marked.

**END OF PAPER**

Answers written in the margins will not be marked.

**Database (SQL commands – based on SQL-92 Standard)**

Constants	FALSE, TRUE
Operators	+, -, *, /, >, <, =, >=, <=, <>, %, _, ', AND, NOT, OR
SQL	ABSOLUTE (ABS), AVG, INT, MAX, MIN, SUM, COUNT ASC, AT, CHAR (CHR), CHAR_LENGTH (LEN), LOWER, TRIM, SPACE, SUBSTRING (SUBSTR/MID), UPPER, VALUE (VAL) DATE, DAY, MONTH, YEAR ADD, ALL, ALTER, ANY, AS, ASC, BETWEEN, BY, CREATE, DELETE, DESC, DISTINCT, DROP, EXISTS, FROM, GROUP, HAVING, IN, INDEX, INNER JOIN, INSERT, INTEGER, INTERSECT, INTO, LEFT [OUTER] JOIN, LIKE, MINUS, NULL, RIGHT [OUTER] JOIN, FULL [OUTER] JOIN, ON, ORDER, SELECT, SET, TABLE, TO, UNION, UNIQUE, UPDATE, VALUES, VIEW, WHERE

**Electronic Spreadsheet**

Constants	TRUE, FALSE
Operators	+, -, *, /, <, >, =, <>, <=, >=
Functions	ABS, INT, MOD, QUOTIENT, RAND, ROUND, ROUNDUP, ROUNDDOWN, SQRT, TRUNC, AND, NOT, OR CHAR, CODE, CONCATENATE, EXACT, ISBLANK, LEFT, LEN, LOWER, MID, PROPER, RIGHT, TEXT, TRIM, UPPER, VALUE AVERAGE, COUNT, COUNTA, COUNTBLANK, COUNTIF, LARGE, MAX, MIN, RANK, SMALL, SUM, SUMIF, SUMPRODUCT, SUMSQ, FREQUENCY DATE, NOW FIND, HLOOKUP, VLOOKUP, LOOKUP, SEARCH, CHOOSE IF