Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka Department of E
Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka Department of E

80 E I, II

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கல்விப் பொதுத் தராதரப் பத்திர (சாதாரண தர)ப் பரீட்சை, 2011 டிசெம்பர்
General Certificate of Education (Ord. Level) Examination, December 2011

තොරතුරු හා සන්නිවේදන තාක්ෂණය	I,II		පැය තුනයි
தகவல் தொடர்பாடல் தொழினுட்பவியல்	I,II		மூன்று மணித்தியாலம்
Information & Communication Technology	I,II		**Three hours**

Information & Communication Technology I

Note:
(i) *Answer all the questions.*
(ii) *In each of the questions 1 to 40, pick one of the alternatives (1), (2), (3), (4) which you consider is correct or most appropriate.*
(iii) *Mark a cross (×) on the number corresponding to your choice in the answer sheet provided.*
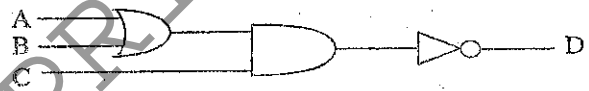(iv) *Further instructions are given on the back of the answer sheet. Follow them carefully.*

1. Which of the following can be classified as data in comparison with information?
   (1) Average monthly temperature in the city of Anuradhapura.
   (2) A pie chart showing percentage of male and female students in a school.
   (3) Last four digits of a residential telephone number.
   (4) Maximum mark obtained for Mathematics by Grade 10 students.

2. A student prepares a report and saves into a permanent storage device (*device* 1) inside the computer. He then copies the report to a portable storage device (*device* 2) to be given to a friend. Which of the following is most appropriate to represent *device* 1 and *device* 2 respectively?
   (1) Main Memory and Flash Memory
   (2) Hard Disk and Compact Disk (CD)
   (3) Main Memory and Compact Disk (CD)
   (4) Hard Disk and Main Memory

3. A person has taken a photograph using a digital camera. Subsequently he shows the photograph to one of his friends using the display of the camera. In this scenario, the camera serves as a / an
   (1) Input device only.
   (2) Output device only.
   (3) Communication device only.
   (4) Input / Output device.

4. Consider the following symbols:
   A - #
   B - @
   C - &
   Which of the above is a valid symbol / symbols in an email address?
   (1) A only
   (2) B only
   (3) C only
   (4) A and B only

5. What is the equivalent value for decimal value 125?
   (1) 01011101_2
   (2) 01111101_2
   (3) 174_8
   (4) $7B_{16}$

6. What value does the symbol 'C' represents in the hexadecimal number system?
   (1) 1011_2
   (2) 1101_2
   (3) 14_8
   (4) 13_{10}

7. Two computers, A and B have memory capacities of 1 GB and 1024 MB respectively. What is the correct statement regarding their memory capacities?
   (1) *Computer A* has a higher memory capacity than *Computer B*.
   (2) *Computer B* has a higher memory capacity than *Computer A*.
   (3) Both have equal memory capacities.
   (4) Memory capacities of the two computers cannot be compared as different units of measurement are used.

8. Saman has an electronic presentation of size 10,256 bits. What is the minimum capacity of a portable flash drive that can be used for storing this file?
   (1) 256 Bytes   (2) 1 KB   (3) 1 MB   (4) 1 GB

9. Binary Coded Decimal (BCD) uses four bits to represent each digit in the decimal number system. Which of the following is a valid bit pattern in BCD?
   (1) 0011   (2) 1011   (3) 1100   (4) 1101

10. If 1000001_2 represents A in ASCII, which of the following is represented by 1000111_2?
    (1) D   (2) E   (3) F   (4) G

11. A merchant sells a pack of three items for Rs 75. The pack contains a cup (A) and a saucer (B). The customer can select either a plate (C) or a dish (D) as the third item. Which of the following Boolean expression represents the above scenario?
    (1) (A AND B) AND C AND D
    (2) A AND B OR C OR D
    (3) A AND B AND (C OR D)
    (4) A OR B OR (C AND D)

12. If the final output of the given logic circuit, D is 1, which of the following represents the corresponding values for the inputs A, B and C respectively?
    (1) A = 1, B = 1, C = 1
    (2) A = 1, B = 0, C = 1
    (3) A = 0, B = 1, C = 0
    (4) A = 0, B = 1, C = 1

13. The Operating System:
    A - fills the gap between the hardware and the user by providing an interface.
    B - provides Internet facilities to the user for communication and access to information.
    C - manipulates files and folders.
    Which of the above statements are correct?
    (1) A and B only   (2) A and C only   (3) B and C only   (4) All A, B and C

14. Part of a spreadsheet is shown in the given diagram:
    If formula min(A1:A8) is written in cell A9,
    what value would be displayed in cell A9?
    (1) 70
    (2) 50
    (3) 40
    (4) 15

	A	B
1	20	
2	15	
3	30	
4	25	
5	40	
6	50	
7	60	
8	70	
9		
10		

15. Which of the following statements is correct regarding spreadsheet software?
    (1) Intersection of a row and a column is known as an *absolute address*.
    (2) *Cell address* is represented by the combination of column name and row number.
    (3) Cell entries can only be left aligned in spreadsheets.
    (4) Content of a cell cannot refer to another cell.

16. A word processing software is used to create a file named *Text1.rtf*. After editing the document, user wants to save this file as *Backup1.txt*. Which of the following word processing command / commands can be used for this purpose?
    (1) File —> Save
    (2) File —> Save As
    (3) Ctrl + S
    (4) Ctrl + B

17. Which of the following statements is correct regarding *tables* used in word processing software?
    (1) Two or more cells can be merged.
    (2) It is not possible to delete a column or a row.
    (3) Column width can be adjusted while row height cannot be adjusted.
    (4) A cell cannot be split.

18. What feature of electronic presentation software can be used to move an image on a slide smoothly from left to right?
    (1) Slide layout
    (2) Slide transition
    (3) Animation
    (4) Slide design

19. Which of the following is correct regarding the *primary key* in a relational database table?
    (1) It must be unique.
    (2) It must be of numeric data type.
    (3) It can be empty.
    (4) It must be of text data type.

● Use the following table containing information about books to answer questions **20** and **21**.

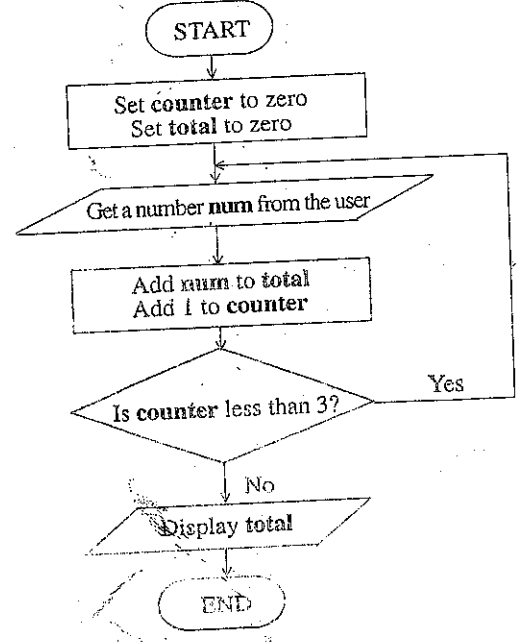| ISBN Number	Title	Author	Edition	Publisher	Price
0-19-431535-5	Oxford Dictionary	A.S. Hornby	6	Oxford University Press	2000.00
0-540-05667-7	Philips Atlas	B.M. Willett	4	Heinemann-Philip	2000.00
0-19-431635-5	Oxford Dictionary	A.S. Horney	5	Oxford University Press	1800.00
0-07-118077-X	Zoology	L. Roberts	6	McGraw-Hill	4000.00

20. Select the correct pair of values that represent the number of records and number of fields respectively of the above table.
    (1) 4, 6
    (2) 5, 6
    (3) 6, 4
    (4) 6, 5

21. Which of the following is most suitable as the primary key of the above table?
    (1) Title
    (2) Price
    (3) ISBN Number
    (4) Author

● Consider the given flowchart to answer questions **22** and **23**.

22. Which of the following is correct regarding the flowchart?
    (1) It repeats more than three times.
    (2) It stops when 3 is entered for **num**.
    (3) It displays the **total** when the **counter** is 3.
    (4) It gets 4 numbers from a user.

23. Which of the following can be used to replace "Add **num** to **total**" in the flowchart?
    (1) num = num + total
    (2) total = num * total
    (3) total = total + num
    (4) total = total / num

START

Set **counter** to zero
Set **total** to zero

Get a number **num** from the user

Add **num** to **total**
Add 1 to **counter**

Is **counter** less than 3?   Yes

No

Display total

END

24. Which of the following statements is correct regarding control structures used in algorithms?
    (1) Statement / statements within an *If-Then* construct is executed when the condition is false.
    (2) *For-Next* loop can be used when the number of repetitions is known in advance.
    (3) *If-Then* construct cannot be used within a *For-Next* loop.
    (4) *If-Then* construct cannot be nested.

25. Consider the following statements regarding *operators* in a programming language:
    A - An operator performs an operation on one or more variables.
    B - An expression may have more than one operator.
    C - *Comparison operators* compare two expressions.
    Which of the above statements are correct?
    (1) A and B only
    (2) A and C only
    (3) B and C only
    (4) All A, B and C

[see page four

26. Consider the following types of computer programming languages:
    A - Machine languages
    B - Assembly languages
    C - High level languages
    Which of the following shows the order of generations of the above programming languages in ascending order?
    (1) A, B, C.   (2) B, C, A.   (3) C, B, A.   (4) C, A, B.

27. Which of the following statements is correct regarding a compiler and an interpreter?
    (1) An interpreter translates all statements into machine language instructions before program execution.
    (2) A compiler translates each statement into machine language instructions one at a time during the program execution.
    (3) A compiler needs an interpreter for program execution.
    (4) An interpreter translates each statement into machine language instructions one at a time during the program execution.

28. The .... phase of the System Development Life Cycle (SDLC) is concerned with system functionality, meeting user's requirements, effective use of resources, and the cost effectiveness.
    Which of the following is most suitable for filling the above blank?
    (1) system analysis   (2) system design   (3) implementation   (4) feasibility study

29. Which of the following best describes the *direct implementation* as used in system development?
    (1) The new system is introduced alongside the existing system.
    (2) One component is implemented and the others are implemented if it is successful.
    (3) Operation of the manual system is stopped and the new system is introduced.
    (4) The new system is implemented in parts.

30. Consider the following statements regarding system development activities:
    A - Making changes to hardware and software.
    B - Correcting detected errors in the system after deployment.
    C - Introducing new user requirements into the system.
    Which of the above activities are involved in the *maintenance phase* of a system development life cycle?
    (1) A and B only   (2) A and C only   (3) B and C only   (4) All A, B and C

31. A student needs to send a digital copy of a printed photograph to a friend living abroad.
    Consider the following procedures:
    A - Taking a copy using a digital camera, saving it as an image file then sending via email.
    B - Sending the photo using normal post.
    C - Scanning the photograph, saving it as an image file then sending via email.
    Which of the above procedures is / are suitable for sending the photograph?
    (1) A only   (2) B only   (3) A and C only   (4) B and C only

32. Consider the following statements relating to the Internet:
    A - Each machine requires a unique address called an IP to connect to the Internet.
    B - WWW comprises of a collection of electronic documents.
    C - An HTML document which is accessible through the Internet is called a webpage.
    Which of the above statements are correct?
    (1) A and B only   (2) A and C only   (3) B and C only   (4) All A, B and C

33. Two students access the same website using two machines in their school computer laboratory. The two computers must have different:
    (1) Web browsers.   (2) IP addresses.
    (3) Internet Service Providers.   (4) Operating Systems.

34. What is the *domain name* of the URL *http://www.srilanka.lk/web/guest/welcome*?
    (1) www.srilanka.lk   (2) srilanka.lk   (3) /web/guest/welcome   (4) .lk

nsider the following statements regarding multimedia editing:

A - *Layers* can be used to draw and edit objects in one layer without affecting another layer.

B - *Key frame* can be used to create or edit animations.

C - Speed of a graphics animation can be changed using the *frame rate*.

Which of the above are correct?

(1) A and B only   (2) A and C only   (3) B and C only   (4) All A, B, and C

36. Consider the following special effects:

A - Adding echo

B - Changing speed

C - Changing volume

Which of the above special effects can be used in editing sound files?

(1) A and B only   (2) A and C only   (3) B and C only   (4) All A, B, and C

37. Consider the following statements regarding HTML tags.

A - <hr> defines a horizontal rule.

B - creates an ordered list.

C - <p> creates a page break.

Which of the above is/are correct?

(1) A only   (2) C only   (3) A and B only   (4) A and C only

38. Consider the following HTML statements:

```
<dl>
<dt> Rice </dt>
<dd>   White Rice </dd>
<dt> Tea </dt>
<dd>   Milk Tea </dd>
</dl>
```

The output of the above HTML code segment would be:

(1)	(2)	(3)	(4)
Rice	Rice	● Rice	Rice
White Rice	White Rice	● White Rice	White Rice
Tea	Tea	● Tea	Tea
Milk Tea	Milk Tea	● Milk Tea	Milk Tea

39. Consider the following three statements:

..(A)......... is a unique name that identifies a website.

......(B)...... is a unique address of a file that is accessible on the Internet.

.(C).......... is a unique number that identifies a machine on the Internet.

Which of the following correctly replace (A), (B) and (C) respectively?

(1) Uniform Resource Locator (URL), IP Address, Domain Name

(2) Uniform Resource Locator (URL), Domain Name, IP Address

(3) Domain Name, Uniform Resource Locator (URL), IP Address

(4) Domain Name, IP Address, Uniform Resource Locator (URL)

40. Consider the following statements:

A - Firewalls are only available as hardware and does not exist in the form of software.

B - A computer worm is a self-replicating malware computer program which spreads through a computer network.

C - Spam is the use of electronic messaging systems to send large volumes of unwanted emails indiscriminately.

Which of the above is / are correct?

(1) C only   (2) A and B only   (3) A and C only   (4) B and C only

* *

01/2011/80-E-I,II

Information & Communication Technology II

❋ Answer *five* questions only, including **first** question and **four** other questions.

❋ First question carries 20 marks and each of the other questions carries 10 marks.

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1. (i) Classify computers into two types according to their purpose.

   (ii) G.C.E. (Ordinary Level) candidates can obtain their examination results from the website of the Department of Examinations. When the Index Number is entered to the data entry form of the website, the system validates it. If it is valid, then the results will be retrieved from the database and displayed on the screen. Write the input, process and output for this scenario.

   (iii) Copy *Table A* and *Table B* given below into your answer script and draw arrows between matching items of *Table A* and *Table B*.
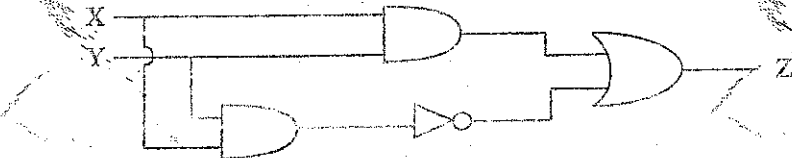
Table A
Email address
URL
IP address
Search Engine
Web Browser

Table B
www.google.com
Internet Explorer
Google
172.16.12.1
exams@doenets.lk

   (iv) Write the Boolean expression to represent the following logic circuit. Simplify your answer.

   (v) Character encoding schemes are used to represent symbols within computers. The number of symbols represented in a computer depends on the number of bits used for the encoding scheme. How many different symbols could be represented using eight (8) bits? Show your computations.

   (vi) Convert hexadecimal number C9 into binary. Show your computations.

   (vii) You are given the following logic circuit where the input B is a binary value. The output of the logic circuit is either 0 or 1 depending on the input. Modify the logic circuit by inserting an appropriate logic gate in a suitable place to produce 1 irrespective of the input value of B.

i) Consider the following **three** statements:

- A 2D animation file has a ...(A).. extension but when it is exported as a movie file it has a ....(B).. extension.
- In graphic editing software the working area is commonly referred to as the ...(C).. .
- In graphic editing software the ..(D)... can be used to select similar coloured areas.

Select the appropriate words for (A), (B), (C) and (D) from the list given below.

* timeline   * fla
* swf   * import
* canvas   * magic wand

(ix) Consider the set of integer numbers S = {2, 3, 4, 5, 6, 7, 8, 9, 10}. The following pseudo code calculates the total of the even numbers of the set S.

Copy the pseudo code to your answer script and complete the blanks.

```
Begin
    Set Total to zero
    For (Counter = ......... To ......... Step ......... )
            Total = ...............
    Next Counter
End
```

(x) State **four** requirement gathering techniques used in System Development Life Cycle (SDLC).

Consider the following worksheet on drug prices prepared according to a newspaper advertisement.

	A	B	C	D	E	F	G	
1	**Why Pay More?**							
2	*Same drug is available in different names at different prices*							
3	Name of drug	Price in Generic name	Price in branded name	Price Difference				
4	Paracetamol	Rs0.40	Rs2.75					
5	Amoxicilin 250mg	Rs2.00	Rs12.65					
6	Salbutamol 2mg	Rs0.20	Rs1.50					
7	Ibuprofen 200mg	Rs0.40	Rs2.40					
8	Dichofenac Na 50mg	Rs0.60	Rs31.20					
9	Total							
10								

H-4-►-►I Sheet1 / Sheet2 / Sheet3 / ◻

(i) Suggest the most appropriate chart type available in spreadsheet software, to show two prices of all five drugs along with the *name of drug*.

(ii) Write the required formula in cell D4 to show the price difference of Paracetamol.
(price difference = Price in branded name − Price in Generic name)

(iii) If the formula entered in cell D4 is copied to cell D5, how would the formula appear in cell D5?

(iv) Assuming the cells D4, D5, D6, D7 and D8 contain price differences, write the formula to calculate the total of the price differences for the five drugs in cell D9. You may use the function SUM, in your answer.
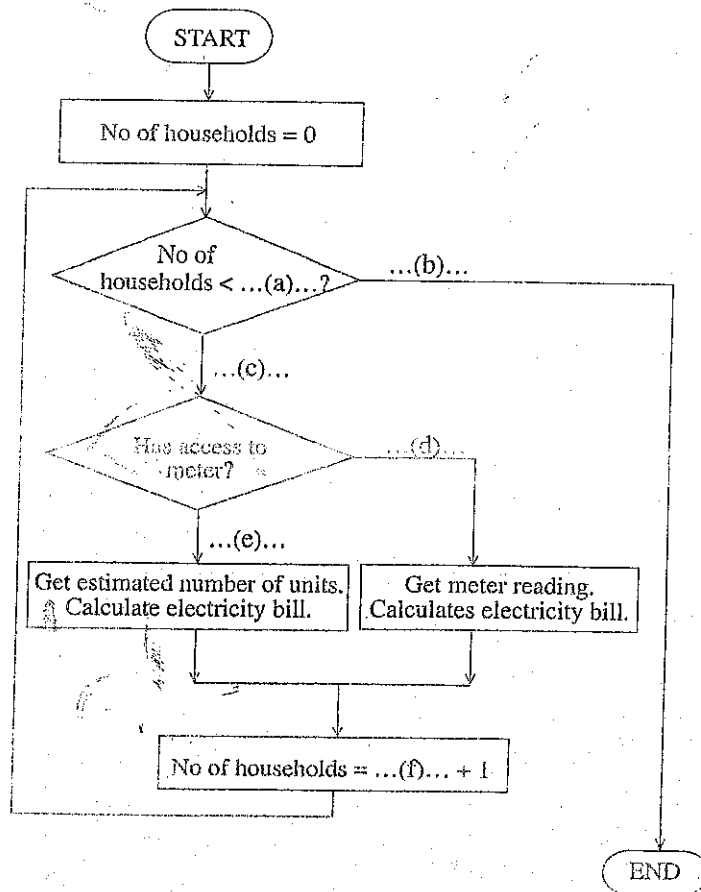
[see page eight

3. Consider the following table containing information of teachers in a school.

Teacher ID	Full Name	Date of Birth	Address	Subject ID	Subject Name
111111	Raj Kumar	12-09-1977	45 Kalutara Road, Kalutara	OL2020	ICT
222222	Nuha Jamil	24-12-1980	20 Royal Gardens, Colombo	OL1010	Science
222222	Nuha Jamil	24-12-1980	20 Royal Gardens, Colombo	OL1050	Mathematics

There is one *specific* teacher for each subject. One teacher can teach more than one subject.

(i) Explain "data duplication" using the above example table.

(ii) Explain briefly why data duplication should be avoided.

(iii) Identify the most appropriate *data types* to represent each of the fields in the above table.

4. (i) Assume that you have developed the HTML content for the website of your school on your home computer. Write down the steps required to publish the website for public access.

(ii) Briefly explain the following:

(a) Digital Divide

(b) Encryption

(c) Firewall

5. (a) An Electricity Meter Reader reads the meters of fifty (50) houses a day. If he has access to the meter at a house, he takes the reading, calculates the bill amount and hands over the bill to the household. If he does not have access to the meter (when the gate is closed) he calculates the bill with an estimated number of units and keeps the bill in order to be sent by post.
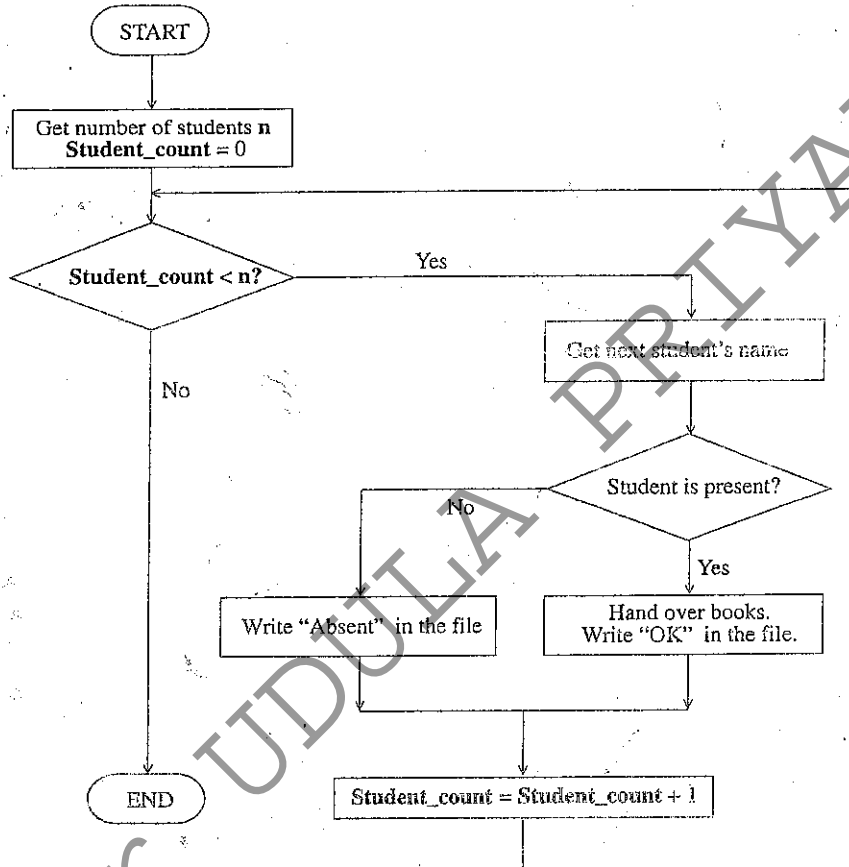
Write down the appropriate labels to fill the blanks (a) to (f) in the given flowchart.

It is **not** necessary to copy the flowchart into your answer script.

START

No of households = 0

No of households < ...(a)...? → ...(b)...

...(c)...

Has access to meter? → ...(d)...

...(e)...

Get estimated number of units. Calculate electricity bill.

Get meter reading. Calculates electricity bill.

No of households = ...(f)... + 1

END

(b) A teacher distributes text books to a class. First, teacher finds the number of students from the class register. Each student's name is called, if present, books are issued and a record is made to indicate that the books have been issued. If the student is absent, a record is made that the books have not been issued. The process is repeated for all the students. Write the pseudo code for the above scenario as indicated in the flowchart below.

You may use the keywords:

'INPUT', 'PROCESS', 'DISPLAY', 'BEGIN', 'END', 'DO-WHILE' and 'IF-THEN'.

6. (i) A shop selling handicraft items considers starting an online business.

   (a) List three advantages the shop would gain by selling online.

   (b) List two methods of protecting the information of the online store from unauthorized access.

   (c) Briefly explain two methods that would promote the website among customers.

   (ii) Assume that one of your uncles have decided to use online shopping and asks your advice on safe online shopping. List three recommendations you would give him.

7. (i) Vimal studies abroad. His parents communicate with him by sending letters through postal service. He told his parents that it is easier and cheaper to communicate through email.

   (a) List two other methods his parents could use to communicate with Vimal using the Internet.

   (b) List three advantages in communicating via email instead of traditional postal mail service.

   (ii) Assume that you are planning to replace the existing Library Information System of your school with a Web based system.

   (a) Write three aspects you would consider in order to ensure that the new system is feasible.

   (b) Which implementation method out of *direct* and *parallel* would be most appropriate for the new library system? Justify your answer.

* * *