

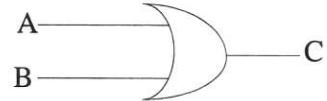


Information & Communication Technology II

- * 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.

1. (i) Convert the binary number 10101001 into hexadecimal. Show your computations.
(ii) Name a coding system used to represent characters (e.g., @, 2, A, ...) in computers.
(iii) List **two** advantages of a computer network.
(iv) Consider the truth table given below.

input		output
A	B	C
0	0	1
0	1	0
1	0	0
1	1	0



Modify the given logic circuit by inserting a single logic gate to represent the above truth table.

(v) Consider the following two columns:

Column 1	Column 2
A.	translates a web address (URL) to the relevant IP address.
B.	is a service of the Internet.
C.	uniquely identifies each computer on the internet.
D.	separates the user name and domain name of an email address.
E.	displays formatted web pages on a screen.

Select and write down suitable terms for A, B, C, D and E from the following list:

@ symbol, Domain Name Server (DNS), IP Address, Web Browser, World Wide Web

(vi) Consider the following sentences:

A(A)..... port in a computer can be used to connect external devices such as external hard drives, printers, mice and scanners.

The B port can be used to connect the computer to internet.

The(C)..... port is used to connect a monitor to a computer.

The(D)..... port is used to connect speakers to a computer.

Write appropriate terms from the list given below for labels (A), (B), (C) and (D).

- line out
- network
- PS/2
- USB
- VGA

(vii) Copy the following two tables A and B to your answer sheet and draw arrows between matching items of table A and table B.

Table A
Computer monitor
CPU
Digital Camera
Hard disk
Keyboard

Table B
Computations
CRT, LCD, LED
QWERTY
Read/write head
Image capture

(viii) A vehicle with two doors (X and Y) has an indicator light (Z) to show whether the two doors are properly closed. When one or both doors are open, the light will be 'on'. When both doors are closed, the light will be 'off'.

(a) Construct a truth table for the above scenario using the following assumptions:

- For doors: 'closed' = '0' and 'open' = '1'
- For the indicator light: 'off' = '0' and 'on' = '1'.

(b) What is the **single** logic gate that represents the above scenario?

(ix) Consider the following four statements:

- In video editing software, the **(A)** feature organizes and controls movie contents over time.
- The **(B)** can be used to insert sound into an animation file.
- The **(C)** allows to access and change the most commonly used attributes of a graphic animation.
- The **(D)** tool trims images on a graphics editing software.

Write appropriate terms from the list given below for labels **(A)**, **(B)**, **(C)** and **(D)**.

(canvas, crop, import, layer, magic wand, property inspector, timeline)

(x) A program is required to perform ten divisions. The program accepts **two numbers as input** at each time. If the divisor (e.g., if 1 is divided by 2, the divisor is 2) is not zero, then the division is carried out and the answer is printed. If the divisor is zero, then "division by zero" is printed. The following pseudo-code (incomplete) represents this scenario.

Copy the pseudo-code exactly as given, and complete the blanks.

Begin

For (counter=..... to

..... number_1

..... number_2

if (..... = 0) then

 print "....."

else

 answer =

 print

endif

Next counter

End

2. The following spreadsheet segment shows the distribution of dengue cases reported in 18 selected cities for three months (source: www.epid.gov.lk).

A	B	C	D	E	F
1	Distribution of Notification -Dengue Cases by Month				
2	City	July	August	September	
3	1 Anuradhapura	26	34	25	
4	2 Badulla	47	40	35	
5	3 Batticaloa	11	21	7	
6	4 Colombo	1314	1210	493	
7	5 Galle	208	217	65	
8	6 Gampaha	969	884	464	
9	7 Hambantota	48	78	29	
10	8 Jaffna	26	36	41	
11	9 Kalutara	344	321	151	
12	10 Kandy	287	345	133	
13	11 Kegalle	385	315	173	
14	12 Kurunegala	378	360	302	
15	13 Matara	186	222	141	
16	14 N Eliya	30	30	21	
17	15 Polonnaruwa	22	30	12	
18	16 Puttalam	93	142	229	
19	17 Ratnapura	620	630	306	
20	18 Trincomalee	8	13	6	
21	Total by month				
22	Maximum cases				
23					

Use the above spreadsheet segment to answer the following questions:

- Write down the cell range which represents the data for the month of July in all 18 cities.
- Write the formula with a **single function** that has to be entered in cell C21 to display the total number of cases in all 18 cities for the month of July.
- Write the formula with a **single function** that has to be entered in cell C22 to display the maximum number of cases among all 18 cities for the month of July.
- Assume that a formula with a **single function** required to obtain the average value of Dengue cases for the month of July is entered in the cell C23.

If this formula is copied to cell D23 what will be the **formula** contained in cell D23?

3. The following three tables are a part of a school management information system that stores details of teachers and their subjects. One teacher may teach more than one subject and one subject may be taught by more than one teacher.

Teachers

Teacher ID	Name
1111	Saman Silva
2222	Mallika Perera

Subjects

Subject Code	Subject Name
Eng10	English
Sin09	Sinhala
Sci10	Science

Teacher_Subject

Subject Code	Teacher ID
Eng10	1111
Sin09	2222
Sci10	1111
Sci10	2222

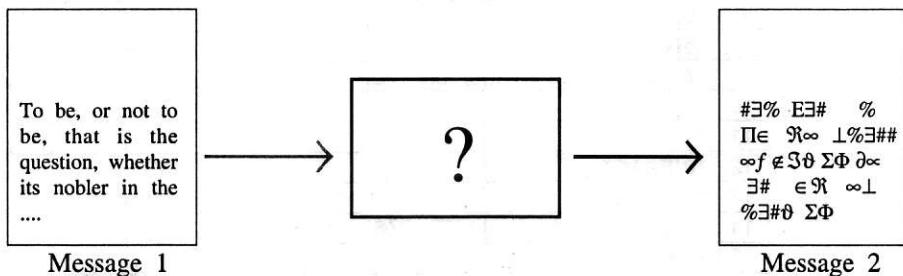
- List **two** primary keys together with their corresponding table names.
- Briefly explain **one** disadvantage that would occur if a single table is used instead of three tables for storing the data.
- What is meant by a foreign key? Illustrate your answer using the above tables.

4. (i) Consider the URL, <http://www.schoolnet.lk>
Write down the protocol, service and the top level domain name.

(ii) Online shopping can be defined as the act of purchasing products or services over the internet.
Briefly explain **two** benefits of online shopping.

(iii) A person says that his credit card details have been stolen and used by some one else after online shopping.
Suggest **three** safety measures that he can take to prevent such unauthorized transactions.

(iv) In the following diagram, Message 1 is the equivalent of Message 2. A certain technology is used to convert Message 1 to an unreadable format which can only be read by the intended recipient. What would you call this technology shown in the middle-box with a "?" ?



5. (i) Draw the relevant flowchart segment to present the following scenario:

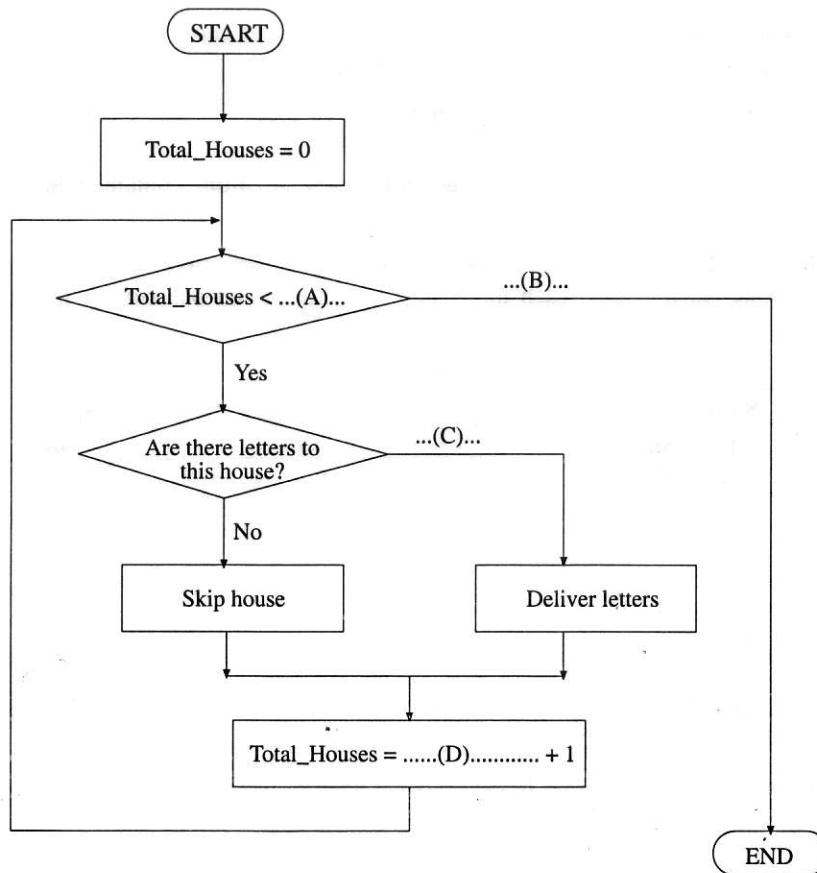
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if it rains today then
  go to the library
else
  go to the playground

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(ii) A postman is required to deliver letters to one hundred and fifty (150) houses. He collects the mail bag from the post office and travels from the first house to the last house. Every house has a letter-box. If there are letters to a particular house he delivers them to the letter-box, otherwise (i.e., if there is no letter) he skips the house.

The following flowchart represents the above scenario. Write down the appropriate labels to fill the blanks (A), (B), (C) and (D). Your answer should use the exact variable names as in the flowchart.



6. (i) Telemedicine allows investigation, monitoring and management of patients from remote locations.

- List **one** advantage of telemedicine in addition to the remote accessibility.
- List **one** challenge in using telemedicine.

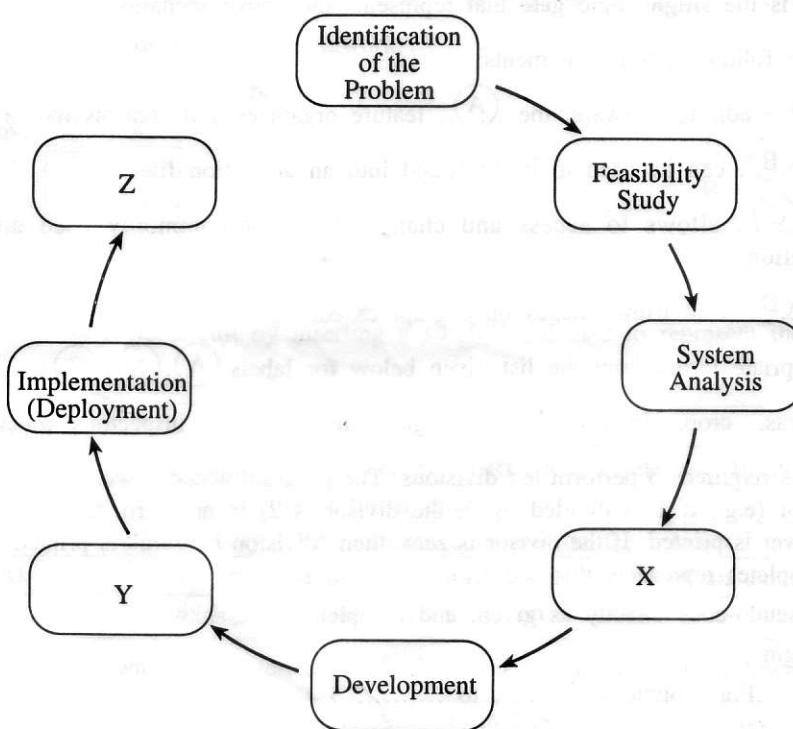
(ii) One of your friends offers a copy of an unlicensed software CD to you. Do you agree or disagree? Justify your answer.

(iii) Briefly explain **two** examples for computer controlled systems in agriculture.

(iv) "e-learning helps one to learn at his/her own pace (speed) compared to traditional classroom-based learning." Do you agree with this statement? Briefly explain your answer.

7. (i) Piumi tells Saman that she found an interesting web article on the history of Internet. Although Piumi could remember the title of the article as "Evolution of the Internet", she does not remember the web address of the site. Write down the steps that Saman should follow in order to find this article from the internet.

(ii) Udara is planning to implement a new library information system for his school using the Systems Development Life Cycle (SDLC) methodology as shown in the following diagram:



(a) Write the names of the phases X, Y and Z.

(b) List **two** types of feasibility that he needs to assess during the Feasibility Study phase.

(c) List **three** methods that Udara could use to collect relevant information during the System Analysis phase.

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