ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව இலங்கைப் பாட்சை, திணைக்களம் இலங்கைப் பாட்சை, திணைக்களம் இலங்கைப் பாட்சை, திணைக்களம் Department of Examinations, Sri Lanka Department of Examinations, Sri Lanka Department of E ශ්‍රී ලංකා විභාග දෙපාර්තමේන්තුව ශ්‍රී ලංකා විභාග Department of Examinations, Sri Lanka இலங்கைப் பாட்சை, திணைக்களம் இலங்கைப் பாட்சை, திணைக்களம் இலங்கைப் பாட்சை, திணைக்களம்	**80 E I, II**

අධ්‍යයන පොදු සහතික පත්‍ර (සාමාන්‍ය පෙළ) විභාගය, 2012 දෙසැම්බර්
கல்விப் பொதுத் தராதரப் பத்திர (சாதாரண தர)ப் பரீட்சை, 2012 டிசெம்பர்
General Certificate of Education (Ord. Level) Examination, December 2012

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

Information & Communication Technology I

Note: (i) *Answer all questions.*

(ii) *In each of the questions from **1** to **40**, pick one of the alternatives **(1)**, **(2)**, **(3)**, **(4)** which you consider as 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 represents the correct order of evolution in computer processor technology?
   (1) Transistors, Integrated Circuits, Vacuum tubes   (2) Transistors, Vacuum tubes, Integrated Circuits
   (3) Vacuum tubes, Integrated Circuits, Transistors   (4) Vacuum tubes, Transistors, Integrated Circuits

2. In a library information system, when a user enters the title of a book, its availability is indicated after searching the database. Which of the following indicates the correct order for input, process and output of the system?
   (1) book title, availability of the book, searching the database
   (2) book title, searching the database, availability of the book
   (3) searching the database, book title, availability of the book
   (4) searching the database, availability of the book, book title

3. Which of the following shows the storage devices arranged according to their access speeds from slowest to the fastest?
   (1) Floppy Disk, Hard Disk, Main Memory   (2) Hard Disk, Floppy Disk, Main Memory
   (3) Hard Disk, Main Memory, Floppy Disk   (4) Main Memory, Hard Disk, Floppy Disk

4. A student prepares a report using word-processing software. What is the most suitable device that can be used to insert a picture from a printed book into the soft copy of the report?
   (1) Keyboard   (2) Mouse   (3) Printer   (4) Scanner

5. The binary equivalent of the number $3A_{16}$ is ....
   (1) 111000   (2) 111001   (3) 111010   (4) 111011

6. The decimal equivalent of the number 1010101_2 is ....
   (1) 21   (2) 58   (3) 81   (4) 85

7. Consider the number '11_x' where 'x' is the base of the number system. Which of the following number system(s) can the number '11_x' belong to?
   (1) Binary only   (2) Hexadecimal only
   (3) Octal only   (4) Either Binary, Hexadecimal or Octal

8. Binary Coded Decimal (BCD) uses four bits to represent each digit in the decimal number system. What is the bit pattern used to encode the decimal number 28 in the BCD code?
   (1) 00011100   (2) 00101000   (3) 10000010   (4) 11100000

9. If '1000111_2' represents 'G' in ASCII, what character does ASCII '1000010_2' represent?
   (1) A   (2) B   (3) C   (4) D

10. A question paper consists of three questions *x*, *y* and *z*. Candidates are required to answer two questions. Question *x* is compulsory and the candidate has to select one from questions *y* and *z*. Which of the following represents the selection of questions by a candidate?
    (1) *x* OR (*y* OR *z*)   (2) *x* AND (*y* AND *z*)   (3) *x* AND (*y* OR *z*)   (4) *x* OR (*y* AND *z*)

11. Consider the following:

    A - Marks obtained by a student for mathematics.

    B - The average marks for mathematics of all students.

    Which of the following is correct in relation to the above?

    (1) Both A and B represent data.

    (2) Both A and B represent information.

    (3) While A represents data, B represents information.

    (4) While A represents information, B represents data.

12. Consider the given logic circuit with A and B as inputs and C as the output.

   Which of the following is correct regarding the inputs when the output C = 1 ?

    (1) A should always be 0.

    (2) A should always be 1.

    (3) B should always be 0.

    (4) B should always be 1.
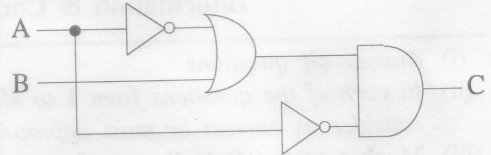
13. Which of the following statements is correct regarding folders in a computer?

    (1) Folder names cannot be altered (renamed).

    (2) Folders are used to store files in an organized manner.

    (3) Maximum number of folders that can be created within a folder is 10.

    (4) One folder can store only the files of the same type.

14. What is the icon that can be used to undo the steps applied to a document in a word processing software?

    (1)   (2)   (3)   (4)
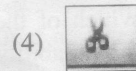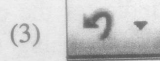
15. What is the function key for obtaining help in a word processing software?

    (1) F1   (2) F2   (3) F5   (4) F7

16. Assume that the cell pointer of the following spreadsheet segment is currently in cell A1. By pressing the key combination **Ctrl +→** the cell pointer can be directly moved to cell D1.

    What is the key or key combination for directly moving the cell pointer from cell D1 to cell D6?

    (1) Ctrl +↓   (2) Ctrl + End

    (3) End +↓   (4) PgDn

	A	B	C	D	E
1	Ambepussa			Dehiovita	
2					
3					
4					
5					
6	Ampara			Dikwella	
7					

17. Select the most suitable statement which describes the formula =B2*C2 in a spreadsheet.

    (1) The contents of cell B2 is added to the contents of cell C2.

    (2) The contents of cell B2 is divided by the contents of cell C2.

    (3) The contents of cell B2 is multiplied by the contents of cell C2.

    (4) The contents of cell C2 is subtracted from the contents of cell B2.

18. Which of the following formula should be entered in cell A8 in the given spreadsheet segment to provide the total number of cells containing numeric values in the range A1 to A7?

    (1) =count(A1:A7)   (2) =max(A1:A7)

    (3) =min(A1:A7)   (4) =sum(A1:A7)

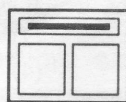|	A
1	10
2	apple
3	23
4	34
5	45
6	76
7	anil
8	

19. Nazeer wants to do an electronic presentation in the full-screen mode with his computer. What is the most suitable view for this purpose?

    (1) Normal   (2) Slide master   (3) Slide show   (4) Slide sorter

20. Which feature of an electronic presentation software can be used to change the style of a slide from *Style 1* to *Style 2* as given below?
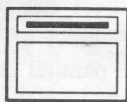
                       Style 1   Style 2

    (1) Slide animation   (2) Slide layout   (3) Slide show   (4) Slide sorter

● Answer the questions **21 - 23** using the following table segment that stores details of some students of a school.

21. How many records are stored in the given table segment?
    (1) 2   (2) 3
    (3) 4   (4) 6

Student_number	Name	Date_of_Birth
S2010-01	Shantha	21/10/2003
S2010-02	Fathima	26/11/2003
S2010-03	Uma	25/02/2003
S2010-04	Dilani	12/01/2004

22. How many fields are used to store data in the given table segment?
    (1) 2   (2) 3
    (3) 4   (4) 6

23. What is the most suitable data type for 'Student_number'?
    (1) Currency   (2) Date/Time   (3) Number   (4) Text

24. Which of the following is correct regarding the 'primary key' of a database table?
    (1) Primary key can be empty.   (2) Primary key must be of numeric data type.
    (3) Primary key must be of text data type.   (4) Primary key must be unique.

25. A collection of web pages accessible on the internet is known as a/an ....
    (1) Intranet   (2) IP address   (3) Web server   (4) Web site

26. Which of the following shows the domain name part of the URL
    http://www.doenets.lk/exam/docs/examcal/cal-oct-2012.pdf ?
    (1) *.pdf*   (2) *cal-oct-2012.pdf*   (3) *doenets.lk*   (4) *http://*

27. Which of the following is defined by the tags *<hr>...</hr>* in HTML?
    (1) Anchor   (2) Break   (3) Header Line   (4) Horizontal Rule

28. Which of the following defines a comment in HTML?
    (1) <!--...-->   (2) <a>...   (3)
...</br>   (4) <p>...</p>

29. What is the result after evaluation of the following expression considering the operator precedence of programming languages?
    5*3+1*5-1
    (1) 19   (2) 35   (3) 79   (4) 99

30. Consider the following logical expressions:
    A - (23>14) AND (11>8)
    B - (23<14) OR (11>8)
    C - NOT (23>14)
    Which of the following represents the correct outcome of the expressions A, B and C respectively?
    (1) True, False, False   (2) True, False, True   (3) True, True, False   (4) True, True, True

31. What is the expected output of the following pseudo-code segment?
```
n=1;
Do while n<5
    Print n
    n=n+1
Loop
```
    (1) 1234   (2) 2345   (3) 12345   (4) 23456

32. Which of the following shows the correct order of the given phases in the System Development Life Cycle (SDLC)?
    (1) design, coding, testing   (2) design, feasibility study, maintenance
    (3) design, testing, feasibility study   (4) testing, maintenance, feasibility study

33. A new automated library information system is to be implemented in a school. The principal does not feel safe to directly start the new system by completely stopping the current manual system. Which of the following are appropriate methods of system conversions which will address the principal's concern?
    (1) either direct or phased
    (2) either direct or prototype
    (3) either parallel or phased
    (4) either parallel or prototype

34. Consider the following HTML segment:

```
<html>
<body>
<dl>
<dt> <b> Cricket </b> </dt>
<dt> Volleyball </dt>
<dt> <b> Football </b> </dt>
<dt> Netball </dt>
</dl>
</body>
</html>
```

    Which of the following is the output of the above?

    (1) Cricket
    Volleyball
    Football
    Netball

    (2) Cricket
    Volleyball
    Football
    Netball

    (3) **Cricket**
    Volleyball
    Football
    Netball

    (4) Cricket
    Volleyball
    Football
    Netball

35. Amal sent an email to Meena and copied the same mail to Nazeer using Cc. Amal also sent a copy to Russel using Bcc. Which of the following is correct with regard to this scenario?
    (1) Email received by Nazeer does not display Amal as the sender of the email.
    (2) Email received by Nazeer does not display Russel as another recipient of the email.
    (3) Email received by Meena does not display Amal as the sender of the email.
    (4) Email received by Meena does not display Nazeer as another recipient of the email.

36. Which of the following is/are correct regarding the 'layers' available in image editing software?
    A - Layers used in image editing software allow the objects on the layer to be edited without affecting other layers.
    B - Layers can be inserted into an image and renamed.
    C - Two layers **cannot** be blended (be combined).
    (1) A only
    (2) A and B only
    (3) B and C only
    (4) All A, B and C

37. A/An .... in graphic animations defines the starting and ending points of any smooth transition.
    Which of the following is most suitable to fill the above blank?
    (1) Image Property Inspector
    (2) Key Frame
    (3) Panel
    (4) Timeline

38. .... security of ICT applications can be improved through the use of user names and passwords.
    Which of the following is most suitable to fill the above blank?
    (1) Environmental
    (2) Hardware
    (3) Logical
    (4) Physical

39. Which of the following help(s) to bridge the Digital Divide?
    A - Donating computers to schools with less facilities.
    B - Improving computer literacy of communities with less computer literacy.
    C - Providing internet connectivity to the communities without internet access.
    (1) A only
    (2) C only
    (3) A and B only
    (4) All A, B and C

40. Which of the following help(s) to reduce Repetitive Stress Injury (RSI) when using computers?
    A - Keeping the wrist straight and level with the lower arms when typing.
    B - Taking precautionary measures such as blinking to avoid eye strain.
    C - Keeping the computer in a suitable place to avoid indirect glare (bright light).
    (1) A only
    (2) B only
    (3) A and B only
   (4) All A, B and C

* *

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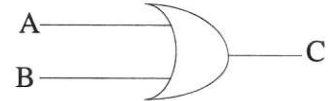
   Modify the given logic circuit by inserting a **single** logic gate to represent the above truth table.

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

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

   The ……… Ⓒ ……… port is used to connect a monitor to a computer.

   The ……… Ⓓ ……… port is used to connect speakers to a computer.

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

   * 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:

(i) Write down the cell range which represents the data for the month of July in all 18 cities.

(ii) 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.

(iii) 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.

(iv) 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

(i) List **two** primary keys together with their corresponding table names.

(ii) Briefly explain **one** disadvantage that would occur if a single table is used instead of three tables for storing the data.

(iii) 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 2 is the equivalent of Message 1. 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 "**?**" ?
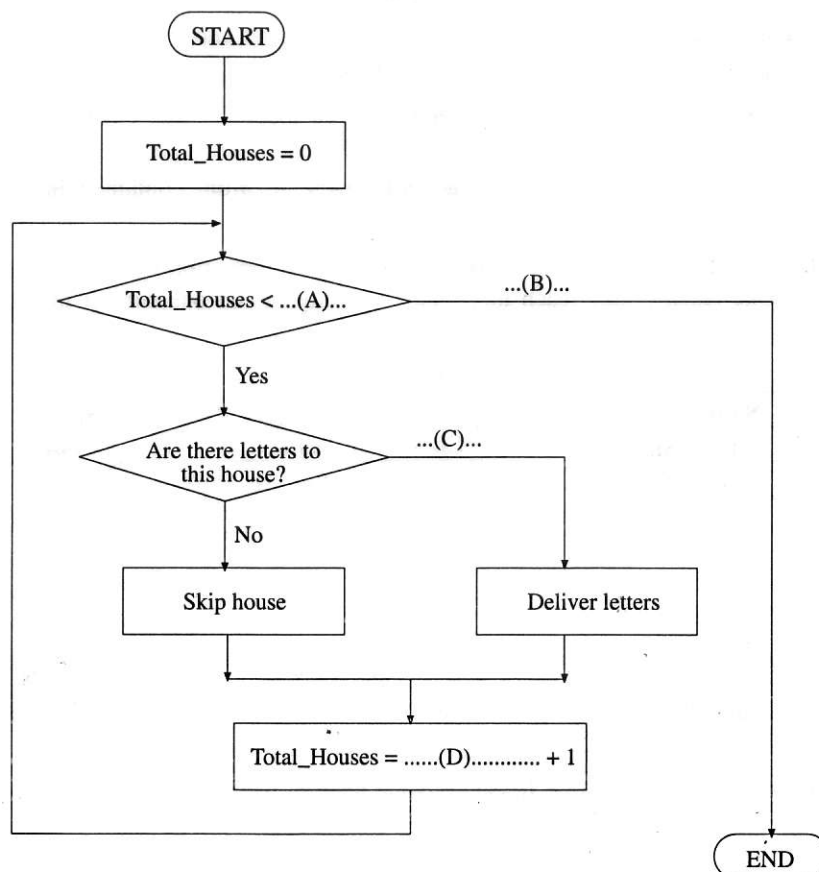
To be, or not to be, that is the question, whether its nobler in the	**?**	#∃% E∃# % ΠЄ ℜ∞ ⊥%∃## ∞f ∉ℑθ ΣΦ ∂∝ ∃# ∈ℜ ∞⊥ %∃#θ ΣΦ
Message 1		Message 2
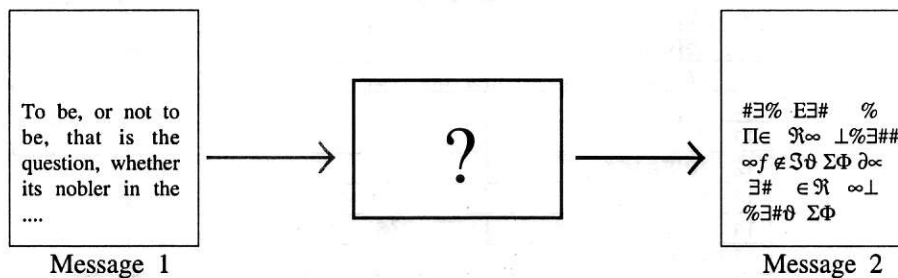
5. (i) Draw the relevant flowchart segment to present the following scenario:

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

(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.

START

Total_Houses = 0

Total_Houses < ...(A)...   ...(B)...

Yes

Are there letters to this house?   ...(C)...

No

Skip house   Deliver letters

Total_Houses = ...(D)........... + 1

END

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

      (a) List **one** advantage of telemedicine in addition to the remote accessibility.

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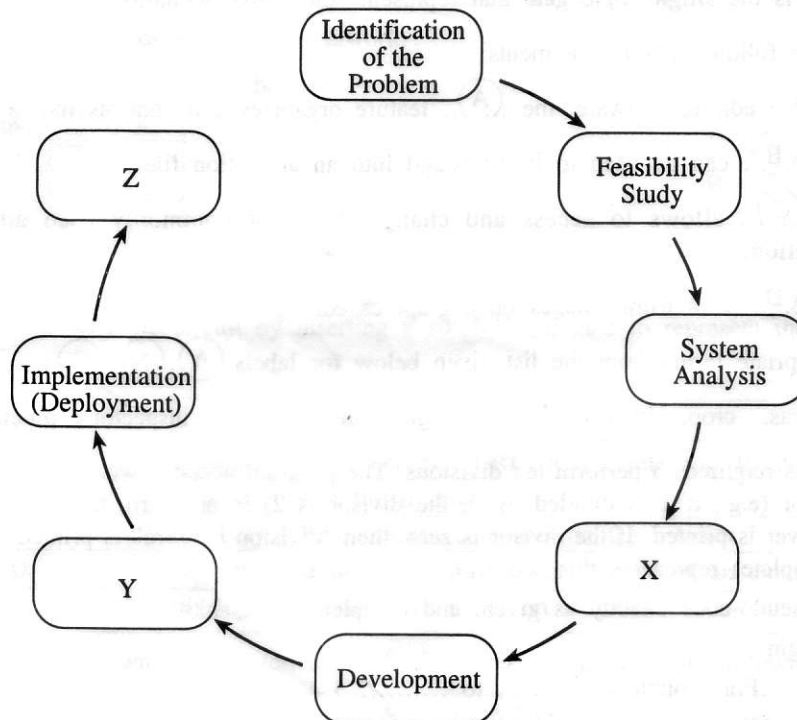
    (a) Write the names of the phases X, Y and Z.

    (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.

✳ ✳ ✳