

MINISTRY OF EDUCATION

FIJI YEAR 13 CERTIFICATE EXAMINATION 2018

COMPUTER STUDIES

DETAILED SOLUTION

SECTION A**Multiple - Choice Questions****[20 marks]**

Circle the letter which represents the **best** answer.

1. Which of the following parts of an information system is documented in manuals written by computer specialist?
 - A. Data – raw unprocessed facts
 - B. People - the end-user
 - C. Internet- provides a connection between people and computers
 - D. Procedures – rules or guidelines to follow

2. The accounting activity that records money the company owes to suppliers for materials and services it has received is known as
 - A. sales order processing – records customers’ requests
 - B. accounts receivable – records money received from customers
 - C. accounts payable – money the company owes its suppliers
 - D. general ledger – keeps track of all the foregoing transactions.

3. The computer based information system that provides a **flexible tool** for analysis is called
 - A. DSS – analyse data
 - B. ESS – draws together data in meaningful patterns
 - C. MIS – summarizes data
 - D. TPS- records data

Study the statement given below and answer **question 4**.

Are reliable hardware, software and trained people available to make the system work?

Source: *Computer Studies Year 13*, Ministry of Education, 2016.

4. Which of the following feasibility **best** describes the statement above?
 - A. Economic – cost over benefits
 - B. Technical – as above
 - C. Operational – Can the system be made to operate in the organization.
 - D. Management – different management levels.

5. Which of the following symbols is used to represent document in a Systems Flowchart?

A.  Represents process in data flow diagram

B.  Process

C.  Manual input

D.  document

6. The file organisation in which records are stored physically one after another in predetermined order is known as

A. direct – records stored on disk in a particular address or location

B. indirect

C. sequential records stored physically one after another

D. index sequential – records stored in sequential order and also contains index.

7. An inventory of all the hardware devices connected to the computer is recorded on a chip called

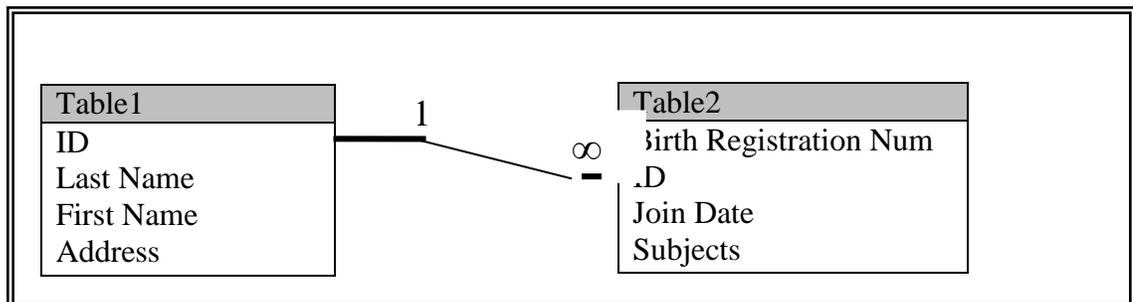
A. CMOS.

B. BIOS - Basic input output device

C. ROM - Read Only Memory

D. RAM – Random Access Memory

Study the database relationship below and answer **question 8**.



8. What is the database relationship depicted above?

A. One-to-one

B. One-to-many – infinity sign represents many

C. Many-to-one

D. Many-to-many

9. The utility program that recognises and corrects problems before they become serious is known as
- A. antivirus – programs that guards the computer system against viruses.
 - B. uninstall - is the process of removing or deleting a program from a computer
 - C.** troubleshooting – as mentioned above.
 - D. file compression – reduce the size of files.

10. The connector used for ethernet networking is

- A.** RJ 45.
- B. RJ 11.
- C. HDMI
- D. CAT 5.



RJ45 jacks are used in networking, where you connect computers or other network elements to each other. RJ11 is the cable connector that is being used in telephone sets.

11. Which of the following ports allow data to travel in only one direction at a time?
- A. Ethernet – Ethernet cables are the medium that carries data packets to and from the computers, hubs, and routers.
 - B. Parallel – transmits data 8 bits at a time.
 - C.** Serial- transmits data one bit at a time.
 - D. USB – port that supports plug and play

12. A device that connects two or more networks is known as

- A.** router – connect two or more networks.
- B. switch – is a device that connects individual devices on the Ethernet network
- C. modem – device that converts digital signal to analog and vice versa.
- D. wireless access points – device used to create a wireless LAN (WLAN).

13. The test that assess the responsiveness of the website to user actions is called

- A. usability – website conforms to appropriate practice in the area of usability.
- B. functional – tests that the website operates normal and error inducing conditions.
- C.** performance – as above
- D. accessibility – website conforms to the stated level of accessibility outlined in the organisations web accessibility policy.

14. Which of the following website design step is concerned with matching visitor expectations to a flow of information?
- A. Interface – selection of web elements that facilitate interaction with site visitors.
 - B. Interaction – generating actions on a website in response to user behavior.**
 - C. Navigation - facilitates movement from one Web page to another Web page
 - D. Information – knowledge communicated or received concerning a particular fact or circumstance.
15. Which of the following tags is used to emphasize a text in web design?
- A. - emphasize a text**
 - B. <h1> - defines the most important heading
 - C. <title> - element specifies a title for the document
 - D. <body> - element contains the visible page content
16. In website development, a web designer writes the code and loads up content in phase
- A. 1 – website planning
 - B. 2 – website content
 - C. 3 – website design
 - D. 4. – website construction**
17. Which of the following commands is used to print the given data on the screen?
- A. Int - integer
 - B. Cin - The standard input, normally the keyboard.
 - C. Cout - The standard output, normally the screen**
 - D. Return - The return statement stops execution and returns to the calling function
18. An example of a valid variable name in C++ programming is
- A. intcall – invalid because int is a keyword
 - B. _mycall.**
 - C. 8mycall – invalid because variable name cannot start with a number
 - D. &mycall – invalid because variable name cannot contain symbols
19. Which of the following data types would store the decimal value -3.06?
- A. Int - Keyword used for integer data types
 - B. Dec – does not apply to C++
 - C. Char - Keyword used for character
 - D. Float - used for storing single precision floating point values or decimal values**

Study the program given below and answer **question 20**.

```
cout << "Enter your mark please"<<endl;
cin>>mark;
if (mark >=300)
    cout << "You are eligible for the Toppers scholarship"<<endl;
else if (mark >=200)
    cout << "You are eligible for the Tertiary loan scheme"<<endl;
else
    cout << "You may apply for Bridging courses"<<endl;
```

20. What would be the output if a student enters a mark of 250?
- A. You are eligible for the Toppers scholarship
 - B. You are eligible for the Tertiary loan scheme
 - C. You may apply for Bridging courses
 - D. You have failed

SECTION B

[60 marks]

The six questions in this section are **all compulsory**. Each question is worth **10 marks**.

QUESTION 1

(10 marks)

(a) List the two tasks conducted by a research department of an organisation.

- i) Product research (1 mark)
- ii) Product development (1 mark)

(b) Explain the role of a Chief Executive Officer in an organisation.

Deal with long- range planning/ strategic planning.

Use information to plan the future growth and direction of the organisation.

(2 marks)

(1 mark for the keyword long- range planning or strategic planning, 1 mark for explaining what they do with information)

- (c) Differentiate between a periodic report and a demand report in relation to the time they are produced.

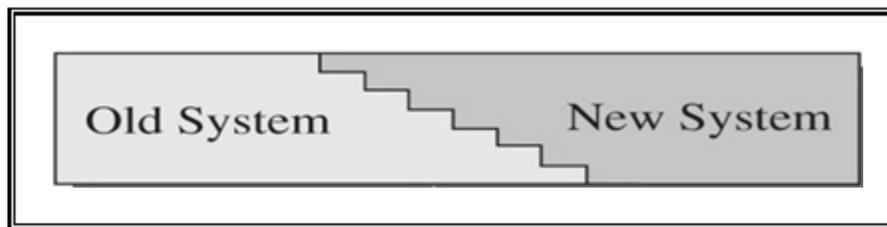
Periodic reports are produced at regular intervals whereas a demand report is produced when requested. **(2 marks)**
(no linking term no mark)

- (d) State the two tasks carried out in the systems maintenance phase in the systems development life cycle.

i) system audit **(1 mark)**

ii) periodic evaluation. **(1 mark)**

- (e) Study the diagram shown below and answer the questions that follow.



- (i) Name the conversion method shown above.

Phased **(1 mark)**

- (ii) State the type of organisation the conversion is appropriate for.

Organisations in which people are performing different operations. **(1 mark)**

QUESTION 2

(10 marks)

(a) State the role of a knowledge worker.

They create information.

(1 mark)

(b) Discuss one alternative to the System Analysis and Design with an example.

i. Prototyping

(1 mark)

Definition: build a model or prototype that can be modified before the actual system is installed.

(1 mark)

Eg: build a ,model of the a system, make changes to it before its actually installed.

(1 mark)

(3 marks)

Or

ii. Rapid Application Development (RAD)

Definition: the use of powerful development software, small specialized teams and highly trained personnel.

Eg: system analyst uses CASE , small teams consisting of selected users and Managers and obtain highly qualified analyst to produce application faster and with highly quality than SAD.

(1 mark for naming the alternative, 1 mark for explaining, 1 mark for eg)

(c) In System Analysis and Design, explain the first task in Phase 1 of the Systems life cycle.

Defining the problem – examining whatever current information system is in use.

Determining what information is needed , by whom, when and why is accomplished by interviewing and making observations.

(2 marks)

(1 mark for task, 1 mark for explanation)

(d) Fill the database dictionary shown below.

Employees Table		
Field Name	Data type	Description
Employee Id	i)	To contain alphabets and numbers
Start Date	ii)	Date employee joined

i) Text (1 mark)

ii) Date/Time (1 mark)

(e) Study the statement shown below and answer the question that follows.

It offers access to this database to the public for a fee.

Source: Computer Studies Year 13, Ministry of Education, 2016.

Name the database described above.

Commercial/ Proprietary database (1 mark)

(f) There are two ways to view data. Define logical view

Logical view focuses on meaning, content and context of data. (1 mark)

QUESTION 3

(10 marks)

- (a) Differentiate between a transaction file and a master file in relation to their content.

Transaction file contains recent changes to records that will be used to update the Master file whereas master file is a complete file containing all records current up to the last update.

(2 marks)

(no linking term no mark)

- (b) Describe **one** advantage of having a database in an organisation.

1. Sharing – information from one department can be readily shared with others.
2. security – users are given passwords or access only to the kind of information they need.
3. less data redundancy – without a common database , individual departments have to create and maintain their own data and data redundancy results.
4. data integrity- when there are multiple sources of data, each source may have variations.

(2 marks)

(1 mark for naming, 1 mark explanation- any 1)

- (c) Discuss one security concern regarding the use of a database with an example and its security measure.

1. Personal and private information about people stored in databases may be used for wrong purposes.

(1 mark)

Eg: a person's credit history is used to make hiring or promotion decision. **(1 mark)**

Security measure: use firewall to control access to internal networks, security in company

Computer rooms, biometrics scanners, CCTV.

(1 mark)

(3 marks)

Or

2. Unauthorized users gaining access to database

Eg: launching of virus into a network or database.

Security measure: use firewall to control access to internal networks, security in company

Computer rooms, biometrics scanners,CCTV.

(any of the 2)

(d) List two ways to reduce the buildup of static charges when servicing computers.

1. Don't shuffle your feet as you walk. **(1 mark)**
2. increase the humidity in the room or building to 50 to 60% - static charges can dissipate before growing large if the humidity level is sufficiently high. **(1 mark)**
3. keep yourself grounded as you walk or move around.
4. wear cotton clothing which is less likely to generate static charges than is clothing of many synthetic materials.
5. remove carpeting from rooms where you service computers and from computer rooms.

(any 2, 1 mark each)

(e) Define ping command.

Is a computer network tool used to test whether a host is reachable across an IP network.

(1 mark)

QUESTION 4

(10 marks)

(a) Study the picture shown below and answer the question that follows.



Source: www.computerhope.com/jargon/

Describe the purpose of the tool shown above.

Network crimping tool. A tool designed to crimp or connect a connector to the end of a cable. **(2 marks)**

(1 mark for the name, 1 mark for the description)

(b) Explain one step that you can perform if you press the power button of the computer and nothing happens.

1. Check to make sure the power cable is connected , the outlet strip is plugged in and turned on and the wall outlet is live.
2. Check the rear power switch on the power supply if present to be switched on.
3. Check the computer's power supply switch to make sure it isn't broken.

(2 marks)

(c) Study the address shown below and answer the question that follows.

00:02:17:58:82:64

Explain the Transmission Control Protocol address shown above.

MAC address – is a unique 6-byte address that is burned into each network interface card

(2 marks)

(d) Describe device driver.

A small piece of software that tells the operating system and other software how to communicate with a piece of hardware.

(2 marks)

(e) Explain the term authoring in web designing.

Authoring- used for the process of preparing content for delivery on the web or more specifically, marking up the content with HTML tags that describe its content and function.

(2 marks)

QUESTION 5

(10 marks)

(a) Sunshine college has hired you to develop their school website.

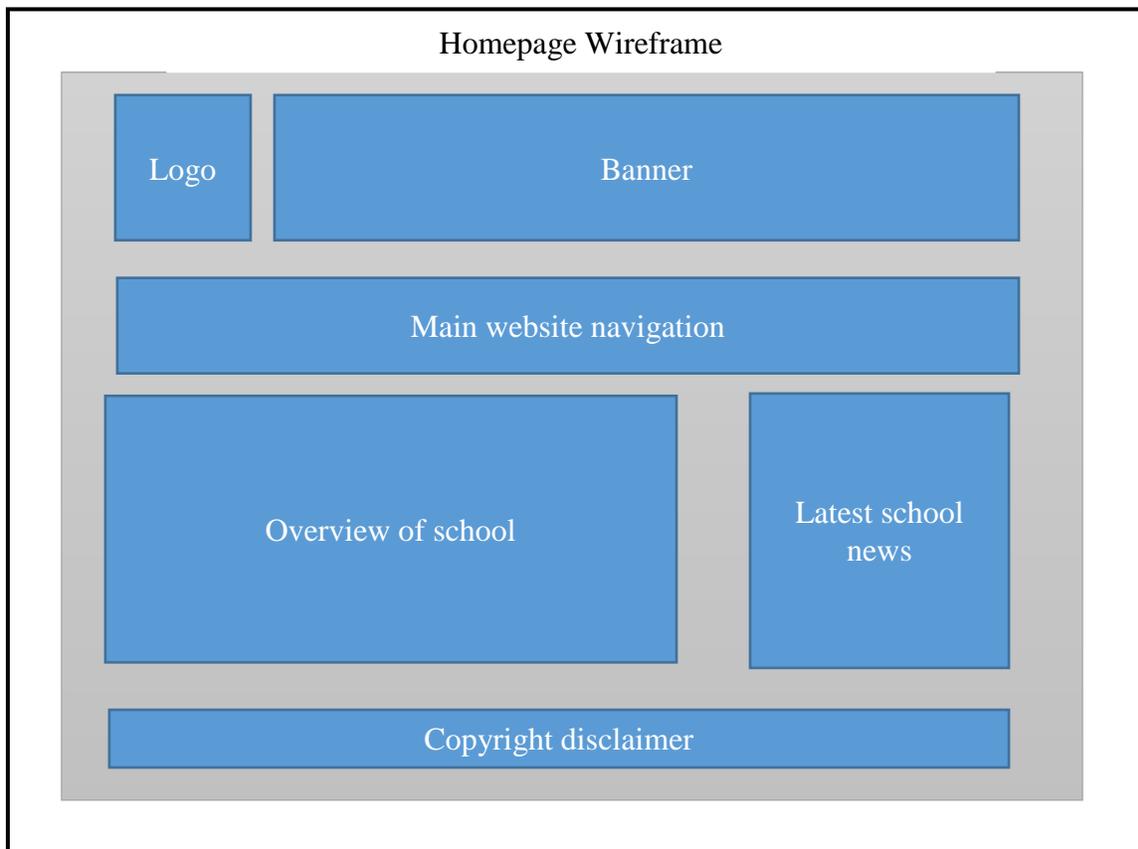
Information is to be organised in a cohesive and pleasing layout.

In the space provided in the **Answer Booklet**, construct a wireframe for their homepage. The homepage is to contain the following web contents:

- (i) Logo
- (ii) Banner
- (iii) Main website navigation
- (iv) Copyright disclaimer
- (v) Overview of school
- (vi) Latest school news

(6 marks)

(b)



(c) Differentiate between **selection statement** and **repetition statement** in programming.

Selection statement , need to take different actions based on the circumstances (make decision) whereas repetition statement , the same type of statement can be executed over and over again (defines the boundary of the program containing the repeated section.

(2 marks)

(d) Study the program shown below and answer the question that follows.

```
#include <iostream.h>
#include <stdlib.h>

int main ( )
{
  int count;

  cout = 0;

  while (count < 4 )
  {
    cout << "Hello"<<endl;
    cout = count + 1;
  }
  system ( "Pause");
}
```

Write the output if the program is executed.

Hello]
Hello] 1 mark

Hello]
Hello] 1 mark

(2 marks)

QUESTION 6

(10 marks)

(a) Define the term **function body**.

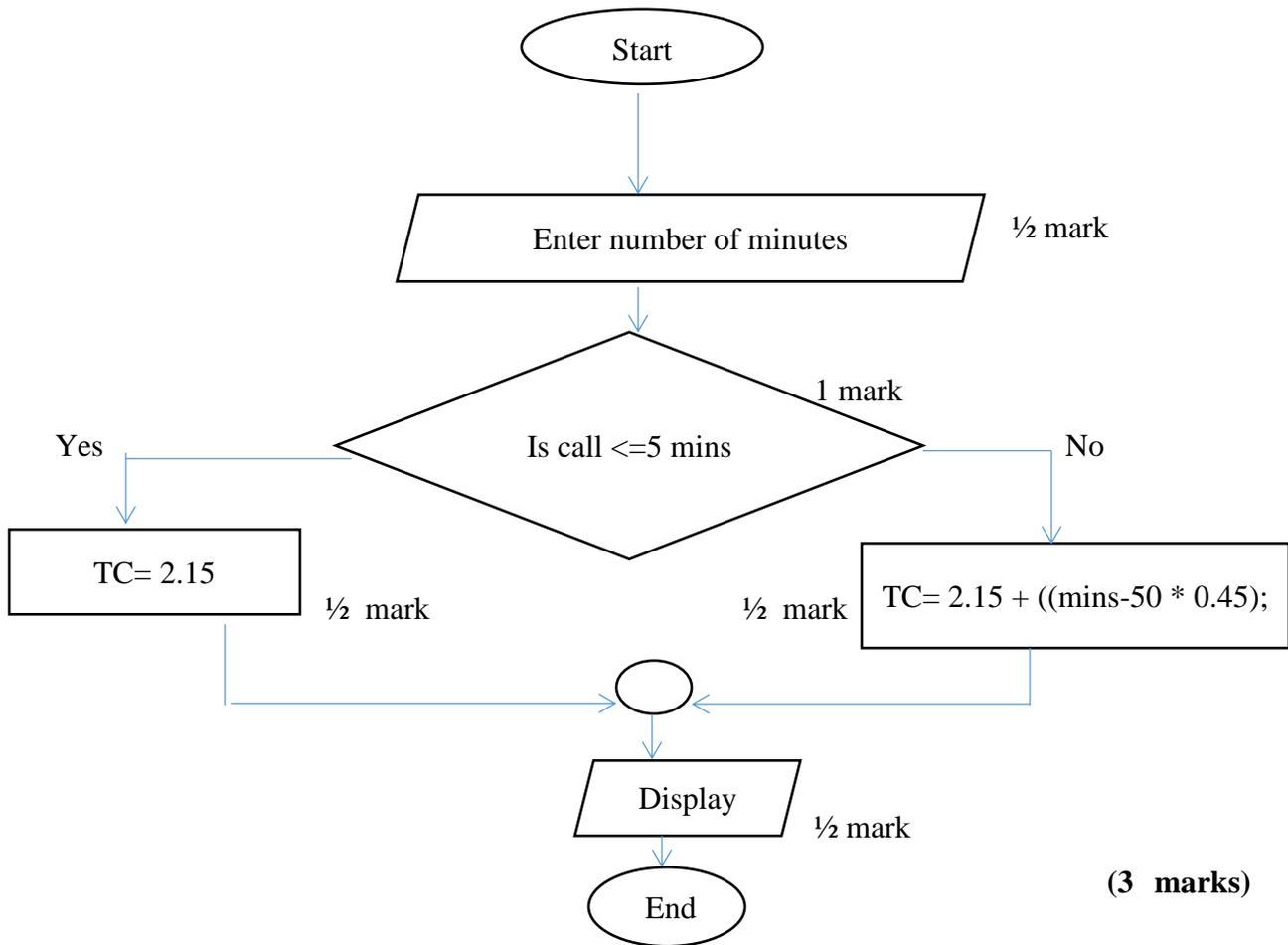
Function body- the main function is where the program execution will start. (1 mark)

(b) Study the information shown below and answer the questions that follow.

The cost of international call from Fiji to Samoa is as follows:

- Connection fee \$0.65
- \$1.50 for the first five minutes and
- \$0.45 for each additional minute

(i) Draw a flowchart from the above information.



(ii) Write a program that prompts the user to enter the number of minutes the call lasted and outputs the amount due.

(6 marks)

```

#include <iostream>
using namespace std;
int main ( )
{
    int mins;
    float Total_Charge;

    cout<< "Enter the number of minutes the call lasted" <<endl;
    cin >>mins;

    if (mins <=5)
    {
        Total_Charge= 2.15;
    }

    Else
    {
        Total_Charge= 2.15 + ((mins-50 * 0.45);
    }

    cout << "The total charge of the calls: $" << Total_Charge<<endl;

    system ("pause");
    return 0,
}

```

} 1 mark

cout<< "Enter the number of minutes the call lasted" <<endl; **1 mark**

cin >>mins; **1/2 mark**

if (mins <=5) **1/2 mark**

{

Total_Charge= 2.15; **1/2 mark**

}

Else **1/2 mark**

{

Total_Charge= 2.15 + ((mins-50 * 0.45); **1 mark**

}

cout << "The total charge of the calls: \$" << Total_Charge<<endl;

1mark

system ("pause");

return 0,

}

(6 marks)

SECTION C

[20 marks]

There are **four** essay questions in this section. Answer **any two** questions.

Write an essay of about **180 – 200** words to answer each question.

QUESTION 1 SYSTEMS ANALYSIS AND DESIGN (10 marks)

In phase 2 of the systems life cycle, to analyse data, there are various different tools available to assist the system administrator.

With reference to the above statement, discuss:

- the **three** tasks carried out in phase 2. **(3 marks)**
- **three** data analysis tools. **(3 marks)**
- **three** reasons why organisations need to change their information system. **(3 marks)**

Introduction - ½ mark

Conclusion- ½ mark

<p>3 tasks carried out in phase 2 :</p> <ol style="list-style-type: none"> 1. Gathering data – expands on data gathered during phase 1. Data is obtained from observation , review of current system documentations and interviews. 2. Analysing the data – data is analysed to learn how information currently flows and pinpoint why it is not flowing appropriately. 3. Documenting system analysis – documented in a report for higher management. 	<p>(1 mark per task)</p>
<p>3 data analysis tool:</p> <ol style="list-style-type: none"> 1. Checklist – is a list of question 2. Top-down analysis methodology – used to identify the top –level components of a complex system 3. Grid chart – shows the relationship between input and output documents 4. System flowchart – show the flow or input of data, processing and output 5. Data flow diagram – show the data or information flow within an information system 6. Automated design tool- are software packages that evaluate hardware and software alternatives according to requirements given by the system analyst. 	<p>(any 3 , I mark per tool)</p>

<p>3. Relational database- there are no access paths down hierarchy .Data elements are stored in different tables, each of which consist of rows and columns</p> <p>4. Multidimensional – is a variation and an extension of the relational data model. Sometimes called data cube. Data can be viewed as a cube having three or more sides and consisting of cells.</p>	
<p>3 illustrations</p>	<p>(any 3, 1 mark per illustration)</p>

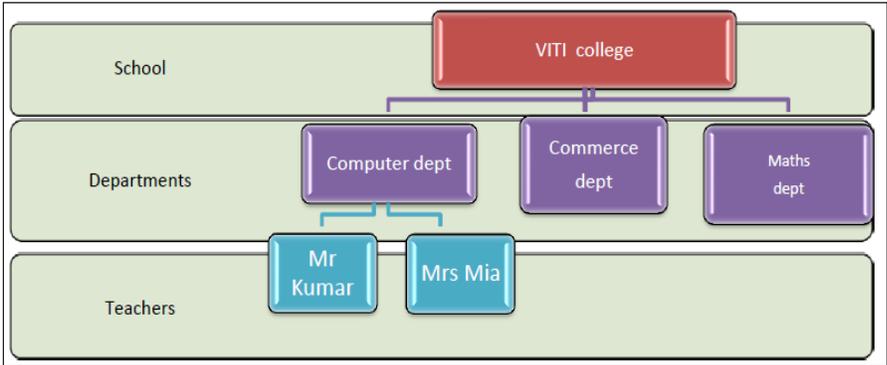


Figure 3.5 Hierarchical database

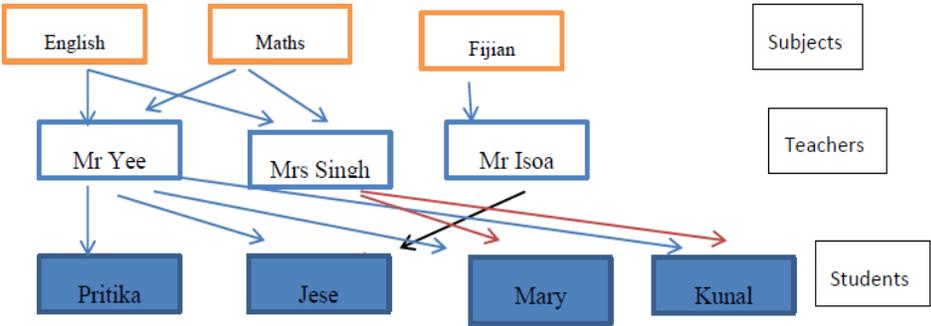


Figure 3.6 Network structure

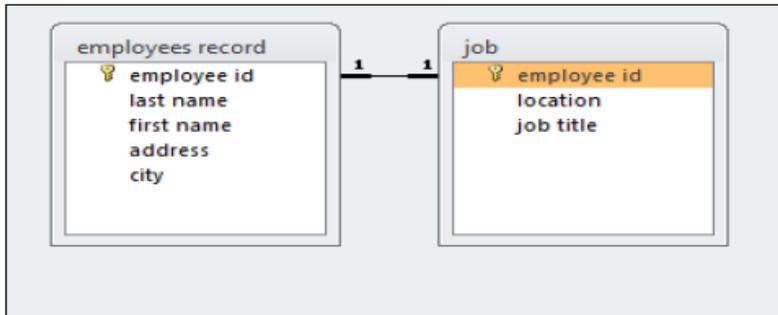


Figure 3.7 Example of a relational database

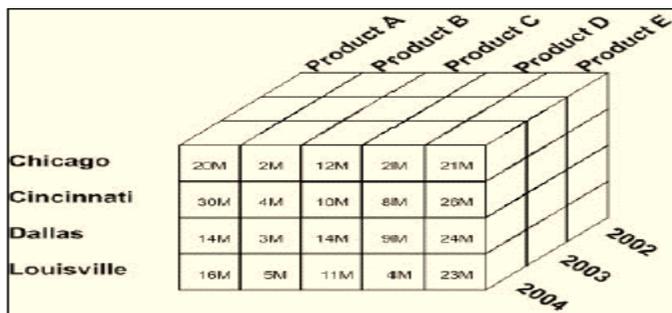


Figure 3.8 Multidimensional

QUESTION 3 **HARDWARE, SOFTWARE INSTALLATION AND BASIC NETWORKING**

(10 marks)

Hardware components such as the hard disk, memory or processor are parts of the computer.

With reference to the above statement, discuss:

- **three** main reasons for installing new hardware components. **(3 marks)**
- **two** hardware components that can be upgraded to increase the computer capacity. **(2 marks)**
- **two** things a computer technician should do while dismantling a computer. **(2 marks)**
- what happens when the computer is switched on. **(2 marks)**

Introduction - ½ mark

Conclusion- ½ mark

<p>three (3) main reasons for installing new hardware components</p> <ol style="list-style-type: none">1. Routine maintenance- is where old hardware is replaced before it wears out or breaks down.2. Fault repair – if equipment develops a fault or break down , it needs to be repaired or replaced3. Upgrade – when a component is installed into a computer to improve performance.	<p>(1 mark per reason)</p>
<p>two (2) hardware components that can be upgraded to increase the computer capacity.</p> <ol style="list-style-type: none">1. Memory card2. Hard drive	<p>(1 mark each)</p>
<p>two (2) things a computer technician should do while dismantling a computer.</p> <ol style="list-style-type: none">1. Disconnect from electricity mains to keep them safe2. Avoid causing damage by not rushing and being careful3. Remember how the parts fit together, perhaps by writing notes4. Keep screws and other components safe	<p>(any 2, 1 mark each)</p>
<p>what happens when the computer is switched on</p> <p>The moment you hit the On switch a light burst of electricity amounting to 3.3 volts starts a series of activities.</p> <p>computer does a self-test (POST) while booting up.</p>	<p>Keyword</p> <p>POST – 1 mark</p> <p>Booting – 1 mark</p>

QUESTION 4 WEB DESIGNING

(10 marks)

A digital web presence enables the content such as texts, images and videos to be displayed on the internet.

With reference to the above statement, discuss:

- **five** activities a web designer needs to consider in website planning. **(5 marks)**
- **four** widely used content formats on the web. **(4 marks)**

Introduction - ½ mark

Conclusion- ½ mark

<p>five (5) activities a web designer needs to consider in website planning</p> <ol style="list-style-type: none">1. Setting the scene –industry and market trends: what web designer’s peers are doing , technology , online society2. The cost of development – budget and time3. Setting SMART goals – specific, measureable , achievable, realistic and timely4. Users needs – who do you want to use the website, what do they want5. Researching users needs - get out and talk to the audience.	<p>(1 mark per activity)</p>
<p>four (4) mostly widely used content formats on the web.</p> <ol style="list-style-type: none">1. Plaintext- can be authored in any word processor2. Video & audio – expensive to produce3. Flash – format that allows for highly interactive applications , games and other contents4. Portable document format (PDF)- preserves the look or original documents5. Other content options eg widgets – embedded feature from another site6. Mash up – a link between data on web designer’s site and some other site.	<p>(any 4, 1 mark each)</p>