MPUMALANGA DEPARTMENT OF EDUCATION

GRADE 12

INFORMATION TECHNOLOGY P2

Trial Examination - September 2009

MARKS: 180 **TIME: 3 hours**

This question paper consists of 6 questions on 11 pages.

INSTRUCTIONS AND INFORMATION

1. Read ALL questions carefully.
2. Answer ALL questions.
3. Answers should be as concise as possible.

SECTION A: MULTIPLE CHOICES

QUESTION 1

1.1 Various possible options are provided as answers to the following questions.
Choose the answer and write only the letter (A – D) next to the question number (1.1.1 - 1.1.5) in YOUR ANSWER BOOK.

1.1.1 One of the factors that has led to the development of faster computer systems in recent years is the …

A . reduction of the number and complexity of instructions used by the CPU.
B. trend towards no longer using stiffy disks.
C . use of virtual memory.
D . use of CISC.

1.1.2 The complete list of folders that have to be clicked to get to the location of a file is called the:

A . directory
B . DNS
C. path
D. URL

1.13 A simulation …

A. is used when unusual input data is used to test new software.
B . is the situation where virtual memory is used to alleviate a lack of available RAM.
C . uses AI software to allow the computer to play a chess game against a human opponent.
D . is a computer program which emulates a real-life situation such as a prediction of weather patterns.

1.1.4 A protocol that provides some protection for users of sites such as those that supply internet banking.

A. HTTPS
B. HTML
C. FTP
D. HTTP

1.1.5 An example of a smart phone is …

A. a handset which can receive e-mails.
B. when Skype is used on a network PC.
C. a cell phone which has internet connectivity and provides a GUI.
D. one which keeps track of all incoming and outgoing calls. (1x 5 = 5)

1.2 State whether each of the following is TRUE or FALSE. If FALSE, provide the correct term for the underlined word.

1.2.1 A modem is required by each LAN which forms part of a WAN. (2)

1.2.2 Multitasking executes several sections of the program simultaneously. (2)

1.2.3 The function of the accumulator is to temporarily hold the results of calculations. (2)

1.2.4 Caching is effective because it reduces the number of accesses to a slower device. (2)

1.2.5 Multiprocessing starts working on the next intstruction while the current one is still being executed. (2)

(10)

TOTAL SECTION A: [15]

SCENARIO

You are employed as the manager at the head office of a huge car sales company in Mpumalanga. Your office is situated in Nelspruit and controls numerous car sales branches situated throughout Mpumalanga. The server for the client-server network is situated in your building and controls all pricing and stock for the branches.

SECTION B : HARDWARE AND SOFTWARE

QUESTION 2

2.1 The majority of branches have e-mailed head office requesting that the computers that they are using need to be upgraded or replaced. The last upgrade was 10 years ago and each branch was supplied with entry level P4 computers that had the following specifications:

- 1.76 MHz Pentium 4
- 128 MB RAM
- 10 Gig hard drive
- 1.44 MB stiffy drive
- Standard keyboard
- Mechanical mouse
- Standard monitor
- Onboard LAN
- One USB port

You hold an urgent meeting with the directors and decide that the computers at all branches need to be upgraded.

2.1.1 Suggest four sensible upgrades for each computer. Motivate. (8)

2.1.2 The operating system needs to be upgraded from Windows 98 to Windows XP.

2.1.2.1 List four functions of the operating system. (4)

2.1.2.2 What is the minimum amount of memory that will be required for the new operating system. (1)

2.1.3 ***The company directors suggest that hard drives will be replaced in batches over a period of time***.

2.1.3.1 Suggest a suitable size for the replacement hard drive. Motivate. (2)

2.1.3.2 Suggest methods/steps that can be used to improve the performance of existing hard drives on computers that are not being upgraded. (2)

2.1.4 ***After comparing prices, you make a decision to replace stiffy drives with DVD-writers.***

2.1.4.1 List two benefits that the staff will enjoy if they have DVD writers. (2)

2.1.4.2 The computers at each branch are linked via a LAN. Is it necessary to equip all computers with a DVD-writer? Motivate. (2)

2.1.5 Staff members sometimes need to take files and data home in order to complete time consuming processing. They were doing this using stiff disks. Suggest a modern alternative. Motivate by giving two advantages. (3)

2.1.6 The manager at one of the branches insists that the dot matrix printer used to print receipts is very noisy and slow. He wants it replaced by a laser printer. Explain why this is not a good (2)

idea?

2.1.7 The number of USB ports on each of the computers need to be increased to at least 4 or more. Why is this upgrade necessary? (2)

2.1.8 Briefly discuss THREE positive effects that have resulted from the use of computers in manufacturing. (3)

2.2 A staff member at one of the branches asks the IT specialist doing the upgrades at their branch for assistance regarding some problems she is having with her PC at home.

2.2.1 She has recently upgraded her operating system from Windows XP to Vista.

2.2.1.1 Her external hard drive that used to work on the old operating system now refuses to work on the new operating system. Provide an explanation as to why this is happening. (2)

2.2.1.2 Write down the term that is given when the operating system automatically detects and makes a new hardware device ready for use without user intervention. (1)

2.1.2.3 The technician assures her that it is safe to disconnect a device and reconnect another while the PC is on. Write down the term that describes this action. (1)

2.3 Jimmy, a salesman complains that sometimes the computer that he works on comes up with the message "insufficient virtual memory".

2.3.1 Explain the term virtual memory. (2)

2.3.2 How can this problem be solved? (1)

2.4 Briefly explain to the branch secretary why it is better to purchase a computer that has "dual core" than one that has "Hyperthreading" technology. (2)

TOTAL SECTION B: [40]

SECTION C: Applications and implications
QUESTION 3: e-COMMUNICATION

3.1 The computers at each branch are networked via a hub. The local server computer is linked via a router and a leased communication line from Telkom to the main severs at the head office.

3.1.1 The branch manager asks why the computers cannot be networked using peer-to-peer rather than client-server. Provide an explanation by listing the advantages of a client-server network. (2)

3.1.2 Name two features of the computer which acts as a server that is different from the computers which will act as clients. (2)

3.1.3 Identify the network topology that will be used at the branch and state one advantage of using this topology. (2)

3.1.4 A network administrator needs to be hired at one of the branches. Name three tasks, besides security issues, a network administrator must perform to make sure the network is up and running. (3)

3.2 Each branch is allowed Internet access with a 1 Gig CAP.

3.2.1 Explain to the branch employees the meaning and implication of 1 Gig CAP. (2)

3.2.2 To enhance sales, the car sales department will be involved in making podcasts and publishing them so that they can be downloaded by clients.

a) What is podcasting? (2)

b) How will podcasting benefit the company. (2)

3.3 The spares and car servicing department will also be allowed to have a blog and to publish content using the alternative company website that has the Internet domain .mobi

What is a web blog and how will clients benefit from it? (2)

What does the domain name “mobi “ stand for? (1)
What is the advantage of having a website with the .mobi domain? (2)

[20]

QUESTION 4: SOCIAL AND ETHICAL ISSUES

4.1 To prevent fraudulent transactions, the employees in the spares department need to log on to the network using their allocated user name and a password. Prescribe THREE ways in which users can ensure that the password they create is "strong" enough, i.e. it is not easily accessed. (3)

4.2 Most employees use the Internet mainly for checking on unlisted faults when cars are being serviced and for transacting with other branches, the bank and clients. However, some employees use the Internet on a daily basis to do their own private work.

4.2.1 What is *computer ethics*? (1)

4.2.2 Briefly explain the following terms:
4.2.2.1 Piracy (2)
4.2.2.2 Plagiarism (2)

4.3 Head office sends out a warning via e-mail warning branches to be guarded against Internet scams. Briefly explain the following two types of scams:
4.3.1 phishing (2)
4.3.2 identity theft (2)

4.4 The parts sales department staff members are complaining about back pains and red sore eyes since they spend many hours looking up part numbers on screen.

4.4.1 What can be done to reduce eyestrain? (1)

4.4.2 Suggest two ways in which the problem involving back injury can be solved. (2)

4.5 The company fully supports "green computing".

4.5.1 Discuss THREE ways with respect to computers in which the company can ensure that they minimise damages to the environment. (3)

4.5.2 Discuss TWO ways in which the company can dispose of old and obsolete computer equipment. (2)

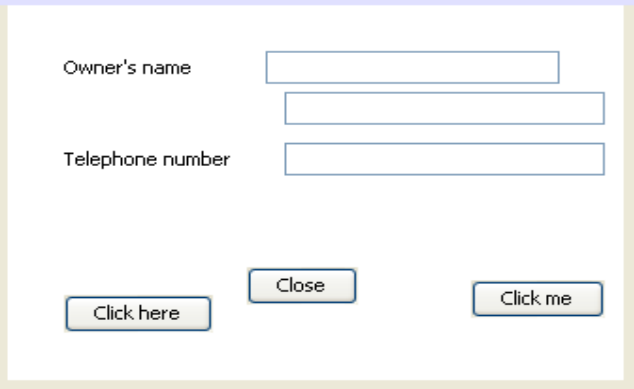
[20]

TOTAL SECTION C: [40]

SECTION D: Programming and software development

QUESTION 5: ALGORITHM AND PLANNING

5.1 One of the branch secretaries has compiled the following capturing screen to capture the data of car owners who have sent their cars for service. Only three fields are shown. Study the given GUI and then answer the questions that follow:



Give two examples of bad design that you can identify regarding:

5.1.1 Screen design (except changing the font type, colour and size) (2)

5.1.2 User friendliness (2)

5.2 The table below (Figure A) shows the table called parts in design view and Figure B shows the table called parts in data sheet view. Use Figures A and B to assist you in answering the questions that follow.

Parts : Table

Field Name	Data Type	Description
Part_No	Number	Four digit reference number
Descrip	Text	Name of part
Quantity	Number	Number in stock
Cost_Price	Currency	Cost to the company
Selling_Price	Currency	Cost plus mark-up
On_Order	Yes/No	Is more stock coming in
Veh_Type	Text	Name of vehicle
Veh_Model	Text	Model of vehicle

Figure A

Parts : Table

Part_No	Descrip	Quantity	Cost_Price	Selling_Price	On_Order	Veh_Type	Veh_Model
1109	Wiper blade	16	R 35.00	R 65.00	☐	Mercedes	2001
1173	Head lamp	2	R 230.00	R 450.00	☑	Mercedes	2002
5689	Bearings	10	R 98.00	R 256.00	☑	Mercedes	2001
7690	Wheel nuts	50	R 4.00	R 8.00	☑	Mitsubishi	2005
0		0	R 0.00	R 0.00	▩		

Figure B

5.2.1 Study both tables and then write down a validation rule for the primary key field. (key is between 1000 and 9999) (2)

5.2.2 Give ONE reason why the field name Veh_model is not a suitable primary key field. (1)

5.2.3 The field size of the field Veh_model is set to 10. Write down an input mask so that the first letter is capital followed by small letters. (2)

5.2.4 Write down the SQL statements that will be used in order to display details of parts that are for Veh_type Mercedes and Veh_model 2001. (3)

5.3 The following algorithm is used to determine the extra charge if a customer who has booked his vehicle for a service comes in late:

```
Step1  charge ←0
Step2  amt ← 40
Step3  x ←time booked
Step4  y ←time vehicle is brought in by customer
Step5  diff ← y – x
Step6  diff ← Round up of Diff to the nearest whole number
Step7  if diff is less than 1
Step8          charge ← amt
               else
Step9          loop from 1 to diff
                   begin loop
Step10               charge ←charge + amt*(value of loop
                       counter)
Step11               output loop counter value
Step12               output charge
                   end loop
```

In your answer booklet copy and complete the trace table below to determine the extra charge for a vehicle that was booked in at 8 and was brought in by the customer at 12.

Step	charge	amt	diff	diff<1	Loop counter<=diff	output

(8)

5.4 The branch workshop where vehicles are serviced, has three mechanics. They work for 8 hours a day, thus the branch can only cope with a limited number of cars per day. A minor service is given the code 1 and allocated a time limit of 1 hour whilst a major service is given a code of 2 and is allocated 3 hours. The workshop has a maximum of 24 hours per day. Clients book in advance.

Write an algorithm that will repeatedly ask the user to enter a vehicle registration number and the service code. The program must then determine the maximum number of cars that can be serviced for the day. Output the number of minor services and the number of major services and the total number of cars that can be serviced for the day. Also output the hours remaining if any. (10)

5.5 The computer prints a number on each receipt/invoice. This number is calculated using the four digit part number and the algorithm below and it is checked when a part is returned to determine if it was taken from this branch.

1. Total ← 0
2. Input four digit part number
3. One ← first digit of part number
4. Two ← second digit of part number
5. Three ← third digit of part number
6. Four ← fourth digit of part number
7. Total ← One * Two * Three * Four
8. Remainder ← The remainder when is Total is divided by 11
9. Output remainder on invoice

5.5.1 Write out steps that will validate the input in step 2 and only accept a four digit part number. (4)

5.5.2 Determine the output for the part number 2715. (4)

5.5.3 Comment on the use of this algorithm for generating sales numbers. State whether this is a good or bad solution and explain why. (2)

TOTAL SECTION D: [40]

SECTION E: INTEGRATED SCENARIO

QUESTION 6

6.1 Many clients have requested that Internet banking facilities be available at the branch to facilitate payment to the company.

6.1.1 Provide TWO benefits of making electronic payments via Internet banking to the client. (2)

6.1.2 How can this facility be made available to the client. (2)

6.1.3 Write down ONE benefit of this system of payment to the company. (1)

6.2 One of the employees suggests that the branch sends Bluetooth messages at regular intervals so that clients in the store with Bluetooth enabled cell phones receive these messages.

6.2.1 What is Bluetooth? (1)

6.2.2 Will this system of communication be costly to the company on a daily basis? Motivate. (2)

6.2.3 Differentiate between Bluetooth and infra-red communication. (2)

6.3 Many employees at head office view the backing up of files at the end of the day as a useless, time consuming exercise.

6.3.1 Explain why the backing up of files is important? (2)

6.3.2 Is it necessary to back up program files as well as data files? Justify your answer. (2)

6.3.3 On a windows computer, the registry is often targeted by spyware. Why do you think this is the case? (2)

6.3.4 What is the function of System Restore in a Windows computer? (2)

6.4 Each branch does not have a dedicated computer technician hence many emails are forwarded to head office requesting guidance on certain issues.

6.4.1 Choose the best option for the following circumstances – choose from **ADSL, Dial-up, ISDN, 3G, iBurst**.

6.4.1.1 I only need to send and receive e-mail and sometimes surf the Internet for short periods

of time.

6.4.1.2 I need a fast, mobile connection as I travel a lot.

6.4.1.3 I need to use the phone and surf the Internet at the same time and I need to have a permanent connection (3)

6.4.2 When I switch my computer on, I am confronted with the message "non system disk". Name TWO possible causes of the problem. (2)

6.4.3 Why is power management so important in portable computers? (2)

6.4.4 I was printing on a computer from the Spares department and someone from the sales department walked in with my printouts! How did she get them? (2)

6.5 Social networking and other forms of e-communication form a part of internet usage by employees. Differentiate between Mailing lists and Newsgroups. (4)

6.6 The company policy is that "Up-to-date anti-virus programs should be running on all computers"

6.6.1 What is a virus? (2)

6.6.2 What is anti-virus software? (2)

6.6.3 How is anti-virus software updated? (1)

6.6.4 Does a stand alone computer need antivirus software? Justify your answer. (2)

6.7 Most modern software is designed with an uninstall feature. Briefly explain why you would recommend this feature over simply deleting the icons and shortcuts when asked to remove the software. (2)

6.8 One of the branch secretaries enquires about the term file compression.

6.8.1 What is file compression and why is it used? (2)

6.8.2 Give an example of a commonly used file compression program. (1)

6.9 How is Internet faxing different to the "normal" way of sending a fax? (2)

TOTAL SECTION E: [45]

GRAND TOTAL: 180