Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2012

INFORMATION TECHNOLOGY P2 MEMORANDUM

MARKS: **180**

This memorandum consists of 9 pages.

SECTION A: MULTIPLE CHOICE QUESTIONS

QUESTION 1

1.1	C	USB devices tend to be more expensive than other devices.	(1)
1.2	B	CPU must support Plug and Play.	(1)
1.3	D	hot plugging.	(1)
1.4	A	partitioning.	(1)
1.5	B	Cluster of the file	(1)
1.6	C	USB hub	(1)
1.7	B	SELECT * FROM CD_Table WHERE Genre = Jazz	(1)
1.8	C	Fetch, decode, transfer, execute	(1)
1.9	A	Firewall	(1)
1.10	D	Applying common sense	(1)
1.11	G	Motherboard	(1)
1.12	F	Sharing hardware	(1)
1.13	L	802.3	(1)
1.14	J	Object Oriented Programming	(1)
1.15	B	IRC	(1)
1.16	I	Rules for determining data transfer	(1)
1.17	E	Disk based	(1)
1.18	C	High speed, high bandwidth connection to the Internet	(1)
1.19	D	For loop	(1)
1.20	H	Authenticity, validity, verification	(1)
		TOTAL SECTION A:	**20**

SECTION B: HARDWARE AND SOFTWARE

QUESTION 2

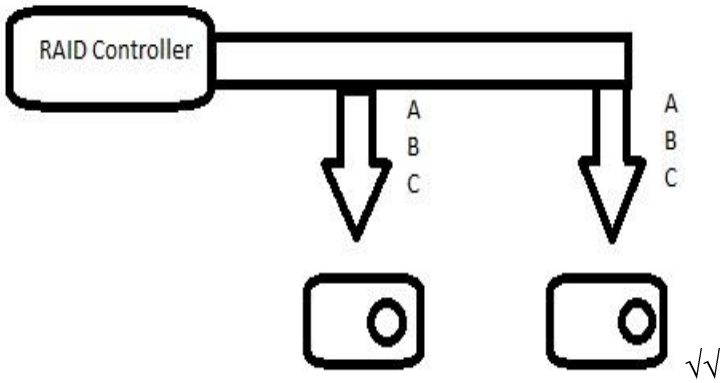
2.1 2.1.1 Three of √√√
Machine 1
Better processor
Better operating system
More RAM (4)

2.1.2 Machine 2 √
For the Internet café, one does not need a high spec machine √ (2)

2.1.3 Five of √√√√√
What do you want to use the computer for?
Where will the computer be used?
Do you need mobility?
Do you need to connect to other computers/Internet?
What peripherals do you need?
What software do you plan to use?
How much data do you need to store?
How much can you afford? (5)

2.2 2.2.1 RAID controller and hard drives √√ (2)

2.2.2 Mirroring √



√√

The same data √ is written to both drives at once √
High fault tolerance √ (6)

2.2.3 To improve speed √ and reliability √ of the storage subsystem in a computer. (2)

2.2.4 Striping with parity √ (1)

2.3 2.3.1 Front Side Bus √ (1)

2.3.2 It is the speed at which the fast components of the motherboard operate √ (1)

2.3.3 A CPU is 32 or 64 bit. √ The register size limits the size of the largest number a CPU can work with without manipulation. √
A larger register size means more addressable memory. √ (3)

2.3.4 Three of: (one mark for naming the method and one mark for the description) √√√√√

- Increase clock speed
  - The faster the clock speed, the greater the instructions the CPU can process per second.
- Clock multiplication
  - Allows the CPU to run at faster speeds than the motherboard
- Cache
  - Fast memory, holds recently used data and instructions
- Instruction set
  - RISC and CISC instruction sets perform basic arithmetic and comparisons. CISC are complex and powerful, RISC are basic but fast. Most CPUs are a combination of both.
- Pipelining
  - Loading a second instruction before the first is finished through the machine cycle.
- Hyperthreading
  - The CPU appears to the OS as if it is two processors
- Multi-core technology
  - One physical chip contains more than one core
- Reduced size of the transistor
  - Means one can fit more transistors into the CPU thus more functionality
- Additional special instructions
  - MMX, SSE etc. to enhance the performance of graphics/multi-media (6)

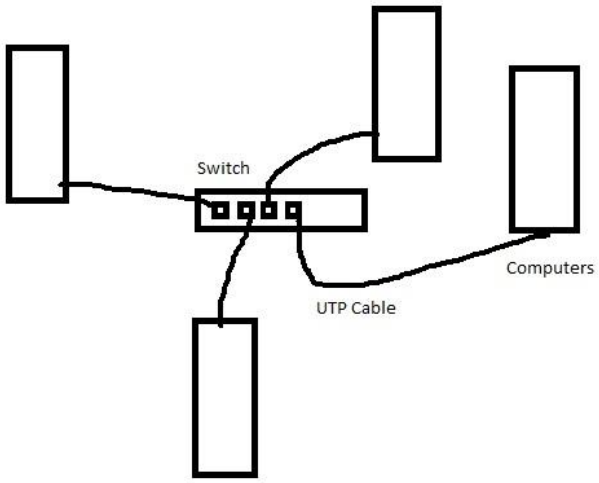
2.4 2.4.1 It is the diagonal measurement across the screen. √ (1)

2.4.2 Two of √√

- Healthier for you
- Takes up less space
- Uses less power
- Or any other suitable answer (2)

2.5 2.5.1 Star topology √. It is the easiest topology to set up √ (2)

2.5.2



√√√ (3)

2.5.3 UTP √ (1)

2.6 2.6.1 Internet Service Provider (1)

2.6.2 A router is a communications device √ that is used to connect one or more networks together √ and allows the secure transmission of data between the networks √ (3)

2.7 2.7.1 Fibre optic √ UTP can only be used to 100 m whereas fibre optic cable can be used easily to cover the 150 m. (2)

2.7.2 Three of √√√
- Faster
- More secure
- More reliable
- Or any other suitable answer (3)

2.8 2.8.1 Plug and play is a technology which allows for the easy and automatic configuration of a hardware device. √√ (2)

2.8.2 A driver is software √ that acts as the interface √ between the hardware and the operating system. √ (3)

TOTAL SECTION B: 55

SECTION C: APPLICATIONS AND IMPLICATIONS

QUESTION 3 e-COMMUNICATIONS

3.1 3.1.1 The Internet was designed for use by the military and academia, both trusted organisations. When it was opened up to the general public, all sorts of abuse started taking place. Hacking, identity theft, spread of viruses and malicious software are some of the threats today. √√√√ (4)

3.1.2 A hacker is someone who tries to gain access to a machine without the person's knowledge or permission. √√ (2)

3.1.3 Phishing is an attempt by someone who uses an email √ to try to get you to access a web site that looks official √ so you "update" your personal details. √ (3)

3.1.4 Identity theft is when a person poses as another person √ in an attempt to fraudulently √ do transactions in that person's name. √ (3)

3.2 Digital signatures ensure the communication is from who it says it is from. √ It provides security to both the sender and the receiver of the communication. √ (2)

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QUESTION 4 SOCIAL AND ETHICAL ISSUES

4.1 Keylogger √ (1)

4.2 No √. People have a right to privacy. √ (2)

4.3 Two of: √√

- Authentic
- Valid
- Verify the data (2)

4.4 Four of √ <u>for name</u> and √ <u>for description</u>.

- Email – write a message, send it and wait for a response
- Instant Messaging – live chat between people
- IRC – people of same interests chatting together
- Forums – place to discuss issues
- Social networking sites – public diaries for friends to see and comment on
- Blogs – public diary focussed on a topic
- RSS feed – keeping track of changing web sites
- Wiki's – reference work
- Podcasts – audio or video newsletter (8)

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TOTAL SECTION C: 27

SECTION D: PROGRAMMING AND SOFTWARE DEVELOPMENT

QUESTION 5 ALGORITHMS AND PLANNING

5.1	5.1.1	The variable cannot hold the result of the calculation. √√	(2)
	5.1.2	Change the variable to one which can hold the value which is being assigned to it √√	(2)
	5.1.3	Because real number variables can hold very large numbers √√	(2)
5.2	5.2.1	Comma separated values √	(1)
	5.2.2	No. √ One does not know how long the file is going to be. √	(2)
	5.2.3	A While loop √ It will continue looping until the condition of EOF is met. If the file is blank it would read no records. √	(2)
5.3	5.3.1	Normalise the database tables √	(1)
	5.3.2	A primary key is a field in a table √ which uniquely identifies a record √	(2)
	5.3.3	The GIGO principle is garbage in garbage out √√	(2)
5.4	5.4.1	ID_Number √. It uniquely identifies a record √	(2)
	5.4.2	It would likely cause an overflow should it be integer. √√	(2)
	5.4.3	Because a cell number has leading a zero. √√	(2)
5.5	5.5.1	SQL is a query language √ used to query and manage databases √. It works across many different database platforms √. Commands are the same no matter what database one accesses. √ For this system, a Delphi program could be written which will have forms for updating/adding/deleting √ data which would be linked to the database through database aware Delphi objects. √	(6)
	5.5.2	SELECT * √ FROM Client_Details √	(2)
	5.5.3	SELECT surname, initials, ID_Number, credit √√ FROM Client_Details √ WHERE credit > 100 √ ORDER BY surname √	(5)
	5.5.4	SELECT surname, initials, √ (((end_hour - start_hour)*60) √ + (end_min - start_min)) √ * cost_per_min - credit √ as owing √ FROM Client_Details √ ORDER BY surname √	(7)

TOTAL SECTION D: 42

SECTION E: INTEGRATED SCENARIO

QUESTION 6

6.1 6.1.1 The layout of the network is referred to as the topology. √ (1)

6.1.2 Three of: √√√
- Easier to make additions/changes
- Easier to troubleshoot
- Network does not go down if there is a cable fault
- Higher speed
- Any other reasonable advantage (3)

6.2 6.2.1 Quad core means the processor contains four processors inside the one physical CPU √ (1)

6.2.2 Hot swappable means the device can be connected and disconnected without turning the machine power off √ (1)

6.2.3 Multitasking is the ability of the processor to switch rapidly √ between running applications √ to give the appearance that the applications each have the full CPU time. √ (3)

6.3 6.3.1 The machine makes use of virtual memory. √ (1)

6.3.2 It is disk based virtual memory. √ When RAM fills up, a page of RAM is swapped to disk √ and memory that is needed is swapped from virtual memory on disk to RAM. √ (3)

6.4 Three of √√√
- Check the printer has power
- Check the cables
- Check that there is paper
- Check for paper jams
- Check for toner/ink
- Check that the correct driver is loaded
- Any other suitable answer (3)

6.5 6.5.1 Web caching is the process whereby web pages are downloaded and saved on the local server the first time the page is accessed √. When that page is required again, it is fetched from the cache instead of from the web √, thus reducing Internet traffic and speeding up web page loading √ (3)

6.5.2 Each packet of data sent over an IP network contains not only the address of the destination computer √ but also a port number √ which tells the destination computer which software the packet must be delivered to. √ (3)

6.5.3 SSL (Secure Sockets Layer) is an encryption protocol √ which encodes data that is sent over the Internet. √ (2)

6.5.4 Spam √ (1)

6.6 6.6.1 Satellite √. Telephones would be non-existent and cell phone coverage could be unreliable or difficult √ (2)

6.6.2 They could purchase a UPS √. A UPS will run a computer system on battery power √ for a short while after power goes off. This protects the equipment from power spikes √ and from corrupting files and the operating system. √ (4)

6.7 A hub broadcasts every received packet of data out on every other port √ thus creating a lot of unnecessary network traffic √. A switch will only forward a packet out on a port to which the destination computer is connected √, thus greatly reducing network traffic making the network more efficient. √ (4)

TOTAL SECTION E: 35

GRAND TOTAL: 180