education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

INFORMATION TECHNOLOGY P2

FEBRUARY/MARCH 2010

MEMORANDUM

MARKS: 180

This memorandum consists of 11 pages.

SECTION A: MULTIPLE-CHOICE QUESTIONS

QUESTION 1

1.1	A	GIGO principle	(1)
1.2	C	encapsulation	(1)
1.3	B	SRAM	(1)
1.4	D	RAID 5	(1)
1.5	B	UPS	(1)
1.6	C	partitioning	(1)
1.7	B	size of the registers inside the processor.	(1)
1.8	A	Any type of software that steals data/damages your computer	(1)
1.9	C	ALU	(1)
1.10	D	guidelines on how to appropriately use the Internet and its utilities.	(1)

TOTAL SECTION A: 10

SECTION B: HARDWARE AND SOFTWARE

QUESTION 2

2.1 2.1.1 Any THREE✓✓✓ (3)
Control access to files
Control individual user logon
Control access to computers
Control access to peripherals
Monitor user activity
Control access to Internet

2.1.2 (a) Cache does not need to be refreshed. ✓ (1)

(b) The CPU✓ runs at different speed✓ from the motherboard / memory✓ and so would have to wait for data✓ (4)

(c) Hard drive ✓ holds recently accessed web pages✓ and when a website is re-visited it is loaded from disk✓ which is faster than the slow communication line✓ (4)

2.1.3 (a) That the processor / chip contains 4 physical CPU's✓ (1)

(b) Multi-core processing✓ OR multi-processing (1)

(c) The single core CPU has to has to manage all current tasks in sequence✓ whilst in the quad core CPU independent tasks can be created and handled simultaneously✓ (2)

2.1.4 (a) An operating system is software✓ that manages the operation of your computer✓ both hardware and software✓ (3)

(b) The code is available. / Anybody can contribute regarding the development of that code ✓ (2)

(c) Well known interface / familiar with the layout of the screen✓
Reliable / Tested code ✓ (2)

2.1.5 Transfer data between memory ✓& CPU✓ (2)

2.1.6 (a) Serial – the data travels 1 bit at a time ✓
Parallel – a number of bits travel together (8 – 16 – 32 – 64 – 128 bits at the same time) ✓ (2)
MAY ALSO STATE
Serial – single wire, Parallel multiple wires (one bit per line)

(b) Heat✓ and Crosstalk✓ (2)

2.1.7 (a) Fetch:The instruction✓ is fetched from cache / RAM✓ (2)

(b) Decode:The instruction is broken up✓ into opcode / data / address✓ and placed in the appropriate registers. (2)

2.1.8 (a) The heat sink stops the CPU from overheating✓ (1)

(b) Makes instructions the same size✓
Frees space on the CPU for more maths / logic circuits✓ (2)

(c) DDR allows data to be transferred twice on a clock tick✓- when the voltage rises (when the tick starts) ✓ and when the voltage drops✓ (when the tick stops). (3)

NB: If the learner explains Quad Pumping (i.e. 4 x transferral) then this can be accepted as well.

(d) Any THREE✓✓✓ of
More logic (working) circuits
Reduces heat
Less power needed
Faster speeds possible (3)

2.2 2.2.1 Wireless network✓ for mobile devices✓ OR Personal Area Network (2)

2.2.2 ANY TWO✓✓ (2)
Cell-phone, GPS, Laptop, headset, camera, PDA

2.2.3 NO. ✓ The range of Bluetooth is too small✓ to contact anything worthwhile OR
YES – the Bluetooth could synch to a cell phone and send a message for help (2)

2.2.4 (a) Any ONE of
WiFi / 3G / Cellular✓ OR Bluetooth (But MUST say connecting to a cell phone) ✓ (1)

(b) A touch screen✓ and browser software✓ (2)

2.2.5 (a) Convergence✓ (1)

(b) ANY TWO✓✓ of Android, Symbian, Palm, Linux, OS X, Windows Mobile (2)

(c) Small screen size✓ (1)

TOTAL SECTION B: 55

SECTION C: APPLICATIONS AND IMPLICATIONS

QUESTION 3: e-COMMUNICATION

3.1 Do NOT✓ respond to email or update your details as this is possible a Phishing scam✓ for criminals to steal your details and your money. ✓
ANY appropriate description along the lines of the above example. (3)

3.2 3.2.1 You are being spammed✓ (1)

3.2.2 Put a filter on your incoming email✓/ Not broadcasting your personal email address (1)

3.3 Software✓ that records all the keys pressed/typing done✓ on the keyboard of a computer. (2)

3.4 3.4.1 The RSS checks all the user's subscribed feeds regularly✓ at scheduled times and downloads any new content automatically without the users having to go to or log on to these sites.✓ (2)

3.4.2 Keeps the identity of the user/subscriber anonymous✓ (1)

[10]

QUESTION 4: SOCIAL AND ETHICAL ISSUES

4.1 ANY TWO✓✓
People can see where you are/you lose your privacy
Makes you vulnerable to stalkers
Your data can be analyzed by spammers/criminals/marketers
Other appropriate threats (2)

4.2 ANY THREE✓✓✓
Improved record keeping
Better communication
Telemedicine
More efficient administration
Better diagnosis
Better training (3)

4.3 No. ✓ The advice is unreliable because the source is unknown/unreliable/not medical professionals – any reason which relates to the quality of the information. ✓ (2)

4.4 4.4.1 It would be plagiarism/theft/dishonest/infringement of copyright✓ (1)

4.4.2 ANY TWO✓✓
Quote and reference / acknowledge sources
Get the author's / publishers permission
Pay for the right to use the material (2)

[10]

TOTAL SECTION C: 20

SECTION D: PROGRAMMING AND SOFTWARE DEVELOPMENT

QUESTION 5: ALGORITHMS AND PLANNING

5.1 5.1.1 Any THREE useful hints: ✓✓✓
Give an example of the format of input e.g. the date to enter
Do not supply too much additional information as part of input/Keep text/instructions short and simple.
Supply the categories of exercises to choose from rather than allowing users to type
Group types of inputs e.g. personal information followed by input on exercise etc.
Be more friendly in terms of input message e.g. Enter your name (3)

5.1.2 Any THREE: ✓✓✓
Supply numbers (dropdown list) to choose from
Provide a messagebox with the entered date for the user to confirm
Give the format of the date: first day then month then year
Or supply an inputmask: -- / -- / ---- (3)

5.1.3 (a) No✓ The person can enter yes / no for being married, but it is not necessarily correct although the input is valid. ✓ (2)

(b) No✓ The name cannot be validated because there is not a fixed set of data that it can be tested against.✓ (2)

5.2 ANY THREE useful hints✓✓✓
Use descriptive variable names
Use comments at the beginning of sections of code
Indent statements in to ensure a readable structure
Break up large sections of code into smaller modules using blank lines / comments / subprograms (3)

5.3 5.3.1

(a) Syntax: Errors that do not follow the rules of the programming language used. ✓ Example: No brackets enclosing the conditions of and if statement✓ (2)

(b) Runtime errors are errors that cause a program to terminate abnormally. ✓ OR Runtime errors occur while an application is running if the environment detects an operation that is impossible to carry out e.g. requesting through code that printing must be done but the printer is not connected✓ (2)

(c) Logical error: When the program does not perform the way it was intended to. ✓ Example: When an endless loop occurs. ✓ (2)

5.3.2 Syntax Error: Compiler will not compile the program and indicates the error.
Runtime error: Program crashes / displays an exception.
Logical error: Results are not what they are expected to be. (3)

5.4 5.4.1 Option C: Best. ✓✓✓ (3)

5.4.2 Option A: Not efficient ✓because the month and year of the current date are extracted inside the loop – Must be done once before the loop starts✓

Option B: Incorrect, ✓ The if-statement must be inside the loop, must be done for each member✓ (4)

5.5 5.5.1

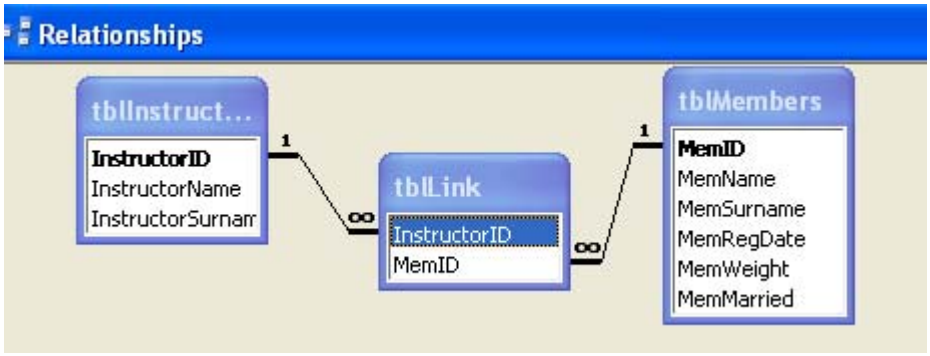
Field	Data type	Size / Format
MemID	Text	6
MemName	Text	20
MemSurname	Text	30
MemRegDate	***Date/Time***✓	***Shortdate***✓
MemWeight	***Number***✓	***Double***✓
MemMarried	***Boolean or Yes/No***✓	
Instructor1	Text	6
Instructor2	Text	6
Instructor3	Text	6

(5)

5.5.2 (a) Three tables with correct fields (Instructor1, Instructor2 and Instructor3 removed from tblMembers✓, tblLink contains the primary keys of both the original tables ✓ The instructor table stays as given ✓ (3)

(b) tblLink contains the primary keys of both the original tables – indicated as foreign keys ✓ the other two tables only contain the two primary keys ✓ (2)

(c) One to many relationships indicated correctly between the tables as indicated below ✓✓ (2)



5.6 5.6.1 A class is the description / blue print / plan of an object✓
An object is an instance of the class. ✓ (2)

5.6.2 Using the setAmount method. ✓ The set method is declared as public and therefore an object can use the method to change the content of the data fields of the object. ✓ (2)

5.6.3 The constructor initializes the data fields of objects✓ (1)

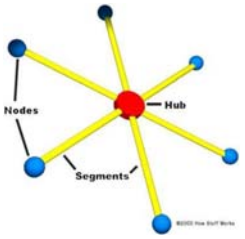
5.6.4 setAmount(newAmount)✓ (1)

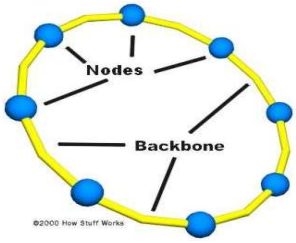
TOTAL SECTION D: 47

SECTION E: INTEGRATED SCENARIO

QUESTION 6

6.1 6.1.1 (a)





Star diagram, computer / switch in the middle, ✓ all the other computers connected directly to the computer/switch in the middle✓ and Ring diagram✓ computers are connected without a switch/computer in the centre✓ (4)

(b) Star topology✓ (1)

(c) Switch✓ (1)

6.1.2 (a) ANY TWO✓✓ (2)
Fibre optic, UTP, STP, Co-Axial

(b) ANY TWO✓✓ (2)
Radio Waves (WiFi, Wimax, wireless, satellite, microwave, bluetooth) Light (Infra-red)

(c) UTP✓ – cheap✓ and reliable✓ / fast✓ OR
Wireless✓ – Easy to install / no cabling✓ few computers✓ (3)

(d) The collision is detected. Both computers✓ time out✓ for a random period✓ and then re-transmit. ✓ OR
An explanation of CSMA-CD – MUST be an explanation. (4)

6.1.3 (a) ADSL has a limited range✓ and because they are in the countryside they will not have access to it. ✓ (2)

(b) The ISP provides a connection to the Internet. ✓ (1)

(c) A router✓ (1)

(d) A firewall stops unauthorized programs on your computer from accessing the Internet✓ and stops computers on the network from accessing your computer. ✓
Learners might talk about blocking ports as well. (2)

(e) Virtual Private Network. ✓ (1)

6.1.4 (a) A reversible✓ set of rules✓ used to scramble data. ✓
(or any answer that implies these points) (3)

(b) Data is encrypted using a public key which can be given to anyone✓✓
The message can only be decrypted using a private key which you do not share✓✓ (4)

6.2 6.2.1 Cookie✓, Database✓ (accept save a file on your computer) (2)

6.2.2 FTP or HTTP✓ (1)

6.2.3 The address contains HTTPS✓ and there is a padlock icon displayed✓
Do NOT accept 'verified by Verisign' or anything similar (2)

6.2.4 A driver translates✓ OS instructions✓ into commands that the hardware understands✓.

Any appropriate description along these lines can be accepted (3)

6.3 6.3.1 ANY TWO✓✓
Do not have to install software
Do not need a powerful computer
Do not need to update software
Always have the latest version
Can access software and documents from any computer anywhere in the world.
May accept 'Free' (2)

6.3.2 ANY THREE✓✓✓
Have to be online
If the company goes bankrupt you lose program and data
Document security and backup is out of your control
Company can easily change fee structure without you having a choice
Company can easily deny you access to your data if you are marked as a spammer (3)

6.4 ANY TWO✓✓
Use images / icons
Use animation
Use video
Use audio (2)

6.5 ANY TWO✓✓ examples that show the thief is pretending to be Anand – e.g.
Open a bank account, get a job, get a credit card, buy a car, buy a house, get a passport – all the the name of Anand. (2)

TOTAL SECTION E: 48

GRAND TOTAL: 180