School Logo

SBA Theory Test **TOTAL: 50**

Examiner D Daniels With memo **Moderator O Koko**

SECTION A: Short questions

QUESTION 1: Choose a description in column B that best describes the term in column A.

Write the answers in the space provided below.

COLUMN A		**COLUMN B**	
1.1	Hot Plugging	A	A method used to compensate for the loss of efficiency, or 'bottleneck', that becomes inevitable when a faster medium tries to communicate with a slower medium.
1.2	Firewire	B	A large electronic circuit board with slots and connectors for attaching different components and peripherals.
1.3	Driver	C	iOS
1.4	System software	D	A small amount of storage space on a CPU to store the current instruction to be processed.
1.5	Caching	E	A navigation system that uses signals received from geo-stationary satellites to determine accurately (within 5 m) the position of a receiving device.
1.6	Motherboard	F	Software that is permanently installed on a ROM chip.
1.7	Machine code	G	Software that enables the operating system to communicate with a hardware device.
1.8	Registers	H	The ability to replace or install a device without shutting down the attached computer
1.9	GPS	I	An error condition that occurs when there are not enough bits available to represent an integer value accurately.
1.10	Firmware	J	A Faster way of transferring information between digital devices, especially audio and video equipment
		K	Instructions in binary format (0's and1's) that the CPU can directly execute.

[10]

1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10
H	J	G	C	A	B	K	D	E	F

QUESTION 2 **[10]**

Define the following:

2.1 Hardware interrupt (2)

A dedicated communication channel, or means, whereby a device can request the immediate attention of the CPU, √ in order to process a given function, e.g. a mouse click or a keystroke. √

2.2 Multitasking (2)

The operating system splits the CPU time√ between multiple programs, and so the computer seems to be doing more than one task at a time. √

2.3 Multi-threading (2)

The ability of an operating system to allow programs to split themselves√ into multiple tasks (or 'threads') that can be run at the same time. √

2.4 SOHO Network (2)

Small-Office-Home-Office√ Can be a mixed network of wired and wireless computers just like other local networks. Since these types of networks are meant for businesses, they also tend to include printers and sometimes voice over IP (VoIP) √

2.5 Bios (Basic Input Output System) (2)

The essential start-up instructions of a computer, √ in ROM chips on the motherboard, and representing the lowest level of programming in firmware. √

TOTAL SECTION A: [20]

SECTION B

Question 3 **[18]**

Your school has decided to implement tablet devices for next year. There was a huge uproar from parents claiming that the cost of this project would outweigh the benefit. Your group of IT students were tasked with the project to prove to the parents that this is not the case.

3.1 Ignoring cost as a factor, tabulate the differences between a desktop computer, laptop and tablet. (6)

Compare Size, portability, peripherals, battery life

3.2 Even on tablets, software plays a huge role. Explain what this means by differentiating between system software and application software. Give an example of each based on the tablets. (4)

System Software: System software is used for operating computer hardware.
Application Software: Application software is used by user to perform specific task. √√

Examples may include Android being the system software. The tablet cannot work without the Application software/Apps which are can be downloaded from the App store. √√

3.3 One of the reasons tablets are so expensive is because of the smaller parts they use. Which type of built-in storage does a tablet use and what are the benefits of this of this type of storage? (2)

Solid state drive, √ No moving partsv

3.4 A tablet is simply a computer device that combines many technologies, what do we call this? Name 2 examples of technologies that are combined on a tablet device. (3)

Convergence. √ It has a built in camera, can scan documents, make calls, send emails etc √

3.5 Name three disadvantages of using a tablet at a school. (3)

Any three:

- Learners may be spending too much time on Social mediav
- Learners may be distracted/playing games during lessonsv
- Copying is easierv
- Tablet can get stolen with homework on
- Any answer related to the scenario (disadvantage for the learner at school)

QUESTION 4 **[12]**

There are lots of other costs involved in asking learners to bring their own devices, one of these costs are networking.

4.1 The school is trying to cut costs and has decided to only invest in one big server. You have been tasked with explaining how you will split the server in two using certain software to do this.

4.1.1 Explain what this is called? (2)

By using virtualization, √ this refers to the act of creating a virtual (rather than actual) version of something, including virtual computer hardware platforms, storage devices, and computer network resources. √

4.1.2 List the advantage and disadvantage of doing this. (2)

One server will be seen as two including the hard drive and separate software may be loaded on each. √√

4.2 One of the parents has offered to sponsor the internet connection, this makes it easier to store documents in the cloud.

4.2.1 What is cloud computing? (2)

The practice of using a network of remote servers hosted on the Internetv to store, manage, and process data, rather than a local server or a personal computer. √

4.2.2 Discuss two advantages of storing data / files in the cloud. (2)

Any two: √√

Cost effective, as you receive a certain amount of storage for free
Accessibility to your work is easy, as long as you have an internet connection
Recovery
Increased security

4.3 What is your opinion on using mobile technology in schools? (4)

- Does mobile technology aid or retard the learning process in a school?
- Does mobile technology aid or harm the social relationships on campus?
- Does mobile technology aid or hinder the administrative needs of the school?
- List four points for 4 marks√√√√

TOTAL SECTION B: [30]

TOTAL: [50]

PECANWOOD
COLLEGE
Prepared for Life

2018

THEORY TEST

HARDWARE AND SOFTWARE

Examiner: L Krause

Moderator: T van Jaarsveld

Total: 50

Duration: 50 minutes

SECTION A: Short questions

QUESION 1: Choose a description in column B that best describes the term in column A. Write the answers in the space provided below.

COLUMN A		COLUMN B	
1.1	Thunderbolt	A	The process of storing recently accessed web pages locally so that they are quicker to retrieve the next time they are needed.
1.2	Firmware	B	Part of a program that run independently but simultaneously with other parts of the same program.
1.3	Machine code	C	Electronic boards that contains banks of RAM chips.
1.4	Thread	D	An area of storage or disk space that the operating system utilise for its own use.
1.5	Web caching	E	Software that is permanently stored on the ROM chip.
1.6	Virtualisation	F	Temporary storage.
1.7	DIMM	G	A superfast connection technology which can support multiple simultaneous connections.
1.8	Hot-swappable	H	Creating an entity that only exists in software.
1.9	Virtual Memory	I	Process where the existing contents of firmware is deleted and replaced with an updated version.
1.10	Flashing the ROM	J	Instructions in binary format that the CPU can directly execute.
		K	Automates the configuration process of a device.
		L	To format a flash drive.
		M	Ability to remove a device when the power is on.

[10]

QUESTION 2: State if the following statements are true or false. If the answer is false, provide the correct answer.

2.1 SaaS is a concept of selling a license to use the software forever. (1)

2.2 The firmware of a device can be upgraded. (1)

2.3 JAVA is an example of a compiler. (1)

2.4 Cache can be changed without replacing the components. (1)

2.5 People who use computers to run a small business fall in the category of SOHO users. (1)

[5]

TOTAL SECTION A: [15]

SECTION B:

Scenario:

Northside High School held an ICT expo week. Schools and leading IT industry specialists were invited to create an exhibit or to give a presentation at the expo. The theme of the expo was "Design a modern computer to improve the overall performance of your school's IT lab".

You, as a grade 12 IT student, were appointed as a member of the judging panel, in order to advise the panel on the various aspects of ICT.

1. At the first stall the students developed their own version of a modern motherboard.

   1.1 Give a definition of a motherboard. (1)

   1.2 What is the purpose of a motherboard? (3)

   1.3 The CPU and RAM are two of the most important components in a computer.

      1.3.1 A point-to-point connection between these components are available on the motherboard. What does this mean? (1)

      1.3.2 These two components cannot function optimally without each other. Why would that be? (2)

   1.4 On the CPU you find the ROM-chip. This chip contains the BIOS of the computer which is the lowest level of software. What is the function of the BIOS? (4)

   1.5 Which type of ROM is used in most modern devices and how does this type of ROM works? (3)

2. Another group of contestants focused on mobile technology. They researched two scenarios. One where each student in the school is issued with a laptop and the other where each student brings his own device like a smartphone of tablet to school.

   2.1 One advantage that the group mentioned was that laptops has a modular design. What is meant by the term "modular design"? (1)

   2.2 Discuss two aspects to consider when the students use smartphones or tablets instead of laptops. (2)

3. The school considers taking one groups research and implement the suggestions they made in the school's IT lab.

3.1 They suggest that the IT student may bring their own mouses and keyboards to school as these devices work with plug-and-play technology. What is plug-and-play? (1)

3.2 They also suggested upgrading the current operating system.

3.2.1 What is an operating system? (1)

3.2.2 Name one operating system suitable for desktop computers. (1)

3.3 While talking to the students, terms like "multitasking" and "multithreading" came up. Explain the difference between multitasking and multithreading. (2)

3.4 Data needs to move fast in order to allow components to communicate. The system clock controls the timing of this data transfer. How does the system clock work? (2)

3.5 What is the purpose of caching? (1)

3.6 The school wants to give each student access to Microsoft Office at home when the student leaves the school. Suggest and discuss how the school can do this in a cost-effective way. (2)

4. The organisers need to store documents like event programs and detail of the judging panel in a place where all the organisers can access the information. You suggest to them to store the documents in the cloud.

4.1 What is cloud computing? (1)

4.2 Discuss two advantages of storing in the cloud. (2)

4.3 The organisers have already created a Gmail account for the expo. Name one example of a service they can use for online storage. (1)

4.4 One of the organisers asks you if they can use this service to back up all the documents regarding the organising of the expo? You suggest to them to rather use a cloud backup service.

4.4.1 Give one example of a cloud backup service. (1)

4.4.2 Explain how a cloud backup service is different from a normal cloud storage. (3)

TOTAL SECTION B: [35]

GRAND TOTAL: [50]