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St Benedict's College IT Department
Information Technology Paper I (Theory)
Grade 11

Examiner: Mrs D Kench

June 2012

Time: 2 hours

Marks: 120

PLEASE READ THE INSTRUCTIONS CAREFULLY

1. Your exam paper consists of 3 pages.
2. Write your name below in the space provided. Also write your name on all pages of paper that you hand in.
3. Answer ALL questions. Write the answers to all the questions on exam paper.
4. It is in your own interest to write clearly and legibly.
5. Number your answers exactly as the questions are numbered in the question paper.
6. Start each question at the top of a new page.
7. Read each question carefully, and make sure that you answer all parts of each question and that your answer gives what is being asked for.

NAME:

Question	Actual Mark	Possible Mark
1: Terminology		20
2: Computer Hardware		32
3: The Operating System		27
4: Networking		18
5: Java Programming		23
TOTAL		120

QUESTION 1

Terminology

20 marks

Write the appropriate word for the following descriptions:

- 1.1 The opposite of a broadcast transmission.
- 1.2 A device that connects two different protocols.
- 1.3 A connection that is established for the duration of the call.
- 1.4 A switching technique that uses fixed packet lengths of 53 bytes.
- 1.5 A form of processing where more than one program is in memory and CPU switches between each program very quickly.
- 1.6 A protocol that uses fast data transmission with no error checking for real time data.
- 1.7 A media access method that passes a bit pattern from node to node to avoid collisions.
- 1.8 A mode of data transfer where data can be sent in both directions at the same time.
- 1.9 A network that allows a computer to connect to a LAN using the Internet.
- 1.10 A wireless communication technology that has a range of at most 30m.
- 1.11 What does the A stand for in ASDL?
- 1.12 The total number of bits in an IPV4 address.
- 1.13 Another name for the command interpreter.
- 1.14 The recognition of a device without turning off the computer.
- 1.15 A hard drive with no moving parts.
- 1.16 A program in the operating system that will determine the next program/process to run.
- 1.17 A user interface that includes icons and a mouse.
- 1.18 One of the programs that is executed by the BIOS when a computer is turned on.
- 1.19 A communication method where data is sent along multiple wires at the same time.
- 1.20 A device that converts analog to digital signals and back.

QUESTION 2

Computer Hardware

32 marks

- 2.1 The North Bridge and the South Bridge are the two main components of all modern chipsets.
 - 2.1.1 List three components connected to the South Bridge. (3)
 - 2.1.2 Explain the difference between the North Bridge and South Bridge. (2)
- 2.2 Data and program instructions are transported on buses. One such bus is the FSB.
 - 2.2.1 Give another name for the FSB. (1)
 - 2.2.2 Name three main computer components that are connected to the FSB. (3)
 - 2.2.3 List the three buses in the FSB. (3)
 - 2.2.4 What is the effect does changing the CPU from 32 bits to 64 bits have on each of the buses? (3)

- 2.3 People often confuse the terms SRAM with SDRAM. Explain each term and how they are used in the machine cycle. (8)
- 2.4 System clock
- 2.4.1 What is the purpose of the system clock? (1)
- 2.4.2 Explain the difference between overclocking and clock multiplication. (3)
- 2.4.3 The new Intel core i7 processor has a built-in predefined overclocking feature called "Turbo Mode". Why would this feature be added? Give two reasons for your answer. (2)
- 2.5 How many processors are there in a dual core hyper threaded CPU? Explain your answer. (3)

QUESTION 3**The Operating System****27 marks**

- 3.1 List the three main functions of an operating system. (3)
- 3.2 In process management the operating system needs to ensure that the CPU is not idle. What is necessary for both cores to be utilised in terms of software. (2)
- 3.3 A user inserts a flash drive into the computer. Explain how the operating system will use the interrupt system to allow the user to have access to the newly inserted drive. (5)
- 3.4 With the advent of solid state drives, some users consider virtual memory to be a thing of the past. Explain why this statement is incorrect by discussing how virtual memory works and what is a solid state drive. (4)
- 3.5 A user sends a command to the printer to print a document in MS Word. Explain how this command will be executed by referring to the relevant hardware and software. (4)
- 3.6 Explain the difference between a cluster and a sector. (2)
- 3.7 One type of virus is one that corrupts the file allocation table. Explain by referring to the function of the file allocation table why this type of virus is particularly malicious. (3)
- 3.8 Use a table to compare buffers and spooler. (4)

QUESTION 4**Networking****18 marks**

- 4.1 List two problems with the use of copper cables to transport data. (2)
- 4.2 When will a LAN network be considered a MAN? (2)
- 4.3 A switch and a bridge both reduce network traffic. Explain why they are not interchangeable. (2)
- 4.4 A user wants to connect his wireless laptop and wireless tablet to the Internet from his home. What is the best device to do this and give two advantages of this device. (3)
- 4.5 Explain in detail how CSMA/CD works. (3)
- 4.6 St Benedict's College uses Ethernet technology for all cabled devices such as desktop computers and printers. What topology, cables and switching technique will be used? (3)
- 4.7 Explain how RAID works. (3)

QUESTION 5

Java Programming

23 marks

5.1 When would you declare a variable as static? Give an example. (2)

5.2 A beginner programmer wants to store all his friend's names and ages. He has declared the following two arrays. One to store his friend's names and one to store his friend's ages.

```
String nameArr [] = new String [100];  
int ageArr [] = new Int [100];
```

Give an alternative data structure (way of representing all his friend's details). Explain your data structure. (4)

5.3 A person can recognise a word as long as the word starts with the same first and last letter. The rest of the words can be in any order as long as they are there. For example:

Arocdnicg to rsceearch at Cmabrigde Uinervtisy, it deosn't mttar in waht oredr the ltteers in a wrod are, the olny iprmoatnt tihng is taht the frist and lsat ltteer are in the rghit pcale.

Code a Java method called jumble that will accept a sentence as a parameter and return the sentence with jumbled words.

You may assume no punctuation in the word or in the sentence between words.

If the word has three letters or less, do not rearrange the word. (17)