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ST BENEDICT'S COLLEGE



INFORMATION TECHNOLOGY JULY THEORY EXAMINATION

GRADE 11

MARKS : 120

TIME: 2 hours

EXAMINER:

Ms Emmett, Mrs D Kench

INSTRUCTIONS

1. Ensure that your name appears on all folio sheets.
2. Answer all the questions on the folio paper - labeling your answers clearly.
3. All descriptions are to be brief and concise.
4. Use the mark allocation for each question to guide your answer length.
5. Calculators may not be used.
6. Read each question carefully!

QUESTION	POSSIBLE MARK	ACTUAL MARK
1	40	
2	28	
3	22	
4	30	
TOTAL	120	

Scenario

As a school pupil, you get a part-time job with Compcom in the computer support department. Your job entails fixing PC's laptops and networks. As you are new, you will work under supervision for the first month or so. You will need to explain your knowledge about computers to your supervisor as you fix the problems. Explain the following to your supervisor:

QUESTION 1

1.1 Give the most appropriate term for the following definitions/descriptions:

- a) A signal sent to the CPU from hardware/software indicating the need for the CPU's attention.
 - b) Temporary storage area in RAM associated with a particular device.
 - c) The table used to store the status of all clusters on a hard drive.
 - d) A type of RAM that does not need refreshing.
 - e) The bus that communicates between cache and RAM.
 - f) A sequence of instructions in a program which is executed repeatedly until a particular condition is met.
 - g) A block of variables in memory which all have the same identifier.
 - h) A step-by-step solution to a problem, written in a logical order.
 - i) The maximum carrying capacity of a channel measured as a rate.
 - j) Memory chip that contains hardware and also data that can be changed / set by the user.
 - k) The port specification that allows for both "plug & play" and "hot plugging" device.
 - l) Cable that uses a BNC connector to connect to another cable or NIC
 - m) Idle time of read/write head while platter spins to correct sector.
 - n) The physical connection layout of the computers in a network
 - o) The type of WAN that connects a company's branch offices in different cities, countries and continents.
 - p) Channel that allows data communication in two directions simultaneously
 - q) Hub that regenerates and amplifies the signal as well as performing some intelligent path selection.
 - r) When groups of bits are transmitted simultaneously over a group of wires.
 - s) The bounded media within a LAN/WAN that uses light to transmit the signals.
 - t) Special storage locations in RAM used to hold data coming in/going out to slower I/O devices.
- (20)

1.2 Define each of the following terms (do not expand the acronym):

- a) Plagiarism
- b) Router
- c) GPU
- d) NIC
- e) smart phone

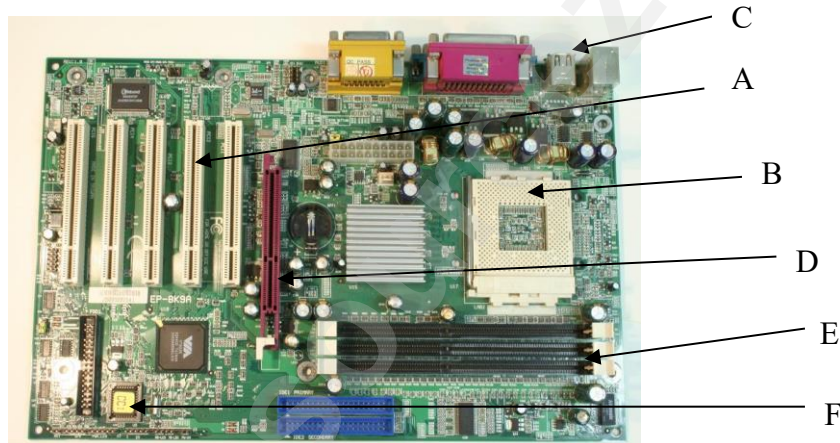
- f) header byte
- g) software piracy
- h) device driver
- i) browser cache
- j) ALU

(20)
[40 marks]

QUESTION 2

Mr Black brings in his old PC which “doesn’t work”. You take apart the PC, removing the connections and identifying the parts to the supervisor as you do it. You are left with the “empty” motherboard as shown in the sketch below:

- 2.1 Clearly identify the labelled parts A to F – by writing the component name in the table below in the correct column – depending on whether the component connects to the Northbridge or Southbridge. (9)



Label	Northbridge	Southbridge
A		
B		
C		
D		
E		
F		

- 2.2 Component A can have various different types of cards slotted into it. Name 2 different cards. (2)
- 2.3 The machine cycle consists of four stages. (4)
- a) Name them. (4)
 - b) Explain why the first stage will always take the same amount of time and execute in the same way. (2)

- 2.4 You need to get Mr Black's computer working. One way to do this is to replace the motherboard with a new motherboard, but we cannot get another motherboard with the same chipset.
- a) Name another computer part that will have to be replaced if you replace the chipset? Justify your answer. (2)
 - b) Name another computer part that can be kept and used with the new motherboard? Justify your answer. (2)
- 2.5 An alternative to replacing the motherboard is to replace the entire PC with a new one.
- a) Explain to Mr Black the cost and time implications of this alternative. (3)
 - b) Would you consider buying a computer with an onboard graphics card or a separate graphics card, if Mr Black only uses his computer to send emails? (2)
 - c) Briefly explain to Mr Black why the development of graphics technology has been so significant in the past 5 years. (2)

[28 marks]

QUESTION 3

- 3.1 Mr Black decides to buy a new PC. Before doing so he reads the specifications for the new PC and they include words like "multitasking", "multiprocessing" and "multithreading". Clearly describe each of these terms to him, showing how they differ. (6)
- 3.2 The memory on the PC consists of DDR3 RAM, CPU registers, EEPROM, cache and virtual memory. Briefly define each term indicating clearly what information is stored in each type of memory. (10)
- 3.3 One of the main tasks of the operating system is managing. It manages the processes, the memory, the files and the secondary storage. Choose any **two** of these management functions. For each of these 2 management functions explain **three** situations the OS has to ensure work smoothly. (6)

[22 marks]

QUESTION 4

CompCom now need to check your expertise in networking PC's together....

- 4.1 Name three different types of cables that can be used to connect nodes in a LAN. (3)
- 4.2 Name 4 different problems that communication channels can be affected by. (4)
- 4.3 A bus topology is one of the oldest (and outdated!) network topology. Use labeled diagrams to clearly show the other 2 network topologies (4)

- 4.4 Why do most networks become a hybrid topology? Explain your answer and define what a hybrid topology is. (2)
- 4.5 If you were to consider connecting computers in a LAN using wireless technology, what hardware would you need if all the computers in the LAN needed Internet access. Explain the function of each device. (4)
- 4.6 Most protocols require error detecting or error correcting. Explain the difference between error detecting and error correcting and how they affect network traffic. Give an example of an error detecting mechanism. (5)
- 4.7 Name and explain the two major access methods used in a LAN. (6)
- 4.8 What is the function of a gateway? (2)
- [30 marks]
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