Grade 11 Tutorial

Question 1
Name an application which makes use of the following sensors.
(a) Temperature
(b) Magnetic field
(c) Motion   [3]

Question 2
(a) State **four** tasks of an operating system.   [4]
(b) State the name for the area of memory used to store temporarily the data
    being sent to a printer.   [1]

Question 3
John is setting up a new computer system to record television programmes.
He wants to be able to record, view and then erase programmes that he does
not want to keep. He has chosen to use DVD-RAM as an optical storage
medium.

(a) Explain to John why it is better to use DVD-RAM rather than
    DVD+RW.   [2]

Optical is one type of storage medium used by secondary storage devices.
(b) (i) Name **two** other different types of storage medium.
    (ii) Give **two** devices that use each type of named medium.   [6]

Question 4
(a) Convert the denary number 125 to hexadecimal.   [1]

(b) Convert binary number 01011111 to hexadecimal.   [1]

(c) Convert hexadecimal number 10D to binary.   [3]

(d) Why a programmer would prefer to see the contents of the locations
    displayed as hexadecimal rather than binary, when debugging his program
    that reads the key presses?   [2]

Question 5

The majority of mobile phones use touch screens. Three common technologies are used by different mobile phone manufacturers. Choose one of the following mobile phone technologies:
• resistive
• capacitive
• infrared

(a) Describe how your chosen technology works to allow a user to make selections by touching the screen. [2]

(b) Give **one** benefit and **one** drawback of your chosen technology when used on mobile phone touch screens. [2]

Question 6

A microprocessor-controlled alarm clock uses the 24-hour clock. The current time is stored in two 8-bit memory locations:
• the hours value is stored in memory location A
• the minutes value is stored in memory location B

(a) State the time currently stored in A and B.

A									B							
0	0	0	1	0	0	1	0	:	0	0	1	1	0	1	0	1
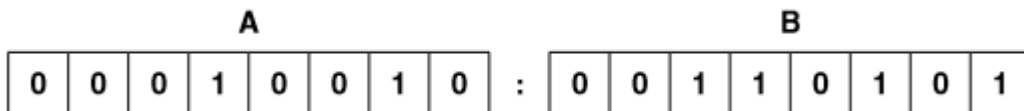
hours: .... minutes: .... [2]

(b) Two 8-bit memory locations, C and D, store the hours (C) and minutes (D) of the alarm time. The alarm has been set for 07:30. Show how 07:30 would be stored:

C								D							

[2]

(c) Describe how the microprocessor can determine when to sound the clock alarm. [2]

(d) The liquid crystal display (LCD) on the clock face is back-lit using a blue LED. The LED brightness is controlled by the voltage supplied to it.

At a certain time at night (i.e. at dusk) or when the room darkens, the LCD display is dimmed automatically. Describe how the microprocessor could determine when to adjust the brightness of the display (i.e. brightness of the LED). [4]

(e) The microprocessor contains both RAM and ROM.
Give **one** function of each type of memory in the alarm clock. [2]