

Application of New Technology in Engineering

Question 1: What is meant by the terms ‘Hardware & Software’?

***Hardware:** all the physical electronic components of a computer system, including peripherals, printed-circuit boards, displays, and printers.*

***Software:** An application program or an operating system that a computer can execute. Software is a broad term that can imply one or many programs, and it can also refer to applications that may actually consist of more than one program.*

Question 2: Make a list of the main parts of a computer internal & external including ancillary parts/components?

Question 3: Explain the function of each of the above.

Input Devices

***Keyboards:** This type of device translates keystrokes into letters or numbers. The letters are then interpreted and commands are performed, depending on what was being sent. The keyboard is one of the most important input devices. There are two major types of keyboard: Mechanical key switch and capacitive.*

***Mouse:** For several years, operating systems were character based. They displayed information on the screen in text format and people interacted with them using command words. Then, a couple of people at the Xerox Palo Alto Research Centre founded the first GUI Graphical User Interface, in which the use of a mouse was used to ‘click’ through the pictures etc.*

Memory/Storage Devices

| <i>Type</i> | <i>Advantages</i> | <i>Disadvantages</i> |
|---------------------------|-----------------------------|---------------------------------|
| <i>Hard Drive</i> | <i>High capacity</i> | <i>Not very ‘mobile’</i> |
| <i>Floppy Disk</i> | <i>Mobile</i> | <i>Low capacity</i> |
| <i>CD-ROM</i> | <i>Reliable</i> | <i>Not enough space</i> |

What is an IC/Silicon Chip

An IC (integrated circuit) or Silicon Chip is a component, which initially has millions and millions of small components within its structure allowing for computer etc. to be made much smaller than usual. The invention has allowed computer manufacturers to produce lower cost computers at a fraction of the size.

Computer Control

CNC – (Computer Numerical Control) Allows the computer to control machines such as – milling machines, lathes, drilling machines etc. This basically allows the computer to control the machines to produce exact replicas of the product every time cut to the proper size and drilled in the correct positions.

CAM – (Computer Aided Manufacturing) This is basically the same as CNC as it allows the computer to control a machine/tool to produce a product which is made exactly to the specifications given by the computer design.

PIC – (Peripheral Interface Controller) Allows the user to design his/her own IC to do as they want it to do, it is also known as 'Programmable Integrated Circuit' for the reason that it can be programmed to do as the user wants it to do and thus is a form of Microprocessor.

Computers effect on:-

a) Business

Computers have allowed businesses to have a faster, more efficient and reliable source of communication, storing valuable data and Coding products for selling (i.e. The Till).

b) Society

Computers have allowed society to become more 'advanced' and therefore allowing it to have the ability to be able to do things faster than the normal conventional ways.

C) Leisure

Computers have allowed people to play computer games on various consoles or PC's. This lets people to do other things for leisure rather than the more conventional ways of going out to play football etc.

d) Engineering

Computers have made a dramatical change in the world of engineering as they have replaced most of the 'manual' jobs such as – Graphical Design through to the actual Manufacturing of the product. It has also allowed certain calculations/equations to be easily worked with i.e. after the product is designed it can then be tested through the computer through simulation programs and therefore the product can be made more efficient or stronger.

e) Education

Education has been benefited by the use of computers as it has allowed students to produce better quality work/homework/coursework and also allowed the teacher to produce better working materials (i.e. Worksheets).