

Example of essay on materials leading to new technologies

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The digital revolutions have made it possible for the amplification of human brains creating symbiotic relationship between human beings and computers efficiently controlling mechanics of industrial revolution as more materials are discovered.

Three essential properties of every material are the kind of atoms of which it's made up of as the atoms can react with other atoms through acquiring, loosing or sharing electrons with other atoms. The way the atoms are arranged to form density e. g. solid materials may be classified according to the way atoms are arranged e. g. may be amorphous when randomly arranged, or may be highly ordered into crystalline structure. Lastly, the way the atoms are bonded together forming ionic or covalent structures.

Silicon is the most semiconductor material being used today for circuitry works in computers (Islam, 2012). It's very much abundant and accessible on earth's surface making it cheap and subsequently reducing the production cost of computers. Discovery of silicon lead to miniaturization of electronic devices resulting into desirable faster and smaller devices called microchips fundamental to computer manufacturing. The microchips flourished market for semiconductors causing tremendous computer revolution increasing supply of cheaper computers in market. This is due to the fact that market evolves around demand for consumer products with new features at low prices (Islam, 2012). Silicon has crystal structure with atomic bonds and can be electrically altered allowing conduction of electric current by either positive or negative carriers depending on added doping agent . Silicon is premier semiconductor used in manufacture of transistors pushing bulky and slow mechanical switches to extinction even replacing the expensive and

fragile vacuum tubes which were used in analog computers.

Microchip is a set of interconnected electronic components etched layer by layer on a semiconductor material e. g. silicon as a result of photolithography. Integrated circuit is a device with numerous etched components on a single piece of semiconductor embedded on a plastic package with a conducting leg making a microchip to be an example of integrated circuit having dual inline package. Other examples of integrated circuits are amplifiers, memory storage, logic gates and complete radios. The number of transistors must be doubled after every 18months when manufacturing any microchip resulting into billions of transistors on a single chip. Integrated circuits are results of physics in conjunction with modern technology in engineering allowing components in solid state like resistors and capacitors to be integrated with active components like transistors and diodes into tiny package with electronic functions on single device.

Artificial intelligence is the science of engineering machines that can simulate human behaviors considered to be brilliant. For example, computers are programmed to play games like chess, make decisions in real life situations e. g. help doctors diagnose diseases based on symptoms, neurotically to reproduce the type of connections that occur in human brain, understand natural languages of human and as robots to see, hear and react to other sensory stimuli. Computers have no live cognitive alert and only strengthen human ability to process information but can not replace human brain; this will make future computers to become more human compatible nurturing human-computer interaction (Whitworth and Ryu, 2009). The human brain is analogue in functioning with neurons transmitting

information at certain thresholds with networks of neuron firing in relative disarray with a leaky integrator in each neuron. The central processing unit of a computers are digital with electrical states recorded in “ 1” and “ 0” where there is no difference following cascading effect when a single electron’s decision go against the grain. The processing speed of the human brain is not fixed as speed is a matter of time taken by electrochemical signals to transverse axons and dendrites and diffusion time of neurotransmitters across synaptic cleft but central processing unit has a concrete monolithic speed.

The modern technologies have enhanced evolution of electronic integrated circuits in computers as microprocessors keep track of all the in formations being transferred within a device. But human brain is more perfect working through out ones lifetime with more researches to inventing and upgrading computers.

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