11 Engineering 4 Engineered Products - Part 2

1.	**martensite**	a hard phase produced when steel is cooled from the hardening temperature at a speed greater than its critical cooling rate, martensite is an acicular (needle-like) phase when seen under microscopic examination
2.	**non-ferrous**	contains no, or minimal, iron
3.	**normalising**	a heat treatment process for ferrous alloys involving heating the material above the upper critical temperature then cooling in still air, the objective being to enhance toughness by refining grain size
4.	**pearlite**	a phase of carbon steel and cast iron consisting of ferrite and cementite formed into distinct layers (or lamellae) on slow cooling from austenite
5.	**polymer**	a giant molecule based on carbon
6.	**potential difference**	the work or energy per unit charge needed to move an electron from one point to another; measured in volts
7.	**quenching**	involves the use of a variety of rates of cooling to cause a steel to harden; media include water, brine and oil
8.	**slip**	involves the movement of planes of atoms moving relative to each other
9.	**steel**	an alloy of iron and up to 2% carbon often with other additions of other alloying elements such as manganese, silicon, chromium, nickel and molybdenum
10.	**tempering**	reheating of a quenched steel to a sub-critical temperature in order to improve ductility and toughness
11.	**three force rule**	when three forces act on a body and the body is in a state of equilibrium, then the three forces must be concurrent, i.e. they will all intersect a common point
12.	**toughness**	the ability of a material to withstand shock loading (opposite to brittleness)
13.	**transformer**	reduce or increase the voltage of an alternating current
14.	**vector**	when a quantity has a magnitude, direction and sense e.g. displacement, velocity, acceleration
15.	**voltage**	the amount of energy required to move a small electric charge along a path
16.	**work hardening**	the result of a plastic or permanent deformation of the crystal structure