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Automotive materials
ACUAG012

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2.

a) The valency of an atom is the calculation of the number of ~~outer~~ electrons in the outer shell, if the number is between 1-4 then the valency is classed as +ve, but ~~if~~ for a compound with 4, 5, 6, 7 valency is decided by subtracting the electron from 8. Ionic bonding occurs when the electrons from an atom swap its electrons with another atom causing it to carry bond with each other, they gain attraction through electrostatic charging. Metallic bonding is bonding that occurs in metal, atoms are arranged in a regular pattern. The outer shell of metal atoms mean that the metal is arranged as the charged ~~electrons~~ ions with the charged electrons in between holding in place with electrostatic forces. Covalent bonding is where the atoms share electrons but don't permanently transfer them, normally this occurs with atoms of the same element or elements close on the periodic table.

b)

$$a = 0.362 \times 10^{-9} \text{ m}$$

$$a = 2\sqrt{2} \times R$$

$$R = \frac{2\sqrt{2}}{2}$$

$$0.362 \times 10^{-9} = 7813334599 \text{ m}$$

$$= 7.81 \times 10^{-9} \text{ nm}$$