

- Give the formula and name of a binary ionic compound formed from the following elements.

Marks
6

	Formula	Name
magnesium and oxygen	MgO	magnesium oxide
barium and bromine	BaBr₂	barium bromide
sodium and nitrogen	Na₃N	sodium nitride
potassium and oxygen	K₂O	potassium oxide

- Explain why some ionic compounds are soluble in water and usually insoluble in hydrocarbon solvents such as kerosene.

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When an ionic solid dissolves, the strong ionic bonds between the constituent ions need to be broken (lattice enthalpy). In water, strong bonds are formed between the ions and the highly polar water molecules to give aquated ionic species. The energy released in this process (enthalpy of solvation) is sufficient to overcome the lattice enthalpy and the solid dissolves. In kerosene, there is little attraction between the ions and the non-polar solvent. The solvation enthalpy is very small in this case, certainly not large enough to overcome the lattice enthalpy, and so dissolution does not occur.