About the Sun

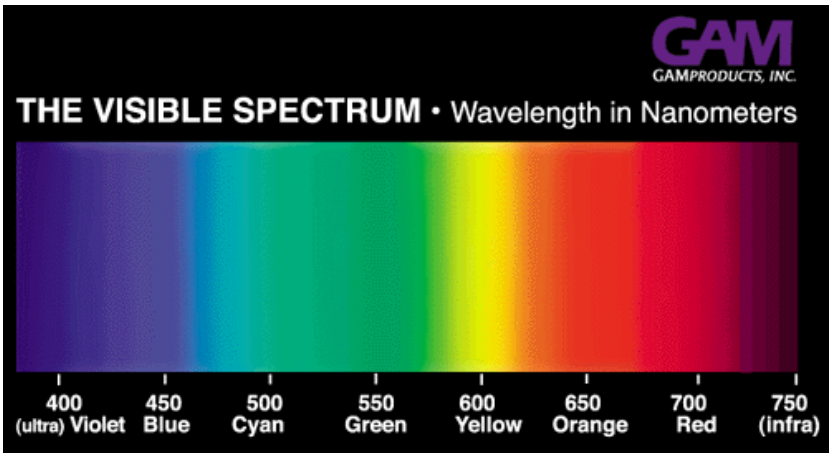
a) What will be the temperature on earth if the sun suddenly stops to emit light?
b) What will be the evolution of the temperature of the sun in the near future and what will be the impact on earth?
c) Give the composition of the sun.
d) Give the name of the process inside the sun which enables it to give a huge amount of energy.
e) Compare the temperature of the corona of the sun to that at its surface.
f) Why does the sun never set on certain planets?
g) The distance of the sun from earth is about 150 million kilometres. How long does light from the sun take to arrive on earth? Give your answer in minutes.
h) In physics Wien's law can explain why light emitted by the sun appears yellow. This law gives a formula:

$$\lambda_{max} = \frac{2.9 \times 10^{-3}}{T}$$

T is temperature in kelvin (K) and λ_{max} is the maximum value of wavelength emitted in metre (m).

The following questions can help you to understand.

☞ Apply the formula to calculate λ_{max} if temperature T = 5000 K. Give the value in nanometres (nm).
☞ To which colour λ_{max} corresponds to? Explain your reasoning.



Note: the temperature at the centre of the sun is equal to about 15 million °C.