16 Alnilam and Mintaka are stars in the constellation Orion.

The table gives some information about these stars.

Star	Surface temperature/K	Luminosity/L_{Sun}	Distance from the Earth/m
Alnilam	2.75×10^4	5.37×10^5	1.90×10^{19}
Mintaka	3.00×10^4	9.00×10^4	8.70×10^{18}

$L_{Sun} = 3.85 \times 10^{26}$ W

(a) State where these stars would be located on a Hertzsprung-Russell diagram.

(1)

....

....

(b) Calculate the wavelength at which peak radiation power occurs for Mintaka.

(2)

....

....

....

Wavelength = ...

(c) Calculate the radius of Alnilam.

(2)

....

....

....

Radius of Alnilam = ...

(d) Deduce which of these stars gives the lower intensity of radiation at the Earth.

(3)

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(Total for Question 16 = 8 marks)