2 **(a)** State what is meant by a *gravitational field*.

.....

.....

.....[2]

(b) Data for the Sun and its nearest neighbouring star, Proxima Centauri, are shown in Fig. 2.1.

	mass/kg	diameter/km
Sun	2.0×10^{30}	1.4×10^{6}
Proxima Centauri	2.4×10^{29}	2.0×10^{5}

Fig. 2.1

The separation of the Sun and Proxima Centauri is 4.0×10^{13} km.

(i) By reference to the diameters of the stars, suggest why Newton's law of gravitation may be used to calculate the force between them.

.....

.....[1]

(ii) Calculate the gravitational force F between the Sun and Proxima Centauri.

$F =$ ..... N [2]

(c) The force calculated in **(b)(ii)** is very large.

Suggest why this force has negligible effect on the motion of the Sun.

.....

.....

.....[2]

[Total: 7]