4 A radio transmitter is a very tall, thin cylinder. It is prevented from falling over by wires which have one end fixed to the transmitter and the other end fixed in the ground. The ends of the wires in the ground are a long distance from the transmitter.

Fig. 4.1 shows the transmitter and two of the wires.

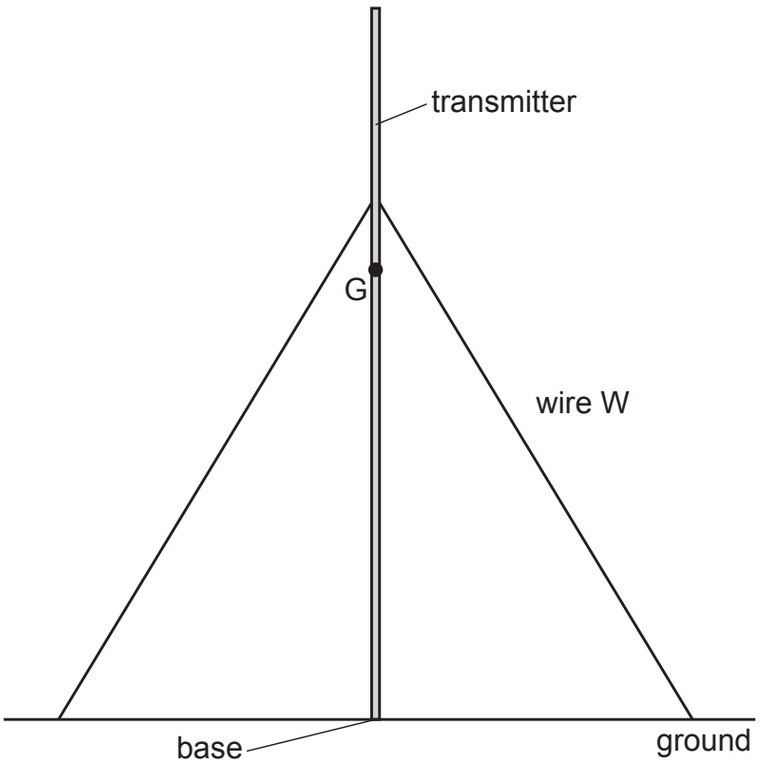

Fig. 4.1

(a) The centre of gravity G is shown on Fig. 4.1.

(i) State what is meant by centre of gravity.

.....

..... [1]

(ii) Explain why the radio transmitter without the wires is a very unstable structure.

.....

..... [1]

(b) Wire W is under tension and it exerts a force *T* on the transmitter.

(i) On Fig. 4.1, mark an arrow to show the force *T* exerted by wire W on the transmitter. [1]

(ii) The force *T* produces a moment on the transmitter about its base.

Describe how the moment produced by *T* is calculated and indicate on Fig. 4.1 what is meant by any other terms in the description.

.....

..... [3]

(c) The radio transmitter uses radio waves to transmit radio and television programmes.

State **one** other use of radio waves.

.....

..... [1]

[Total: 7]