7 A solar panel heats water by absorbing infra-red radiation from the Sun. It consists of an array of pipes, through which water is passed. The array of pipes is contained in a flat box with a glass front, as shown in Fig. 7.1.

For Examiner's Use

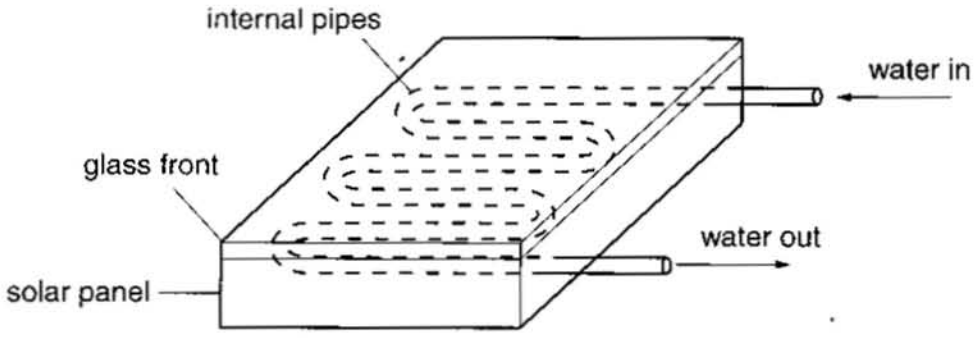

Fig. 7.1

Design an experiment to determine the efficiency of a model solar panel.

The following equipment is available: a high intensity lamp, a variable power supply, an intensity meter for infra-red radiation, a model solar panel with a glass front measuring 10 cm by 10 cm and any other equipment normally available in a school laboratory.

You should draw a labelled diagram to show the arrangement of your apparatus. In your account you should pay particular attention to

(a) the equipment you would use,

(b) the procedure to be followed,

(c) how the power output of the solar panel would be measured,

(d) the control of variables,

(e) any precautions that would be taken to improve the accuracy of the experiment.

[12]

Diagram

[Turn over