

FOR OFFICIAL USE

--	--	--	--	--	--

G

K & U PS

--	--

Total Marks

3220/401

NATIONAL
QUALIFICATIONS
2006

WEDNESDAY, 17 MAY
9.00 AM - 10.30 AM

PHYSICS
STANDARD GRADE
General Level

Fill in these boxes and read what is printed below.

Full name of centre

Town

Forename(s)

Surname

Date of birth

Day Month Year

--	--	--	--	--	--	--	--

Scottish candidate number

--	--	--	--	--	--	--	--	--	--

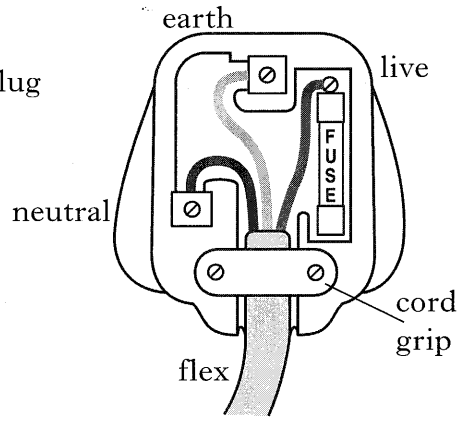
Number of seat

Reference may be made to the Physics Data Booklet.

- All questions should be answered.
- The questions may be answered in any order but all answers must be written clearly and legibly in this book.
- For questions 1–7, write down, in the space provided, the letter corresponding to the answer you think is correct. There is only **one** correct answer.
- For questions 8–19, write your answer where indicated by the question or in the space provided after the question.
- If you change your mind about your answer you may score it out and replace it in the space provided at the end of the answer book.
- Before leaving the examination room you must give this book to the invigilator. If you do not, you may lose all the marks for this paper.



9. The flex of a mains appliance has a 3-pin plug fitted as shown.



The flex contains three wires—live, neutral and earth.

- (a) Circle the correct answer for each of the questions about the wires.

- (i) The colour of the insulation around the live wire is

$\left\{ \begin{array}{l} \text{blue} \\ \text{brown} \\ \text{green/yellow} \end{array} \right\}$.

1

- (ii) The colour of the insulation around the neutral wire is

$\left\{ \begin{array}{l} \text{blue} \\ \text{brown} \\ \text{green/yellow} \end{array} \right\}$.

1

- (iii) The $\left\{ \begin{array}{l} \text{earth} \\ \text{live} \\ \text{neutral} \end{array} \right\}$ wire is a safety device.

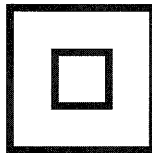
1

- (b) **Explain** why the flex must be held in place by the cord grip.

.....

2

- (c) Another appliance has only two wires in its flex. This appliance carries the following symbol.



- (i) Name this symbol.

.....

1

- (ii) Which wire is not needed in this flex?

.....

1

Marks

DO NOT WRITE IN THIS MARGIN	
K&U	PS

Marks

14. A rowing crew takes part in a race.



The time for their boat at each stage of the race is shown.

		<i>Time from start</i>	
		<i>minutes</i>	<i>seconds</i>
Start:	0 metres	00	00
	500 metres	01	40
	1000 metres	03	50
	1500 metres	05	50
Finish:	2000 metres	07	45

(a) **Describe** how to find the average speed of the boat from the start of the race to the finish.

.....

.....

.....

.....

.....

3

(b) Calculate the average speed of the boat during the first 500 metres of the race.

Space for working and answer

2

14. (continued)

(c) The crew supplies a force to move the boat forward. When the boat is moving, a force opposes the motion of the boat.

(i) Name the force that opposes the motion of the boat.

.....

1

(ii) During the first 500 metres, there is a constant unbalanced force acting on the boat.

Describe the motion of the boat during this section of the race.

.....

1

(iii) During one stage of the race, the speed of the boat is constant.

What can be said about the forces acting on the boat during this stage?

.....

1

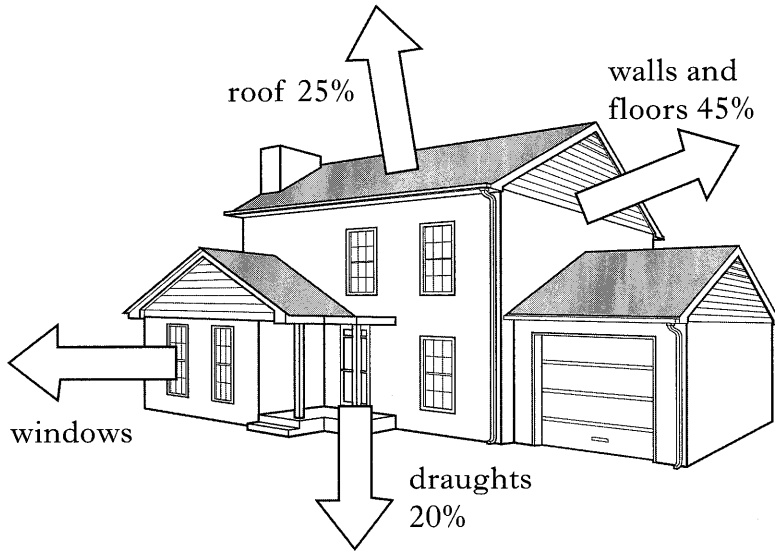
Marks

K&U	PS

[Turn over

Marks

17. The diagram shows all the ways in which heat is lost from a house.



(a) Using information from the diagram, calculate the percentage of heat lost through windows.

Space for working and answer

2

(b) Various windows of area one square metre are tested for rate of heat loss. The results are shown in the table.

<i>Window</i>	<i>Rate of heat loss (joules per second)</i>
single glazed	80
double glazed	60
triple glazed	50

(i) How many joules of heat are lost per square metre from a single glazed window every second?

.....

1

YOU MAY USE THE SPACE ON THIS PAGE TO REWRITE ANY ANSWER YOU HAVE DECIDED TO CHANGE IN THE MAIN PART OF THE ANSWER BOOKLET. TAKE CARE TO WRITE IN CAREFULLY THE APPROPRIATE QUESTION NUMBER.

K&U	PS