

Physics
UNIT: 4PH1
PAPER: 2P

Diagram Booklet

In the boxes below, write your name, centre number and candidate number.

Surname					
Other names					
Centre Number					
Candidate Number					

INSTRUCTIONS

There may be spare copies of some diagrams in case you need them.

THIS DIAGRAM BOOKLET MUST BE RETURNED WITH THE QUESTION PAPER AT THE END OF THE EXAMINATION.

Contents

Page

4	Question 1(b)
5	Question 1(c)
6	Question 1(c) (Spare copy)
7	Question 2(b)
8	Question 3(a)
9	Question 3(b)(iii)
10	Question 4(c)
11	Question 5(a)
12	Question 5(a) (Spare copy)
13	Question 5(c)
14	Question 7(c)
15	Question 7(d)
16	Question 7(d) (Spare copy)

Question 1(b)

Toaster = 1068 W

Kettle = 2025 W

Laptop = 47 W

Electric drill = 713 W

Television = 59 W

Hair dryer = 1511 W

Question 1(c)

199 W

202 W

201 W

213 W

200 W

201 W

Question 1(c)

199 W

202 W

201 W

213 W

200 W

201 W

Question 2(b)

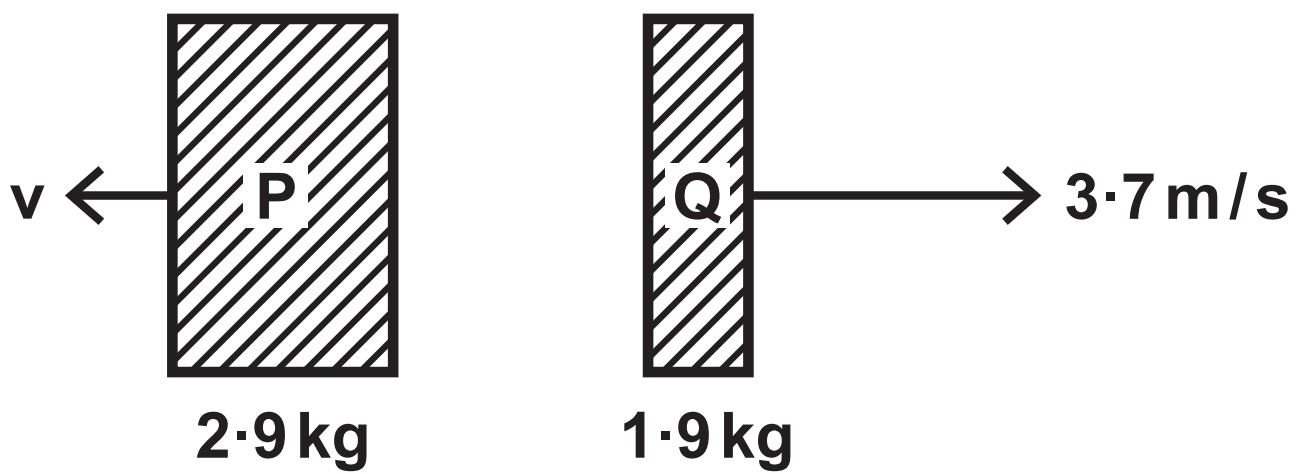
BEFORE



stationary

4·8 kg

AFTER



Question 3(a)

Charger X

Input voltage = 230 V

Output voltage = 5.0 V

Output current = 1.2 A

Question 3(b)(iii)

Charger Y

Input voltage = 230 V

Output voltage = 5.0 V

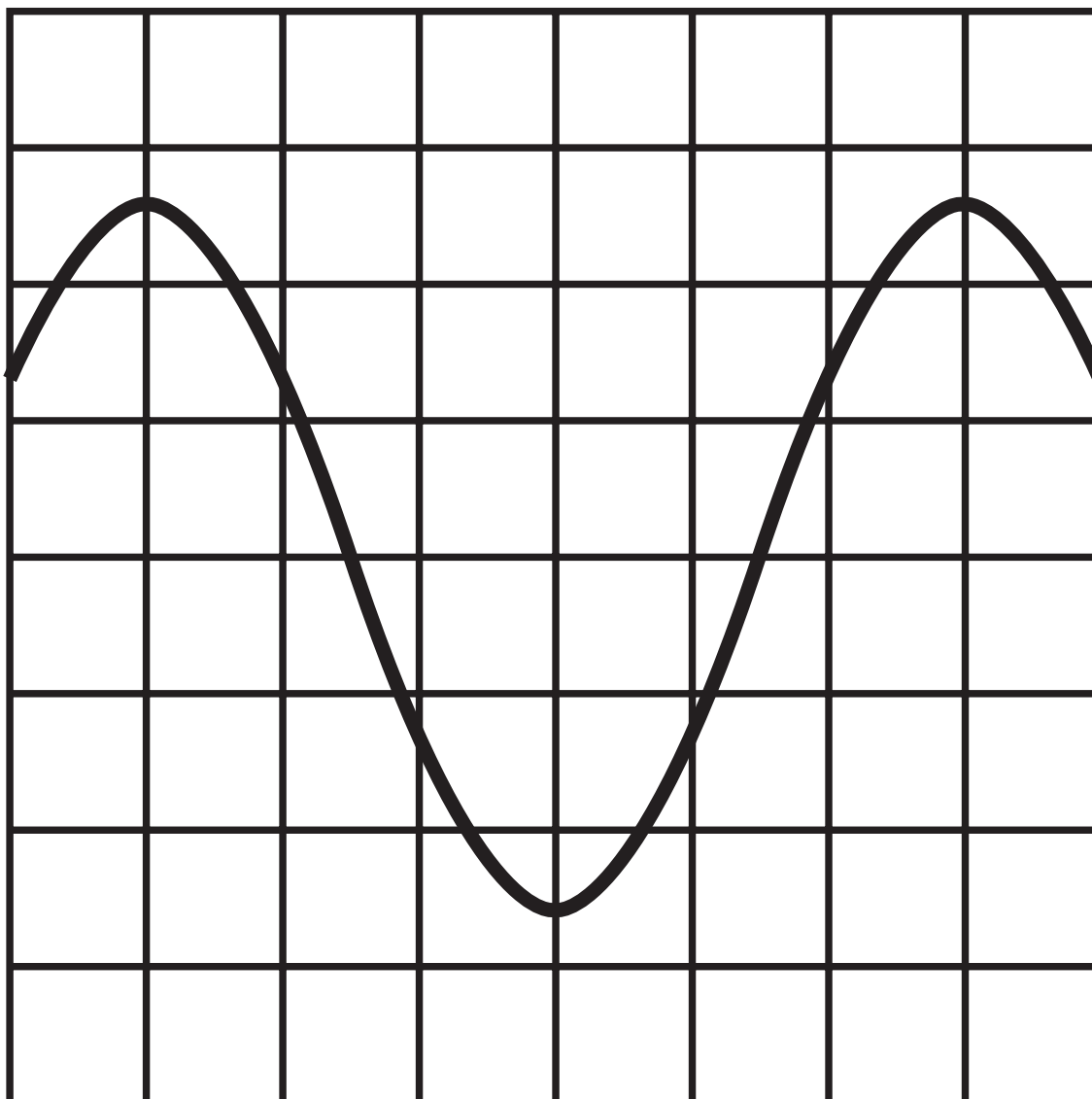
Output current = 2.1 A

Question 4(c)

oscilloscope settings:

y direction: 1 square = 2 V

x direction: 1 square = 5×10^{-6} s



Question 5(a)

	Moderator	Control rod
absorbs excess neutrons		
can be made of boron		
can be made of water or graphite		
is lowered into or raised from the reactor core to adjust the rate of reaction		
reduces the speed of neutrons so they are more likely to cause fission		

Question 5(a)

	Moderator	Control rod
absorbs excess neutrons		
can be made of boron		
can be made of water or graphite		
is lowered into or raised from the reactor core to adjust the rate of reaction		
reduces the speed of neutrons so they are more likely to cause fission		

Question 5(c)

Total mass of uranium in fuel pellet	0·0088 kg
Percentage (by mass) of uranium-235 in fuel pellet	3·0 %
Mass of uranium-235 atom	$3·90 \times 10^{-25} \text{ kg}$
Total energy released from fuel pellet due to fission	$2·17 \times 10^{10} \text{ J}$

Question 7(c)

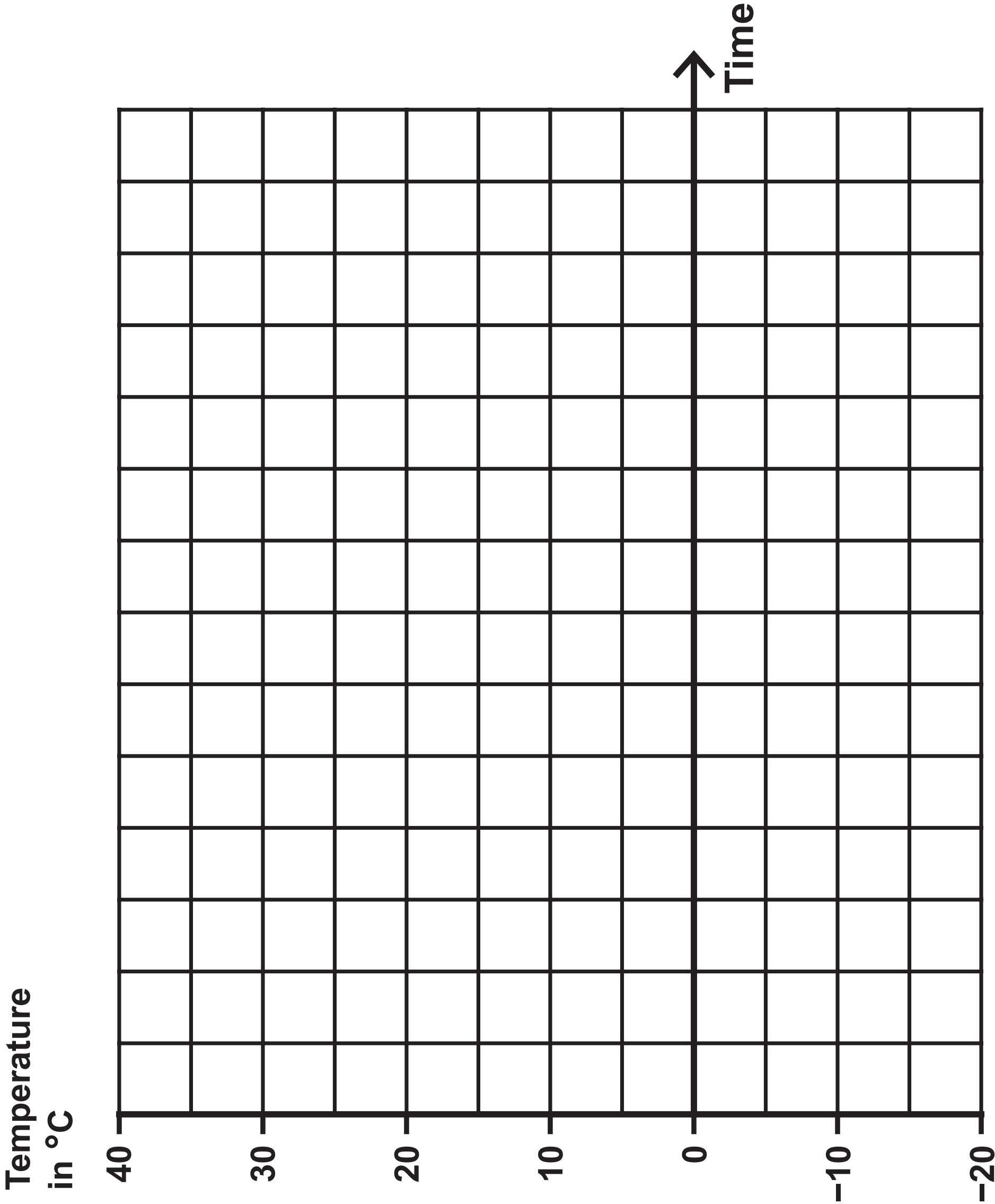
Mass of aluminium block = 1·6 kg

Mass of water = 2·3 kg

Initial temperature of water = 20 °C

Maximum temperature of water = 38 °C

Question 7(d)



Question 7(d)

