

A level Physics B

H557/01 Fundamentals of physics

Question Set 7

1. (a) (i) An electric shower runs at 230 V and 46A.
In summer it increases the water temperature from 22 °C to 39 °C.

Calculate the thermal energy used to increase the temperature of 1 kg of the water.

Specific thermal capacity of water = 4200 Jkg⁻¹ K⁻¹

energy =kJ [2]

- (ii) Calculate the time it will take the heater to deliver this amount of thermal energy.

time =s

[2]

- (b) In winter the inlet water temperature drops to 5 °C, but the final temperature remains at 39 °C.

State and explain the change to the water flow rate for this shower in winter compared to summer.

[2]

Total Marks for Question Set: 6

OCR

Oxford Cambridge and RSA

Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact The OCR Copyright Team, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge