Electric circuits

Question Paper 5

Level	IGCSE
Subject	Physics
ExamBoard	CIE
Topic	Electricity and Magnetism
Sub-Topic	Electric circuits
Paper Type	(Extended) Theory Paper
Booklet	Question Paper 5

Time Allowed: **24 minutes**

Score: **/20**

Percentage: **/100**

1 The circuit shown in Fig. 10.1 uses a 12V battery.
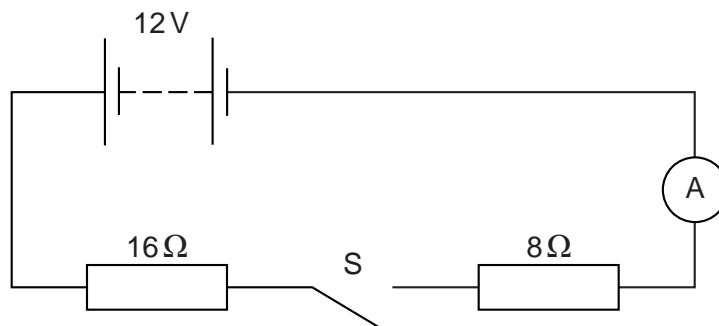
Fig. 10.1

(a) Switch S is open, as shown in Fig. 10.1.

State the value of

(i) the reading on the ammeter,

reading = ... [1]

(ii) the potential difference (p.d.) across S.

p.d. = ... [1]

(b) Switch S is now closed.

(i) Calculate the current in the ammeter.

current = ... [2]

(ii) Calculate the p.d. across the 8 Ω resistor.

p.d. = ... [2]

(c) The two resistors are now connected in parallel.

Calculate the new reading on the ammeter when S is closed, stating clearly any equations that you use.

reading = ... [4]

[Total: 10]

2 Fig. 8.1 is the plan of a small apartment that has four lamps as shown.

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┌─────────────────────────────────┐
│                    │  100 W      │
│     2 × 60 W       │  kitchen    │
│    living room     ├─────────────┤
│                    │   60 W      │
│                    │  bathroom   │
└───────┐   ┌────────┴─────────────┘
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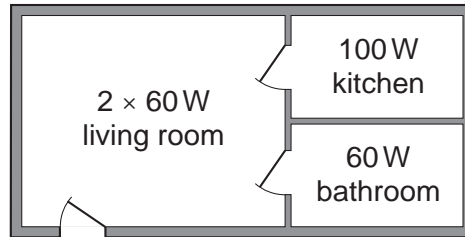
Fig. 8.1

Power for the lamps is supplied at 200 V a.c. and the lamps are all in parallel.

(a) In the space below, draw a lighting circuit diagram so that there is one switch for each room and one master switch that will turn off all the lamps. Label the lamps as 60 W or 100 W.

[3]

(b) The 100 W lamp is switched on. Calculate

(i) the current in the lamp,

current = ... [2]

(ii) the charge passing through the lamp in one minute.

charge = ... [2]

(c) The three 60W lamps are replaced by three energy-saving ones, that give the same light output but are rated at only 15W each.

Calculate

(i) the total reduction in power,

reduction in power = ... [1]

(ii) the energy saved when the lamps are lit for one hour.

energy saved = ... [2]

[Total: 10]