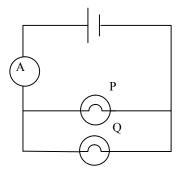
High Demand Questions

QUESTION SHEET 1

(a) In the circuit below, lamps P and Q are identical. The reading on the ammeter is 3A. The cell shown is of emf. 6V.



Calculate the current that passes through lamp P.	
	[2]
(b)If a voltmeter was connected across lamp P, what would it read?	
	[1]
(c)Calculate the resistance of lamp P.	
	[3]

CIRCUITS

High Demand Questions

QUESTIONSHEET 2

(a) Resistors of 5 ohms and 10 ohms are connected in series with a battery supplying 3 volts. What is the total resistance?	
	[2]
(b)Calculate the current which flows in the circuit.	
	[3]

CIRCUITS

High Demand Questions

QUESTIONSHEET 3

(a) Resistors of 2 ohms and 4 ohms are connected in parallel across a battery supplying 6 volts. Another resistor of 5 ohms is connected in series with the battery. Draw the circuit.

	[3]
Calculate the total resistance in the circuit.	
	•••
	•••
	[4]
Calculate the current flowing through the 5 ohm resistor.	
	[2]

High Demand Questions

QUESTIONSHEET 4

(a)	A la (i)	amp is rated at 12 V, 6W. Explain what this means.	
	(ii)	How many joules of energy are transferred by the lamp in 5 minutes ?	[2]
(b))(i) 	Calculate the current passing through the lamp when it is connected to a 12 V supply.	
	(ii) 	Calculate the resistance of the lamp in these circumstances.	
(c)		4 V supply is used to connect two such lamps in series.	[2
	Wha	at difference will there be, if any, in the current and resistance of the lamp?	[2

High Demand Questions

QUESTIONSHEET 5

In the circuit below, 0.6 A flows through the 10 ohm resistor.

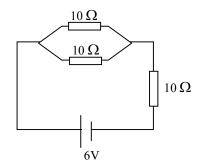
⅃
1 1
10 Ω
20.0
20 Ω

(a) Calculate the current flowing through the 20 ohm resistor.	
(b) Calculate the current flowing through the battery.	
(c) Calculate the voltage supplied by the battery.	
	[3

High Demand Questions

QUESTIONSHEET 6

Each of the resistors in the circuit below has a resistance of $10~\Omega$.



(a) Calculate the resistance	of the two parallel resistor	S.	
			 [2]
(b) Calculate the total resista	ance in the circuit.		
			 [2]
(c)Calculate the current thr	ough each of the resistors		
			 •••••
			 [3]

CIRCUITS

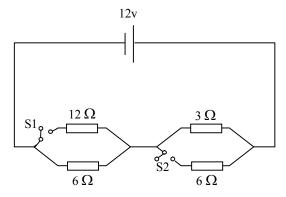
High Demand Questions QUESTIONSHEET 7

(a) Calculate the total resistance of resistors of 2 Ω , 5 Ω and 10 Ω when connected:	
(i) in series with each other	
	[2]
(ii) in parallel with each other.	
	[3]
(b)In which arrangement will the current in the circuit be larger? Explain your answer.	
	[3]

High Demand Questions

QUESTIONSHEET 8

Resistors of 3 Ω , 6 Ω , 6 Ω and 12 Ω are connected up as shown in the diagram.



(a) Calculate the total resistance when both switches are closed.	
(b)Calculate the total current supplied when both switches are closed.	[4]
(e)	
	[2]
(c) Calculate the current in the 3 Ω resistor when switch S1 is closed and switch S2 is open.	
	[3]
(d) Calculate the current supplied when both switches are open.	
	[2]

CIRCUITS

Medium Demand Questions

QUESTIONSHEET 9

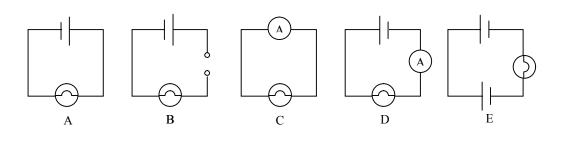
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1	2	Hlactric	Current	10	maggurad	111	amne
ı	\boldsymbol{a}	FIRECUITO	Current	15	measured	111	umns
٦	/						

Which of the following quantities is equal to one amp (1A)? Circle the correct answer

- A one ohm per volt
- B one volt per second
- C one coulomb per second
- D one joule per coulomb
- E one coulomb per ohm

b)(1)	What is meant by an electric current?	
		••
		3]

(ii) State in which of the following circuits the lamp would light. There may be more than one correct answer.

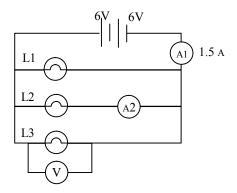


Medium Demand Questions

QUESTIONSHEET 10

The diagram shows a circuit with three identical lamps.

The ammeter, A1, shows a reading of 1.5 A.



and L3, but will not affect lamp L1.	[1]
(b) What name is given to this arrangement of connecting lamps?	
	[1]
(c) What will be the reading on ammeter A2?	
	[2]
(d) What will be the reading on the voltmeter?	
	Γ1 ⁻

CIRCUITS

Medium Demand Questions

QUESTIONSHEET 11

. /	mmeter of low resistance is used to measure the current flowing in a circuit. ain why it must have a low resistance.	
		[2]
(b)(i)	How should a voltmeter be connected in a circuit ?	
(ii)	Should a voltmeter have a high or low resistance? Explain your answer.	[1]
•••••		[3]

(a)

CIRCUITS

Medium Demand Questions

QUESTIONSHEET 12

The potential difference and current for an electrical component is measured. The results are shown in the table below.

Plot a graph of pd (y axis) against I (x axis)

(iii) Suggest what the component could be.

Pd / V	0.5	1.0	2.0	3.0	4.0	5.0	6.0	7.0
I / A	.020	.040	0.56	0.75	0.88	0.93	1.00	1.08

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[4]

CIRCUITS

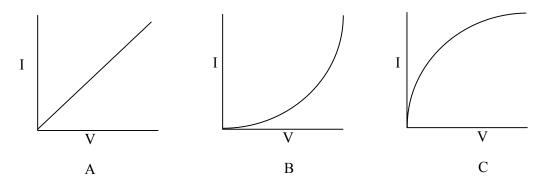
Medium Demand Questions	QUESTIONSHEET 13
A student wishes to investigate whether a	component obeys Ohm's law.
(a) State Ohm's law.	
	[2]
(b) Draw a suitable circuit that could be us	red for the investigation

Medium Demand Questions

QUESTIONSHEET 14

Below are shown graphs of I against V for three different components; a diode, a lamp filament and a metal wire.

All were at constant temperature.



(a) Identify which graph belongs to which component.

Α	
В	
C	[3]
	Which graph shows an ohmic conductor?
	[1
	Which graph shows a component in which resistance increases?

CIRCUITS

Medium Demand Questions

QUESTIONSHEET 15

A machine in a workshop will only operate when the safety guard is in place. There is a large switch on the machine and a switch where it is plugged into the mains.

(a) (i) Draw a circuit diagram showing the switches for the machine.

(ii)	Explain why the switches are placed in the circuit in the way in which you have drawn them.	[3]
		[2]
(eg	to switches are used when you want to able to operate something from two different places. a light at each end of a corridor). plain how the arrangement of the switches will differ from that in the machine.	
		гэ

Medium Demand (Duestions (QUESTIONSHEET 10	6

A stud	ent is asked to investigate	how th	ne resis	stance	of a wii	e varie	s with i	ts length.
(a) Bri	efly describe how this cou	ıld be d	lone.					
			• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •			
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			•••••	•••••	•••••			
								[4]
(b) Hei	re are the results of the exp	perime	nt.					
	Length of wire/cm	0.0	10	20	30	40	50	
	Resistance/ohms	0.0	4.5	9.1	13.6	18.1	22.3	
(i)	Plot a graph of length of	f wire a	against	resista	ınce.			[3]

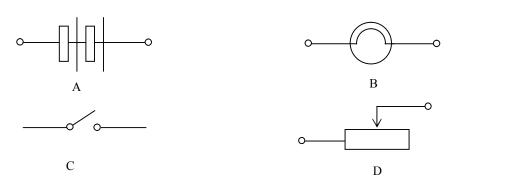
Medium Demand Questions QUESTIONSHEET 16 CONTINUED

(ii) What can you conclude about how resistance of the wire varies with length?
	ro
	i) How is this made use of in a dimmer switch?
	[3

Low Demand Questions

QUESTIONSHEET 17

(a) Name each of the components shown.



(b) What is the purpose of component D?

_____[1]

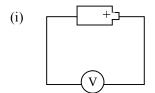
[4]

Low Demand Questions

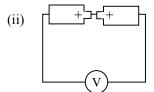
QUESTIONSHEET 18

A torch battery represented by + produces 1.5 volts.

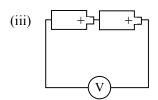
(a) Write down the voltage shown on the voltmeter in each of the following circuits.



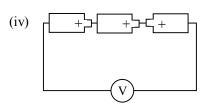




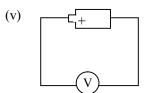




.....[1]



.....[1]



[1]

(b) Explain why you cannot light a car headlamp bulb with a 1.5 V battery.

.....[1]

(c) What happens to the size of a current in a circuit when the voltage increases?

_____[1]

CIRCUITS

Low Demand Questions

QUESTIONSHEET 19

Here is a list some materials in order of their ability to conduct electricity. The best conductor is

at the top and poorest one at the bottom.
silver copper aluminium water PVC rubber
Copper is used in household wiring, but it is not the best conductor.
(a) Why is silver not used?
(b) Aluminium is used in overhead power cables. Why is copper not used?
(c) Which two materials from the list are used to insulate electrical wires?
(d) Explain why bathrooms are always fitted with pull-cord switches.

CIRCUITS

Low Demand Questions QUESTIONSHEET 20

Christmas tree lights are usually wired in series. If one bulb stops working, the others do too.

(a) Explain what is meant by in series.

[2]

(b) If there are 20 bulbs in a set of Christmas tree lights which operate from the mains (240 volts), what would be the voltage across each bulb?

[2]

(c) Why is it wrong to replace a bulb from a 20-bulb set of lights with one from a 40-bulb set?

[2]

(d) Why is it wrong to use

(i) a 3 amp fuse in the plug of an electric fire using 10 amps?

[1]

(ii) a 13 amp fuse in the plug of a radio using 1.5 amps?

.....[2]