

INTEGRATED CIRCUITS (ICs)

TO ANSWER ALL THE QUESTIONS YOU WILL NEED TO DOWNLOAD THE 'INTEGRATED CIRCUITS AND STANDARD COMPONENTS' APP, FROM THE INTERACTIVE MOBILE APP SECTION OF www.technologystudent.com

LINK

<http://www.technologystudent.com/mobapps/electronics2.pdf>

Once you have downloaded the App, you can use it to navigate the website. You may need to follow the links on each page of the App, to research / complete answers to all the questions.

**ARE YOU READY?
USE THE MOBILE App!!**

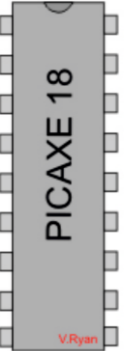
1

WHAT IS AN INTEGRATED CIRCUIT (IC)?

2

THE TWO INTEGRATED CIRCUITS SEEN HERE, ARE 'DUAL INLINE' or DIL PACKAGES.

18 PINS



8 PINS

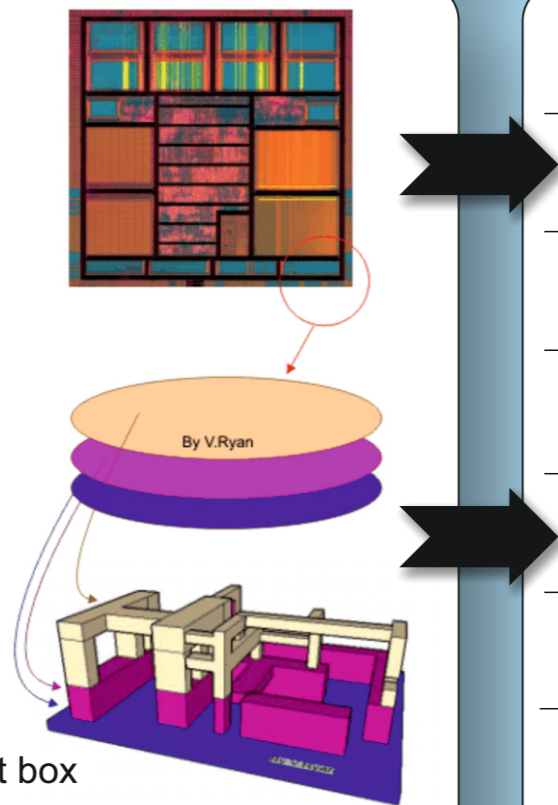


WHY DO YOU THINK THEY ARE CALLED BY THIS TERM?

3

INTEGRATED CIRCUITS ARE COMPOSED OF INTERLOCKING LAYERS / WAFERS OF SILICONE.

WITH REFERENCE TO THE DRAWING, EXPLAIN THE NATURE OF THE LAYERS AND THEIR COMPONENTS.



Write your answer in the next box

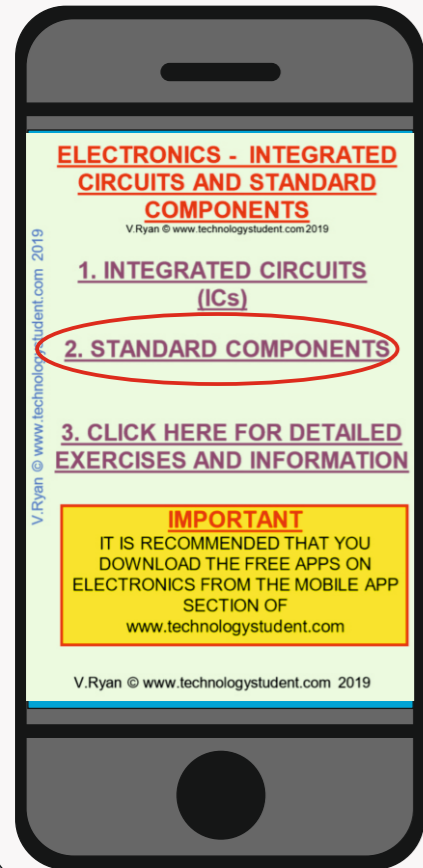
4

INTEGRATED CIRCUITS ARE USED WIDELY IN ELECTRONICS. LIST FOUR ICs. THE FIRST HAS BEEN WRITTEN FOR YOU.

You may need to search the internet.

PICAXE 18

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STANDARD COMPONENTS

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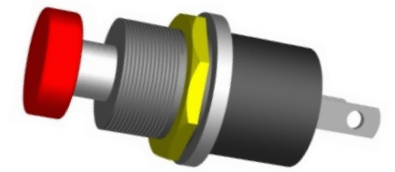
1

NAME THIS SWITCH AND DESCRIBE ONE PRACTICAL APPLICATION.



2

NAME THIS SWITCH AND DESCRIBE ONE PRACTICAL APPLICATION.



3

NAME THIS SWITCH AND DESCRIBE ONE PRACTICAL APPLICATION.



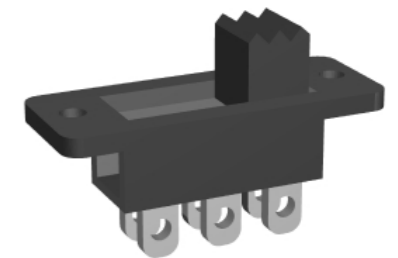
4

NAME THIS SWITCH AND DESCRIBE ONE PRACTICAL APPLICATION.

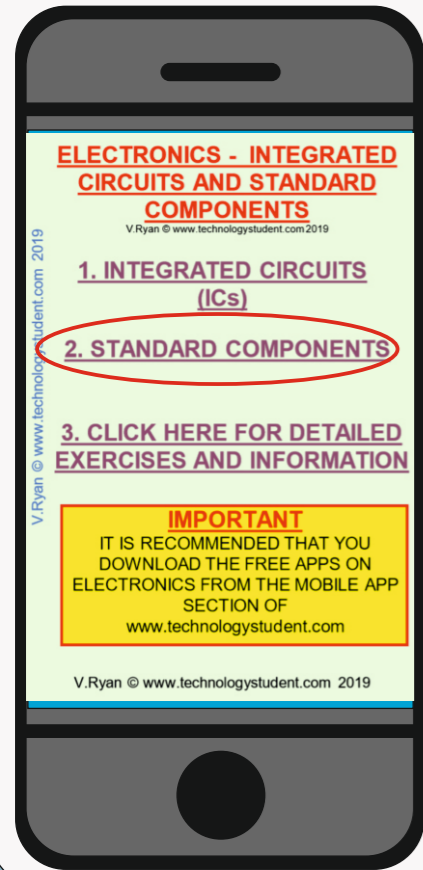


5

NAME THIS SWITCH AND DESCRIBE ONE PRACTICAL APPLICATION.



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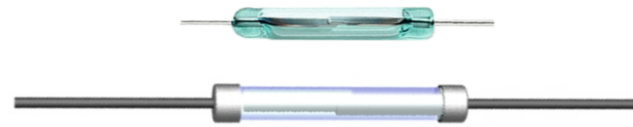
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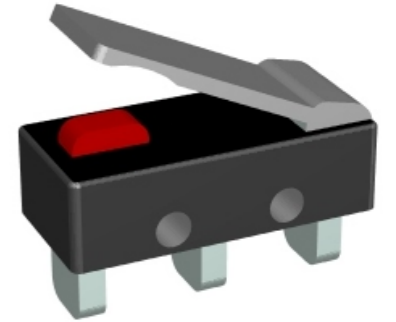
1

NAME THIS SWITCH AND DESCRIBE ONE PRACTICAL APPLICATION.



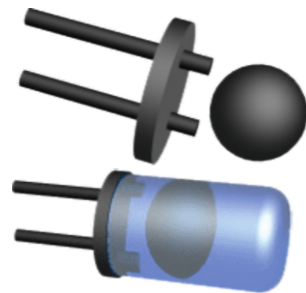
2

NAME THIS SWITCH AND DESCRIBE ONE PRACTICAL APPLICATION.



3

NAME THIS SWITCH AND DESCRIBE ONE PRACTICAL APPLICATION.



4

NAME THIS SWITCH AND DESCRIBE ONE PRACTICAL APPLICATION.



5

SEARCH THE INTERNET FOR ONE MORE SWITCH.
NAME AND DESCRIBE THE USE OF THE SWITCH.
You can paste an image below, if this helps.

HELPFUL LINK: <http://www.technologystudent.com/mobapps/electronics2.pdf>



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1

LABEL EACH OF THE ALKALINE BATTERIES SHOWN BELOW.



2

WHY ARE RECHARGEABLE BATTERIES, A BETTER ALTERNATIVE, TO DISPOSABLE BATTERIES?

3

NAME AND DESCRIBE THE PRACTICAL USE, OF THIS TYPE OF BATTERY.



4

NAME AND DESCRIBE THIS COMMON COMPONENT.



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DIODES

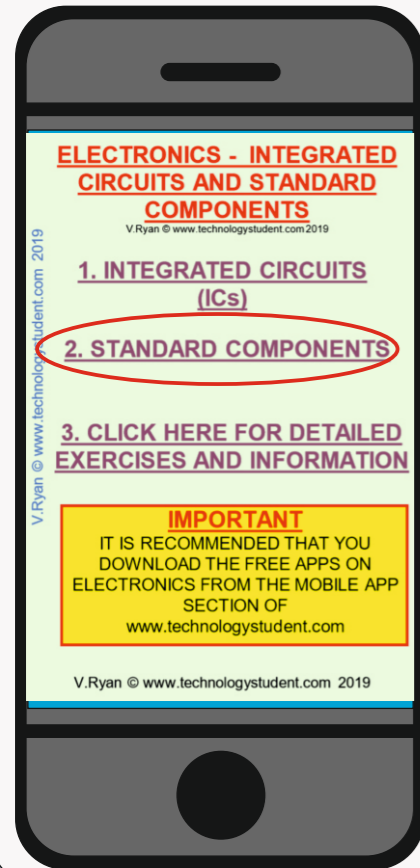
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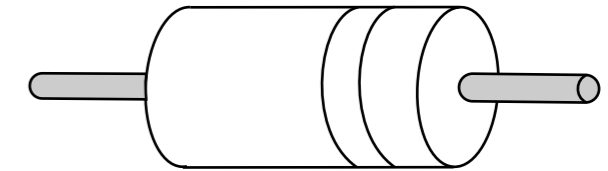


1 WHAT IS THE FUNCTION(S) OF THE DIODE SHOWN BELOW?



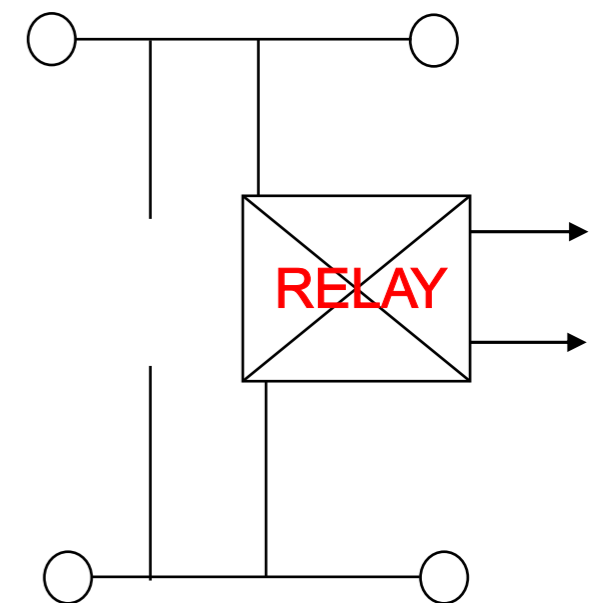
2 LABEL THE ANODE AND CATHODE ON THE DIAGRAM OF THE DIODE

DRAW AN ARROW SHOWING THE DIRECTION OF ELECTRICAL FLOW.



DRAW THE SYMBOL THAT REPRESENTS A THIS TYPE OF DIODE.

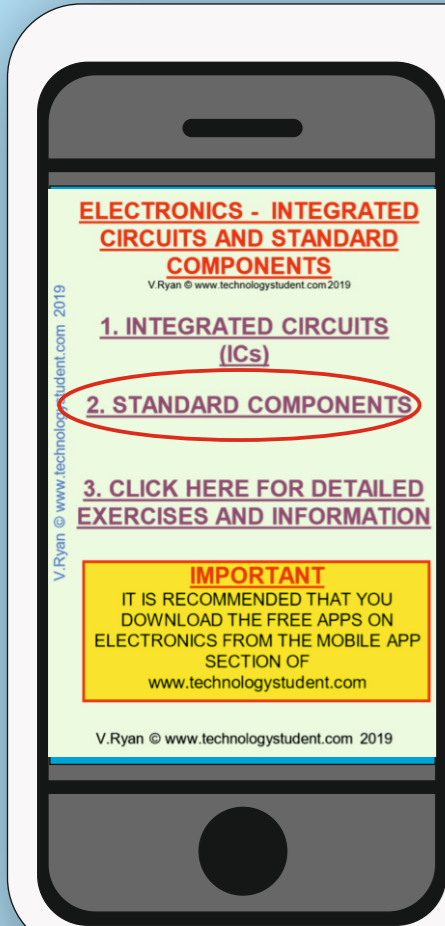
5 COMPLETE THE DIAGRAM BELOW, SHOWING HOW A DIODE CAN BE USED TO PROTECT THE RELAY.



4 EXPLAIN WHY REVERSE POLARITY PROTECTION IS REQUIRED ON A DEVICE SUCH AS A RADIO.

3 THE MOST COMMON TYPE OF DIODE IS A 'SILICON DIODE.' WHAT IS MEANT BY THE THRESHOLD POINT OF A DIODE?

HELPFUL LINK: <http://www.technologystudent.com/mobapps/electronics2.pdf>



ZENER DIODES and THE BULB

TO ANSWER ALL THE QUESTIONS YOU WILL NEED TO DOWNLOAD THE 'INTEGRATED CIRCUITS AND STANDARD COMPONENTS' APP, FROM THE INTERACTIVE MOBILE APP SECTION OF www.technologystudent.com

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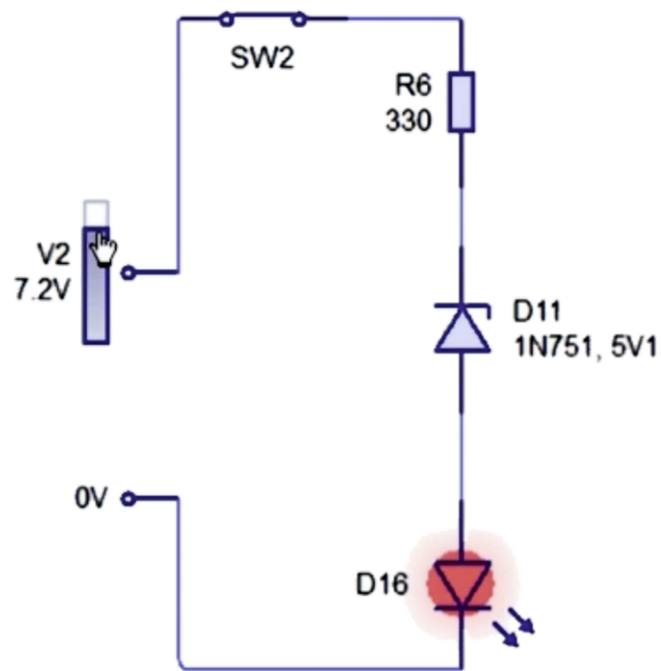
1 HOW DOES A ZENER DIODE DIFFER FROM A COMMON DIODE?

Include the term 'breakdown voltage'



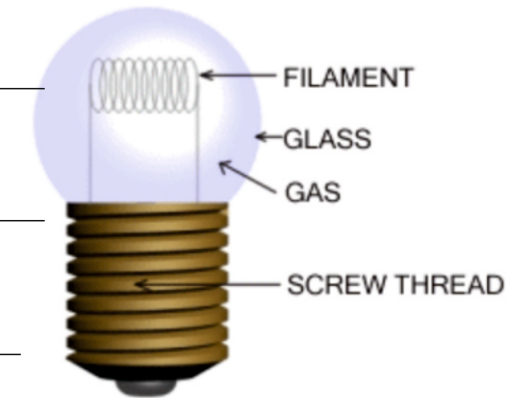
2 DRAW THE SYMBOL THAT REPRESENTS A ZENER DIODE.

3 THE CIRCUIT BELOW, INCLUDES A ZENER DIODE. DESCRIBE ITS FUNCTION IN THIS CIRCUIT.



YOUR DESCRIPTION OF THE CIRCUIT

4 THIS COMPONENT HAS BEEN REPLACED BY THE LED. WHAT IS ITS NAME? WHAT IS ITS FUNCTION?



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CAPACITORS

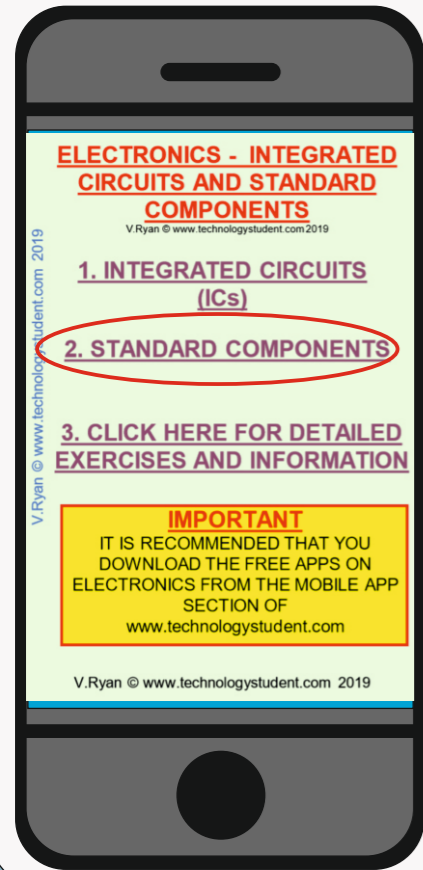
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1

WHAT ARE THE MAIN FUNCTIONS OF CAPACITORS, IN SIMPLE CIRCUITS?

2

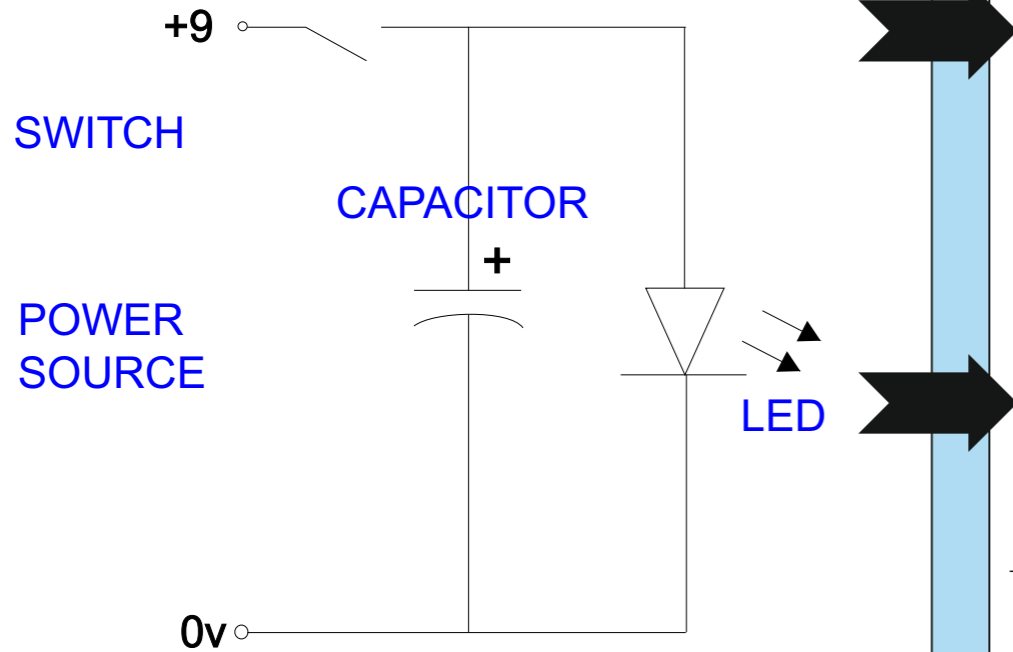
IN THE SPACE BELOW, DRAW THREE SYMBOLS THAT REPRESENT CAPACITORS.

POLARISED NON-POLARISED

VARIABLE

3

STUDY THE CIRCUIT BELOW AND THEN ANSWER THE QUESTIONS IN THE NEXT BOX.



WHAT HAPPENS WHEN THE SWITCH IS CLOSED?
POWER ON.

WHAT HAPPENS WHEN THE SWITCH IS OPENED?
POWER OFF.

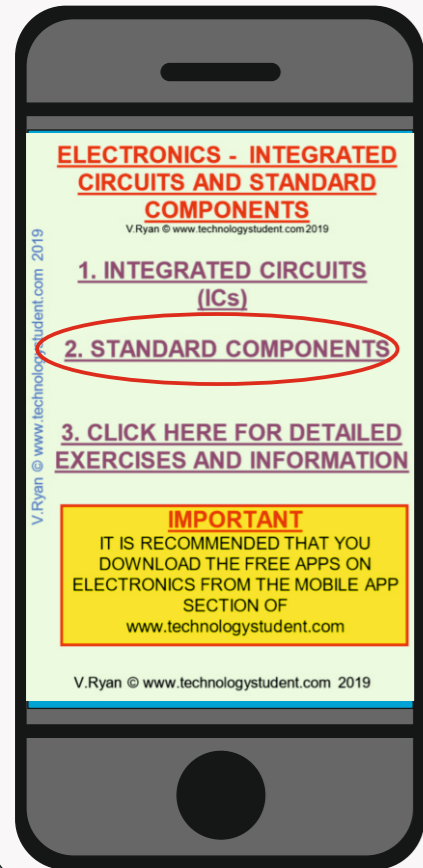
4

WHAT HAPPENS IF A RESISTOR IS ADDED TO THE CIRCUIT, PLACED IN SERIES WITH THE CAPACITOR?

This question relates to the circuit in Q3.

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TEST INSTRUMENTS



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1

WHAT IS IT THAT, THE FOLLOWING TEST INSTRUMENTS MEASURE:

AMMETER:

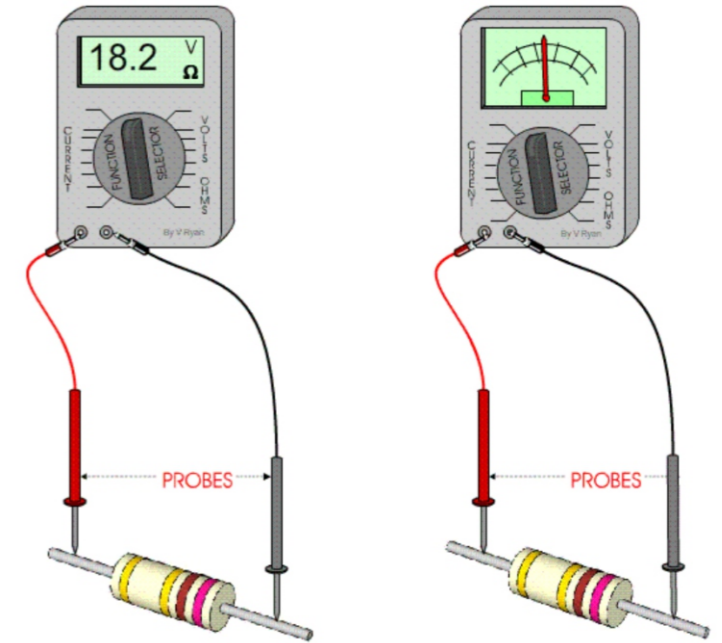
OHMMETER:

VOLTMETER:

2

WHICH OF THESE MULTIMETERS IS ANALOGUE AND WHICH IS DIGITAL?
Label each multimeter.

A: _____ B: _____



3

WHAT ARE THE POSITIVES AND NEGATIVES OF DIGITAL AND ANALOGUE MULTIMETERS?

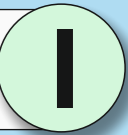
4

DESCRIBE HOW A MULTIMETER IS USED TO MEASURE RESISTANCE

5

IN THE SPACE BELOW, PASTE AN IMAGE OF A TYPICAL MULTIMETER or PRODUCE YOUR OWN SKETCH.

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RELAYS

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ELECTRONICS - INTEGRATED CIRCUITS AND STANDARD COMPONENTS
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1. INTEGRATED CIRCUITS (ICs)

2. STANDARD COMPONENTS

3. CLICK HERE FOR DETAILED EXERCISES AND INFORMATION

IMPORTANT

IT IS RECOMMENDED THAT YOU DOWNLOAD THE FREE APPS ON ELECTRONICS FROM THE MOBILE APP SECTION OF www.technologystudent.com

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1

WHAT TYPE OF SWITCH IS A RELAY?

THIS IS ONE OF THE SYMBOLS THAT REPRESENTS A RELAY. DRAW TWO ALTERNATIVE SYMBOLS FOR A RELAY.



2

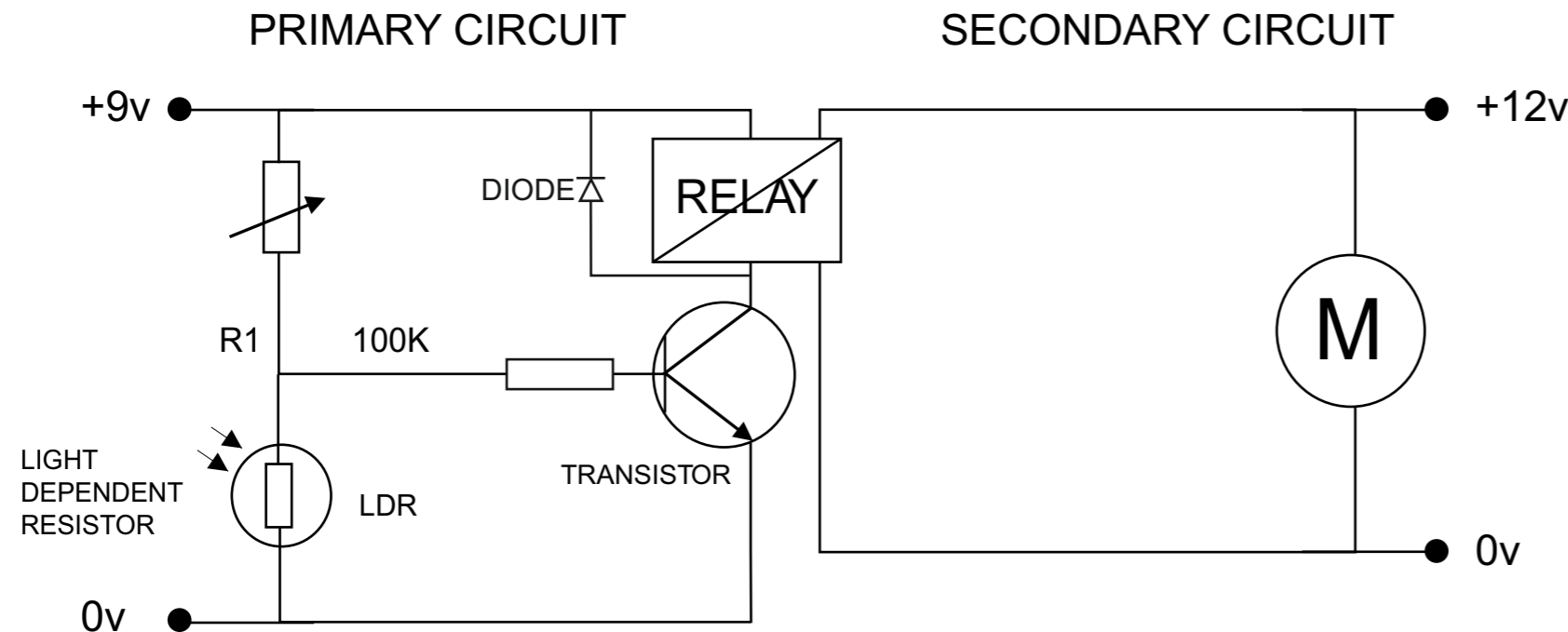
SKETCH THE INTERIOR OF A TYPICAL RELAY.

(The relay without its plastic cover / casing)

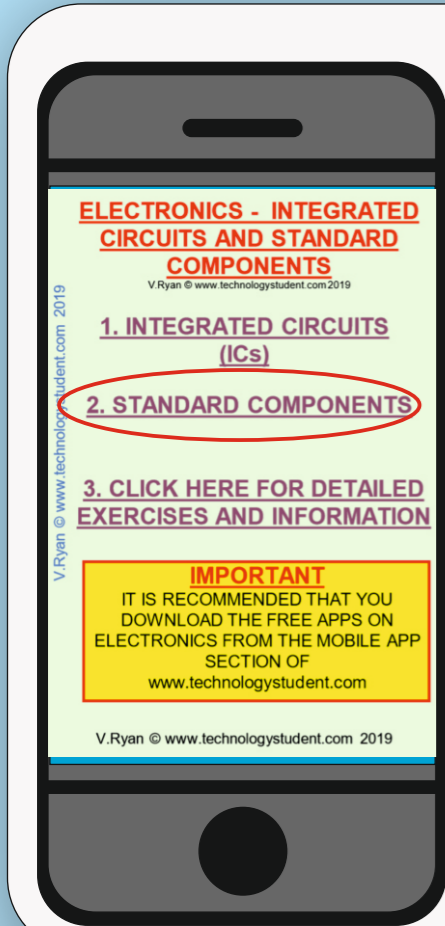
LABEL THE PARTS.

3

EXPLAIN HOW THE PRIMARY AND SECONDARY CIRCUITS WORK TOGETHER. EMPHASISE THE ROLE PLAYED BY THE RELAY.



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THE THYRISTOR

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1

A THYRISTOR IS ALSO KNOWN BY ANOTHER NAME. WHAT IS IT?

NAME THE THREE LEADS/PINS OF A THYRISTOR.

G _____

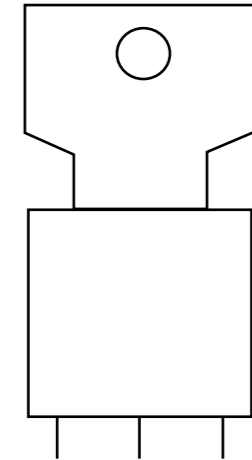
A _____

C _____

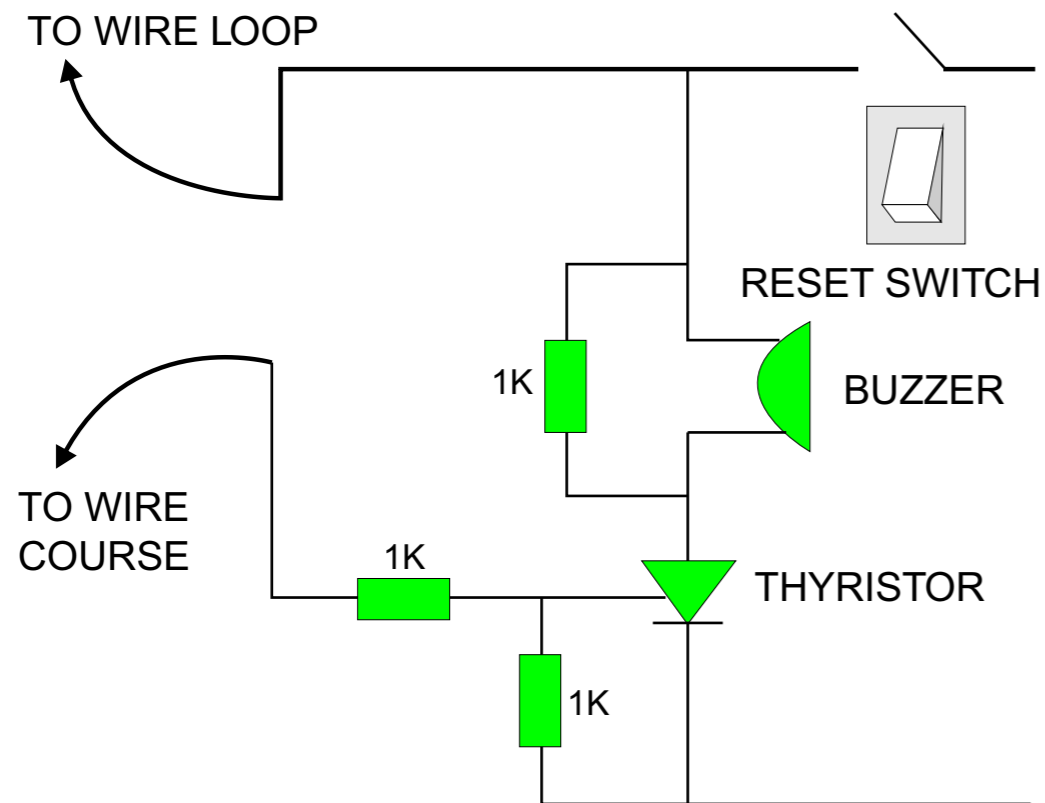
2

LABEL THE THREE LEADS / PINS ON THE DIAGRAM OF A THYRISTOR.

Use the first letter of each label.



3



THIS CIRCUIT DIAGRAM, SHOWS A CIRCUIT FOR A STEADY HAND GAME.

EXPLAIN HOW THE CIRCUIT WORKS, EMPHASISING THE ROLE PLAYED BY THE THYRISTOR.

ANSWER IN THE NEXT BOX.



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