BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Electrical Skills

Session: 2021-22 (Summer Semester)

B. Voc. Program, I Semester

End-Sem. Examination

Course Code: Repairing and servicing of electrical appliances(OE) **Time: 2 Hours**

Course Name: ELE 1121 **Max. Marks: 50**

Instruction: Answer all questions from each and every section. Section A, each question carries one mark, section B, each question carries four marks and in section C, each question carries six marks. Scientific calculators are allowed.

Section – A

10X01 = 10 Marks

1. Which one is a conductor?
   (A) Mercury (B) Copper (C) Iron (D) All of these
2. Ammeter is used to measure_____
   (A) Current (B) Voltage (C) Resistance (D) Frequency
3. MCB is connected in____
   (A) Series (B) Pharrell (C) In both (D) None of these
4. Clamp meter is used to measure____
   (A) Current (B) Voltage (C) Frequency (D) Continuity
5. In open circuit current is_____
   (A) High (B) Low (C) Infinity (D) Zero
6. Which one is correct ohm's law resistance formula?
   (A) R=V/I (B) R=V*I (C) R=V+I (D) R=V-I
7. How much tolerance in silver color of resistance?
   (A) 1% (B) 5% (C) 10% (D) 20%
8. In India ac voltage frequency is____
   (A) 50Hz (B) 60Hz (C) 0Hz (D) All of these
9. SI unit of resistance is____
   (A) Volt (B) Amp (C) Hz (D) Ohm
10. Tube light starter is connected in_____
    (A) Parallel (B) Series (C) Both (A+B) (D) None of these

Set B

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Section – B

04X04 = 16 Marks

1. Explain about MCB and fuse.
2. What is resister? Explain.
3. Explain about soldering and brazing.
4. Draw the circuit diagram of fluorescent tube light.

Section – C

04X06 = 24 Marks

1. Draw the 2-way switch circuit diagram with a lamp and explain about 2-way wiring.
2. Explain about multimeter, megger, clamp meter.
3. Explain about inductor and capacitor.
4. Write any six types of wire joints.

Answers Key

Course Code: ELE1121 Course Name: Repairing servicing of electrical appliances
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Section – A

1. D
2. A
3. A
4. A
5. D
6. A
7. C
8. A
9. D
10. A

Section – B

1. (Ans.)

MCB=

An MCB is an automatically operated electrical switch. Miniature circuit breakers are intended to prevent damage to an electrical circuit as a result of excess current. They are designe to trip during an overload or short circuit to protect against electrical faults and equipment failure.

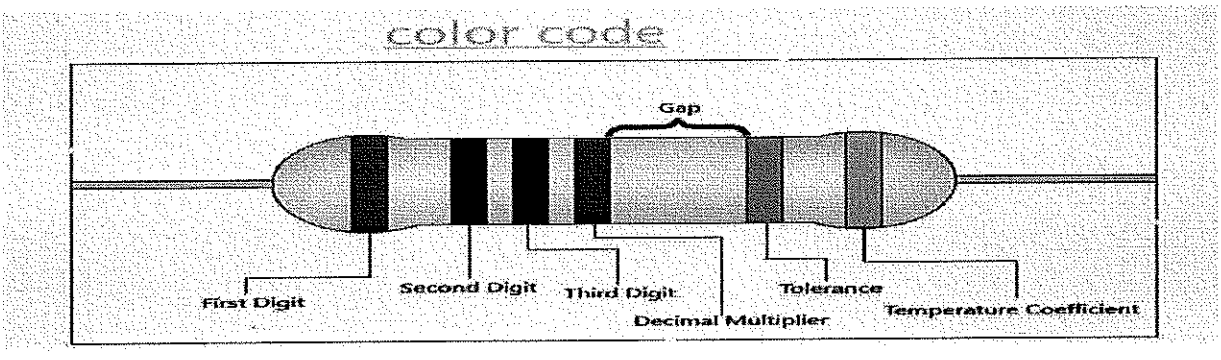
Fuse =

In electronics and electrical engineering, a fuse is an electrical safety device that operates to provide overcurrent protection of an electrical circuit. Its essential component is a metal wire or strip that melts when too much current flows through it, thereby stopping or interrupting the current.

2. (Ans.)

Resistor =

A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses.



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3. (Ans.)

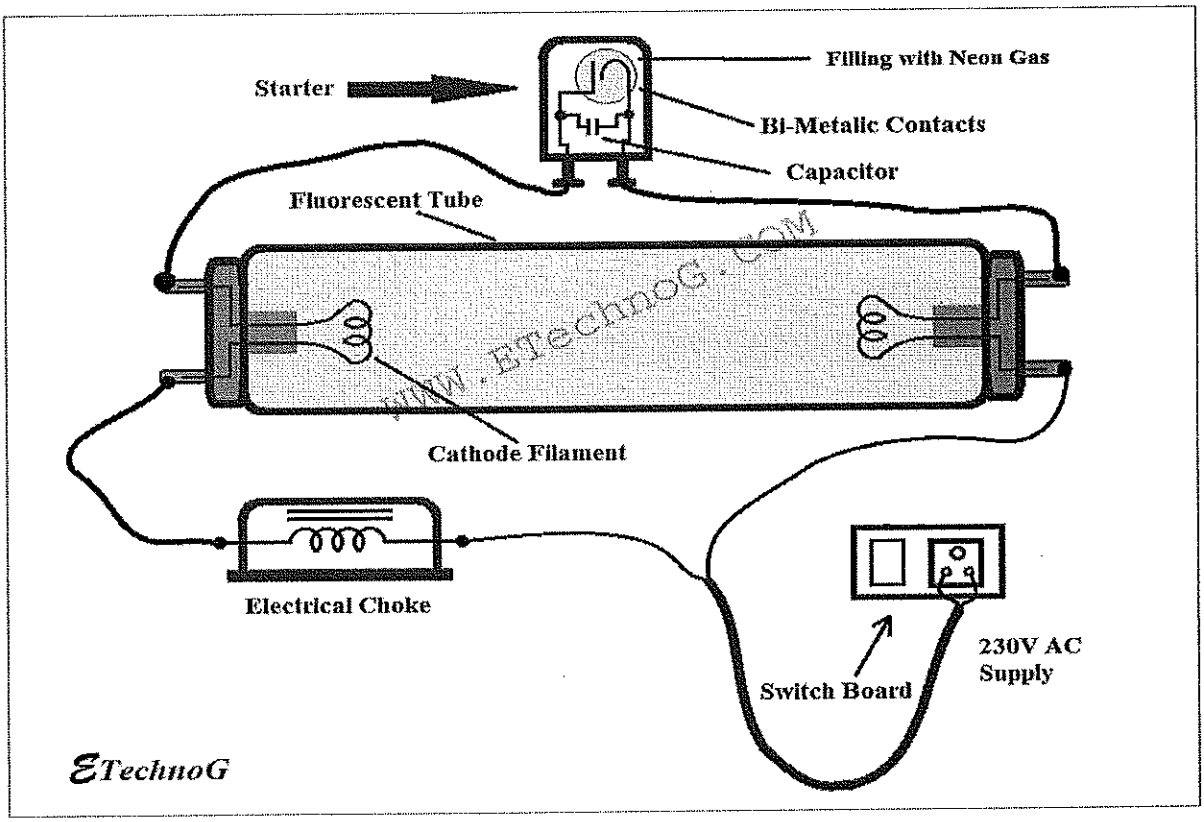
Soldering =

Soldering is a process used for joining metal parts to form a mechanical or electrical bond. It typically uses a low melting point metal alloy (solder) which is melted and applie to the metal parts to be joined and this bonds to the metal parts and forms a connection when the solder solidifies.

Brazing =

Brazing is **a metal-joining process in which two or more metal items are joined together by melting and flowing a filler metal into the joint**, with the filler metal having a lower melting point than the adjoining metal. Brazing differs from welding in that it does not involve melting the work pieces.

4. (Ans.)



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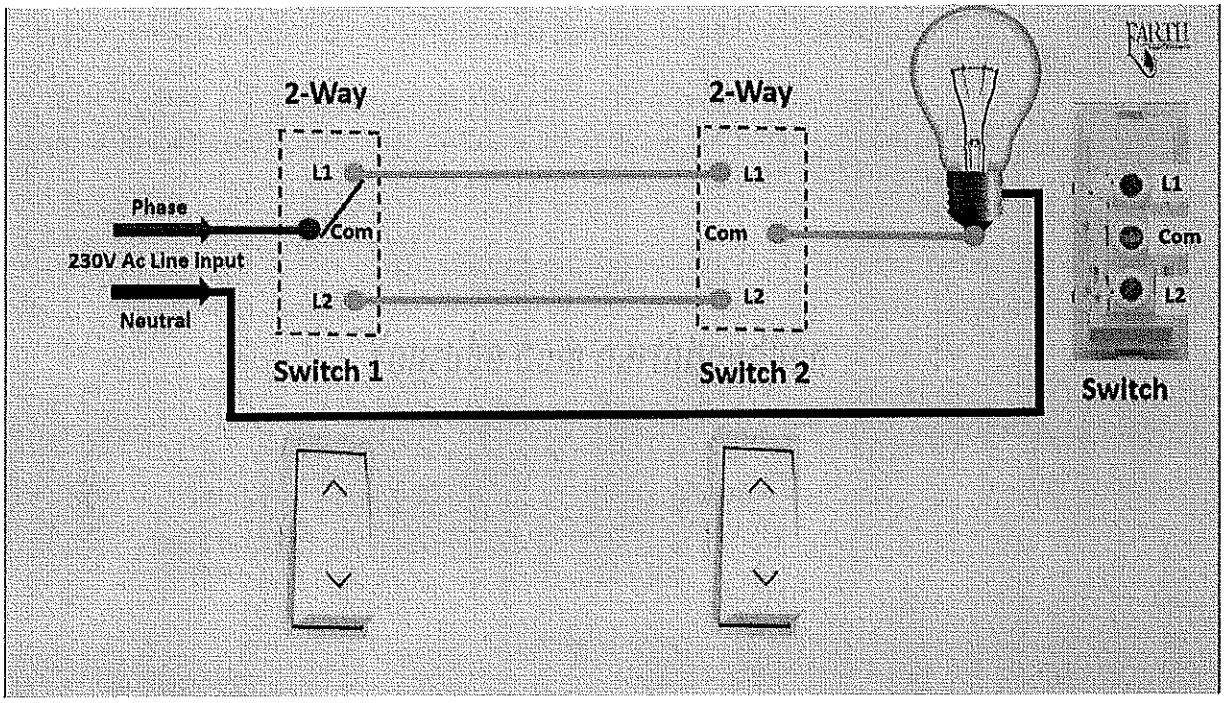
Section – C

1. (Ans.)



2. (Ans.)

Multimeter = A voltmeter is an instrument used for measuring electric potential difference between two points in an electric circuit. It is connected in parallel. It usually has a high resistance so that it takes negligible current from the circuit.

Megger = An instrument that is used to measure insulation resistance is a Megger. It is also known as meg-ohm-meter. It is used in several areas like multi-meters, transformers, electrical wiring, Etc Megger device is used since the 1920s for testing various electrical devices which can measure greater than 1000meg-ohms.

Clamp Meter = A clamp meter is **a clothespin-shaped instrument that can be clamped around a live wire in order to measure the current it's carrying**. As a measurement principle, clamp meters detect the magnetic field emitted by current flowing in a wire in order to measure the current value

Answers Key

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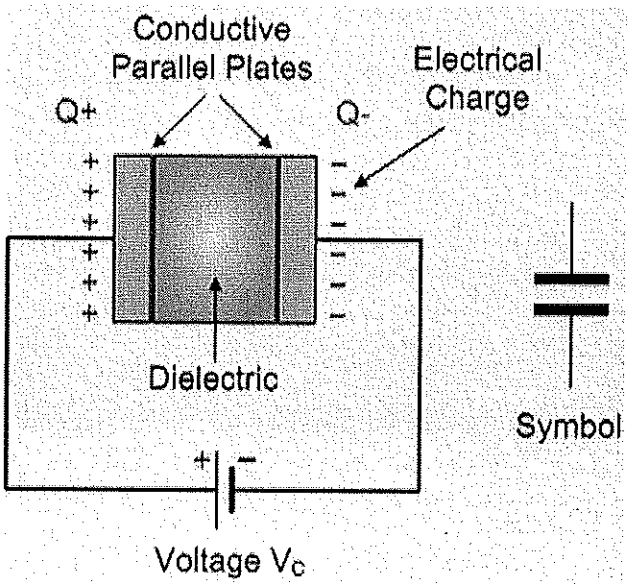
3. (Ans.)

Inductor = An inductor, also called a coil, choke, or reactor, is a passive two-terminal electrical component that stores energy in a magnetic field when electric current flows through it. An inductor typically consists of an insulated wire wound into a coil. As a result, inductors oppose any changes in current through them.

Capacitor = A capacitor is a device that stores electrical energy in an electric field. It is a passive electronic component with two terminals. The effect of a capacitor is known as capacitance.



4. (Ans.)

There are following types of joint used in electrical installation.

1. Straight Twist Joint
2. Britannia Joint
3. Married Joint
4. Tee Joint
5. Duplex or Double Tee Joint
6. Pig Tail Joint
7. Scarf Joint

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Section – A

10X01 = 10 Marks

1. Clamp meter is used to measure____
   (A) Current (B) Voltage (C) Frequency (D) Continuity
2. Brazing is used for_____
   (A) Wire joints (B) Soldering (C) Joint 2 metal (D) None of these
3. Multimeter is used to measure_____
   (A) Voltage (B) Amp (C) Resistance (D) All of these
4. In open circuit Current is_____
   (A) High (B) Low (C) Infinity (D) Zero
5. In dc voltage frequency is_____
   (A) 50Hz (B) 60Hz (C) 0Hz (D) All of these
6. How much tolerance in gold color of resistance?
   (A) 1% (B) 5% (C) 10% (D) 20%
7. Energy meter is used to measure____
   (A) Voltage (B) Current (C) Watt (D) All of these
8. Which one is good insulator?
   (A) Plastic (B) Resistor (C) Copper (D) Mercury
9. Which one is correct ohm's law resistance formula?
   (A) R=V/I (B) R=V*I (C) R=V+I (D) R=V-I
10. SI unit of charge is_____
    (A) Henry (B) Siemens (C) Hertz (D) Coulomb

Set-A

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Section – B

04X04 = 16 Marks

1. Explain about Ohm's law and write its voltage, current, resistance and power formulas.
2. Draw the resistance color code chart.
3. Explain about analog voltmeter and ammeter and draw its connection.
4. Draw the circuit diagram of fluorescent tube light.

Section – C

04X06 = 24 Marks

1. Explain about conductor, insulator, and semiconductor with example.
2. Write the concept of open circuit and short circuit.
3. Write the types of wire and cable that is used for different electrical installation.
4. Draw the 2-way switch circuit diagram with a lamp and explain about 2-way wiring.

Answers Key

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Section –A

1. **A**
2. **C**
3. **D**
4. **D**
5. **C**
6. **C**
7. **D**
8. **A**
9. **A**
10. **D**

Section- B

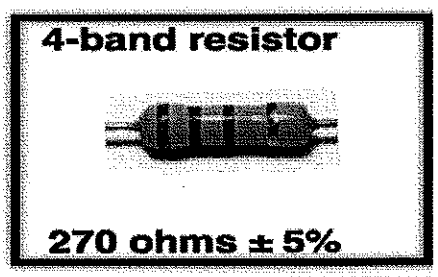
1. (Ans.)

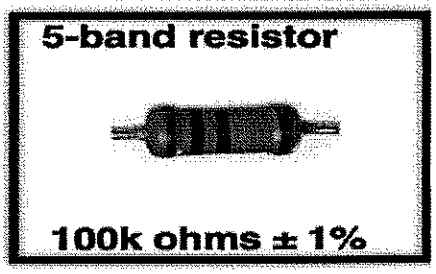
Ohm's law states that the voltage or potential difference between two points is directly proportional to the current or electricity passing through the resistance, and directly proportional to the resistance of the circuit. The formula for Ohm's law is **V=IR**.

Voltage = V=IR
Resistance = R= R = V/I
current = I = V/R
power = v*I

2. (Ans.)

Color	Value	Multiplier	Tolerance
Black	0	$\times 10^0$	± 20%
Brown	1	$\times 10^1$	± 1%
Red	2	$\times 10^2$	± 2%
Orange	3	$\times 10^3$	± 3%
Yellow	4	$\times 10^4$	- 0, + 100%
Green	5	$\times 10^5$	± 0.5%
Blue	6	$\times 10^6$	± 0.25%
Violet	7	$\times 10^7$	± 0.10%
Gray	8	$\times 10^8$	± 0.05%
White	9	$\times 10^9$	± 10%
Gold	–	$\times 10^{-1}$	± 5%
Silver	–	$\times 10^{-2}$	± 10%





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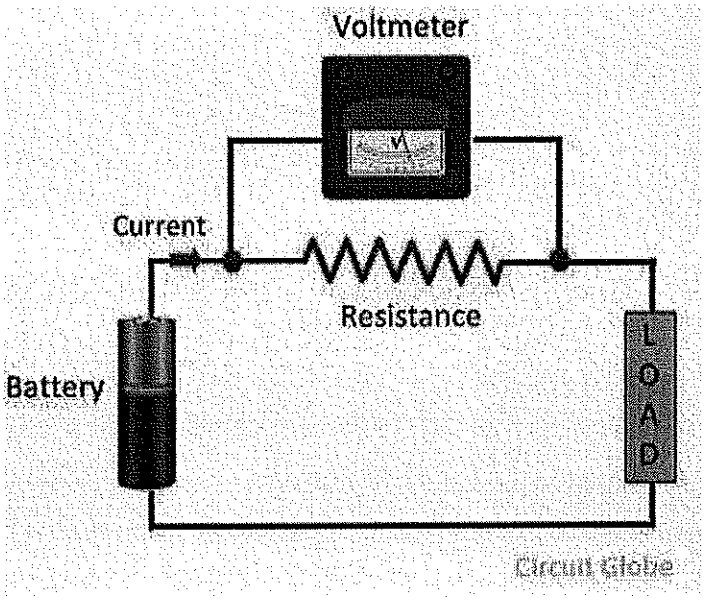
3. (Ans.)

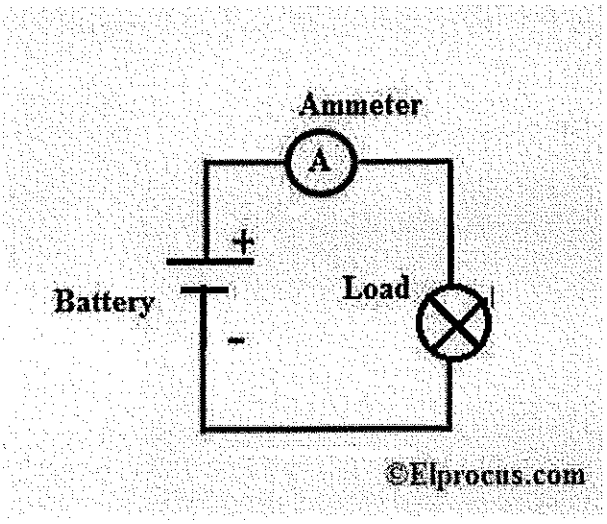
Analog voltmeter=

Analog voltmeters measure voltage or voltage drop in a circuit. They display readings using a needle rather than a digital display. ... Moving-coil galvanometers are typically used to measure current in ammeters, but when provided with suitable resistance can also measure DC voltage in voltmeters.



Analog Ammeter =

Analog ammeters, also known as current meters, are metered instruments that measure current flow in amperes. Current levels are displayed on a dial, usually with a moving pointer or needle made of a soft iron. ... This type of ammeter is called a shunt.



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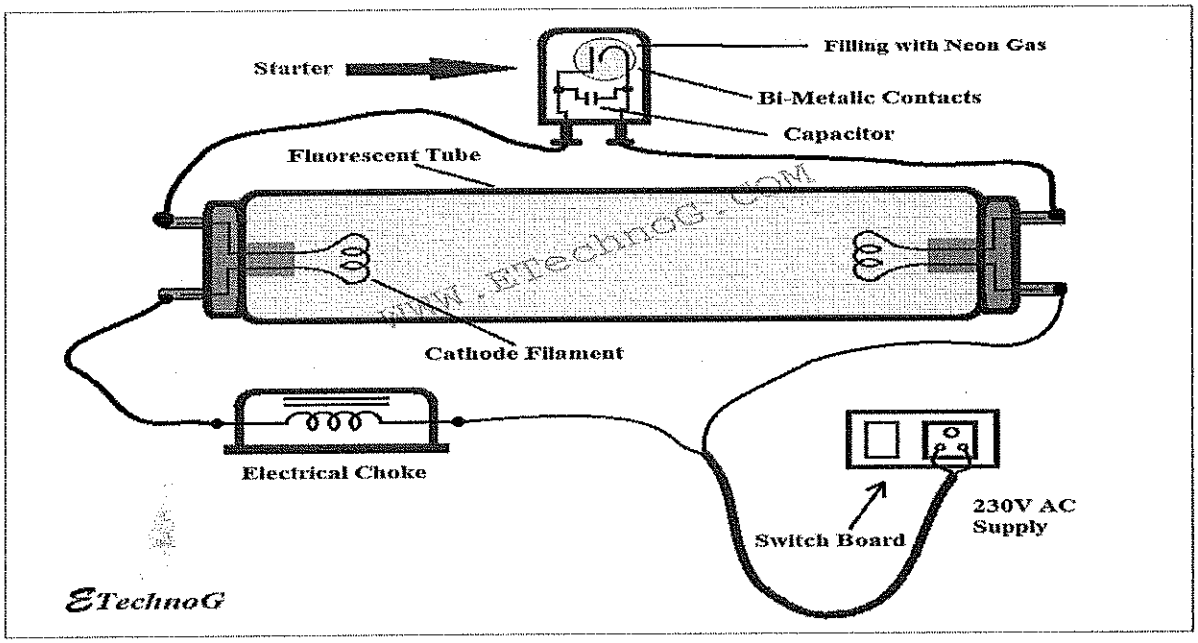
4. (Ans.)



Section-C

1. (Ans.)

Conductor = A conductor is a material that allows the flow of charge when applied with a voltage.

Ex. Copper, Aluminum, Gold, Silver

Semiconductor = A semiconductor is a material whose conductivity lies between conductor & insulator.

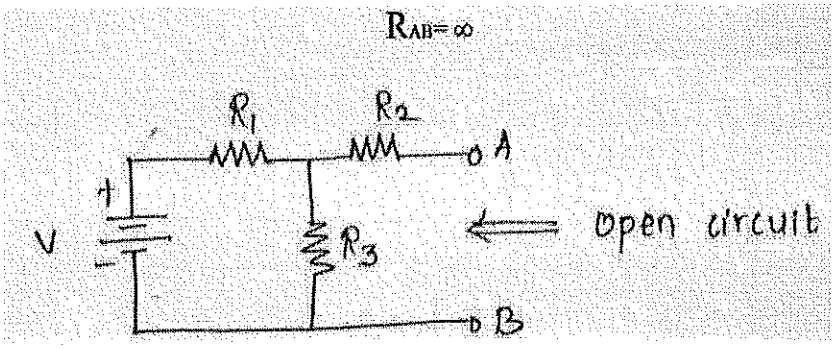
Ex. Silicon, Germanium, Arsenic

Insulator = An insulator is a material that does not allow the flow of current.

Ex. paper, rubber, plastic

2. (Ans.)

Open Circuit = Two points in a circuit are said to be open circuited if there is no circuit element or direct connection between them.



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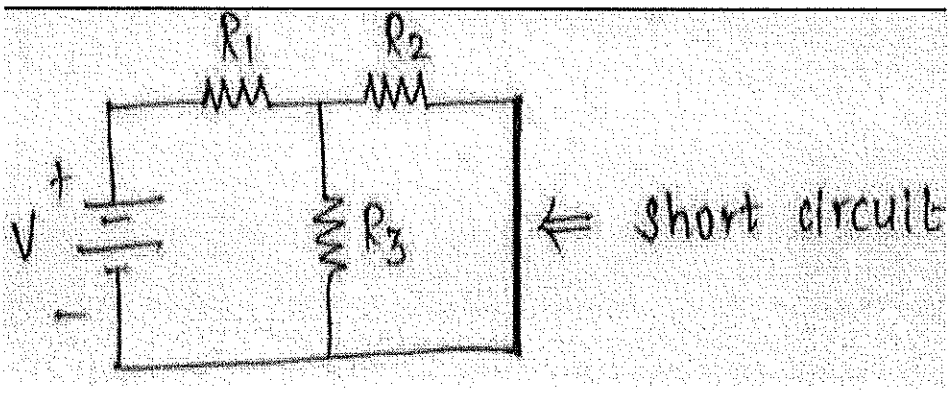
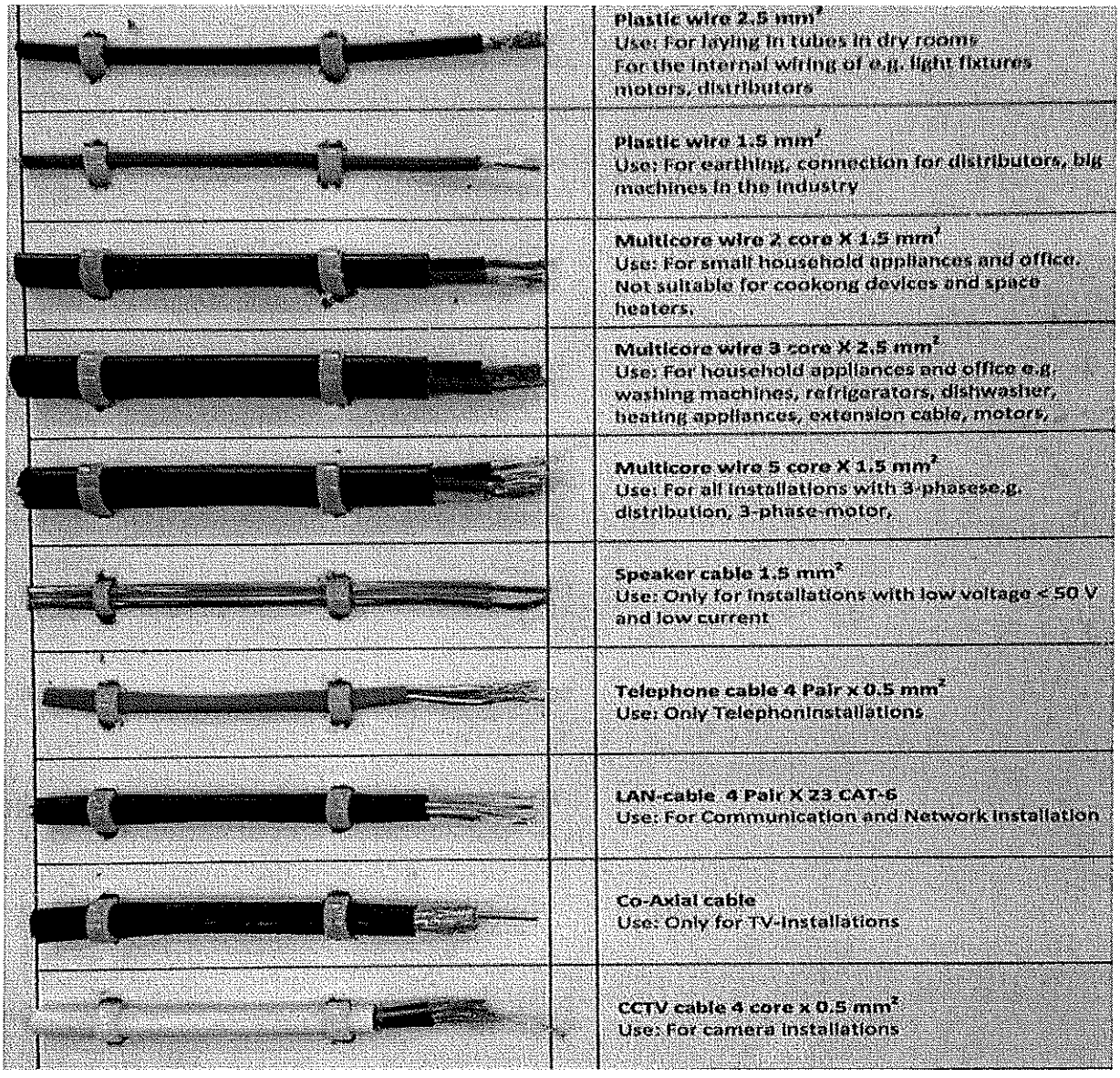
Short Circuit = Two points in a circuit are said to be short circuited when they are connected to each other by a good conducting wire.



3. (Ans.)



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4. (Ans.)