



Registration No.....

**School of Electrical Skills**  
**First Semester, Second In-Semester Examination**  
**Winter Semester, B.-Voc. Program, Session:2017-18**

**Course Code: ELE1001**

**Time: 1 Hour**

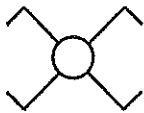

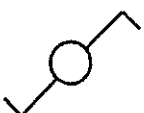
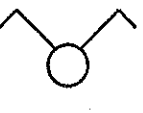
**Course Name: Construction Electrician – I**

**Max. Marks: 20**

**Instructions:** Answer all questions from section A, each question carries one mark. Answer all questions from section B, each question carries two marks. Answer all questions from section C, each question carries three marks.

**Section – A**

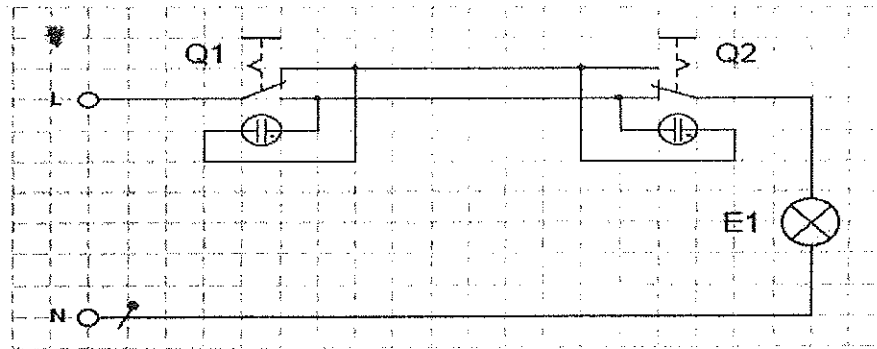
**(5x1=5) Marks**

1. PE conductor in house wiring is:  
(a) Protection equal (b) Protective equator  
(b) Potential equator (d) protective earth
  
2. Symbol of a cross switch is:  
(a)  (b)   
(b)  (d) 
  
3. In 6 core cable 0 labelled wire is used as:  
(a) ground (b) neutral  
(c) phase (d) lamp wire
  
4. Which colour is used for ground wire?  
(a) blue (b) red  
(c) green (d) violet
  
5. Which core cable is preferred for a two-way switch wiring?  
(a) 3 core (b) 2 core.  
(c) 6 core (d) 5 core.

**Section – B**

**(3x2=6) Marks**

1. Draw an overview diagram and integrated view of one-way switch.
2. List any four tools that we use in house wiring for preparing cables and wires.
3. Why do we prefer parallel connection over series connection in house wiring? What is the application of orientation lamp in the given diagram?

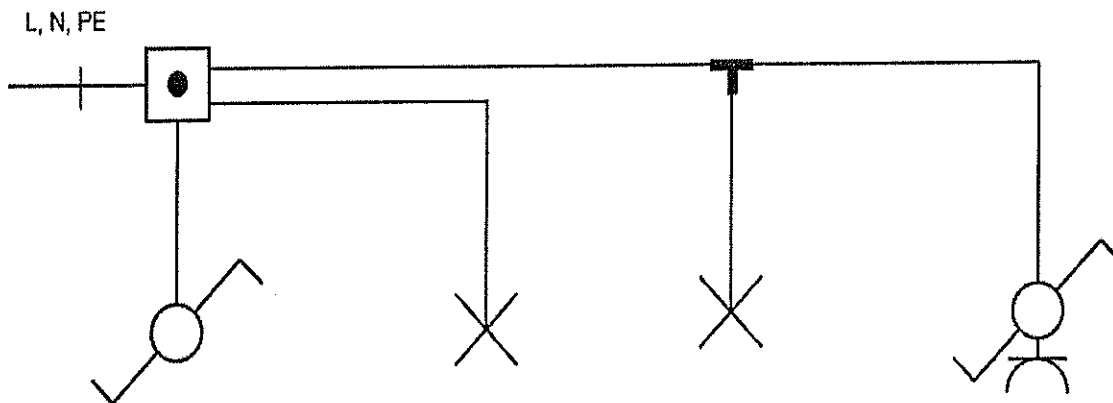


**Orientation Lamp Circuit**

**Section – C**

**(3x3=9) Marks**

1. Draw the exploded view and overview of two-way switch wiring or staircase wiring with the wire numbers.
2. Define overview diagram, exploded diagram and integrated diagram.
3. What is the role of distribution box in house wiring? Enter the wire number of given overview diagram.



**Two-way Switch**



School of Electrical Skills

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Solution

Course code: ELE1001

Time: 1 Hour

Course name: Construction Electrician – I

Max. Marks: 20

Section – A

(5x1=5) Marks

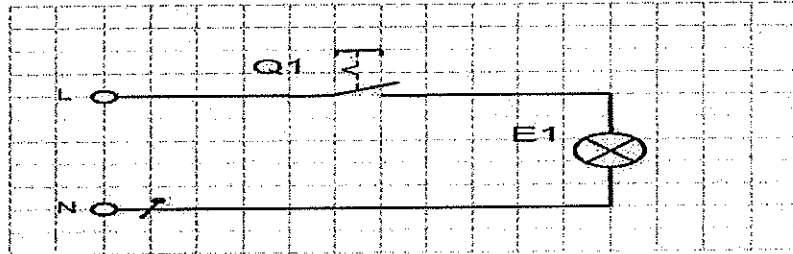
1. D
2. A
3. B
4. C
5. D

Section – B

(3x2=6) Marks

1.

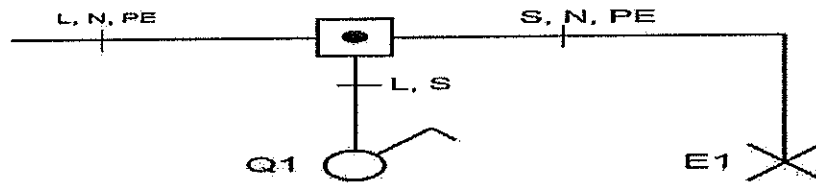
Current flow diagramm in integrated view



1 Marks

Overview diagramm

Enter the wire numbers.



1 Marks

2. Tools which are used for house wiring are as follows:

- 1-> insulation stripper -to remove the outer insulation of the core cable.
- 2->wire stripper-to remove the insulation of the inner wires of the core cable.
- 3->clamping tool-to clamp the lugs on the wire.
- 4->Side cutter, for cut the cable and wire.

1 Marks

1 Marks

3. We prefer parallel connection over series connection because in case of fault in any section supply of the section will not get affected where as in series connection. If one section gets fault in parallel, then other section will work. If one section gets fault in series, then other section will not work.

↓ Marks

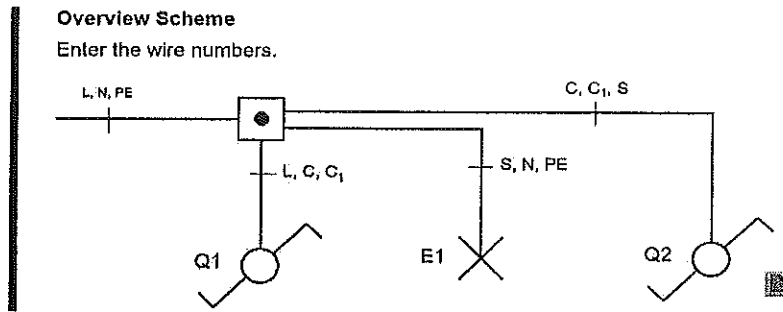
An orientation light indicates where the switch is located. So it burns when the consumer is switched off. As orientation lamps only glow lamps come into question (IB about 0.15mA), since they are in series with the consumer.

↓ Marks

Section - C

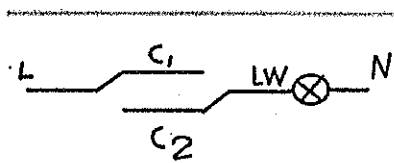
(3x3=9) Marks

1.



↓ Mark

Exploded view



↓ Mark

L= line  
N= neutral  
LW= lamp wire  
C, C = corresponding wire

↓ Mark

1 Mark

2. (a) Overview diagram:

It shows a circuit in a simplified, one line representation. In overview diagrams for simple installation circuits, the Equipment is arranged to its actual positions as far as possible.

1 Mark

(b) Exploded diagram:

These are multi-line representation of circuit, separated according to current paths. The current paths are drawn horizontally or vertically and as far as possible without crossings. The spatial arrangement of the components is not taken into consideration. It is the best diagram to read the function of a circuit.

1 Mark

(c) Integrated diagram:

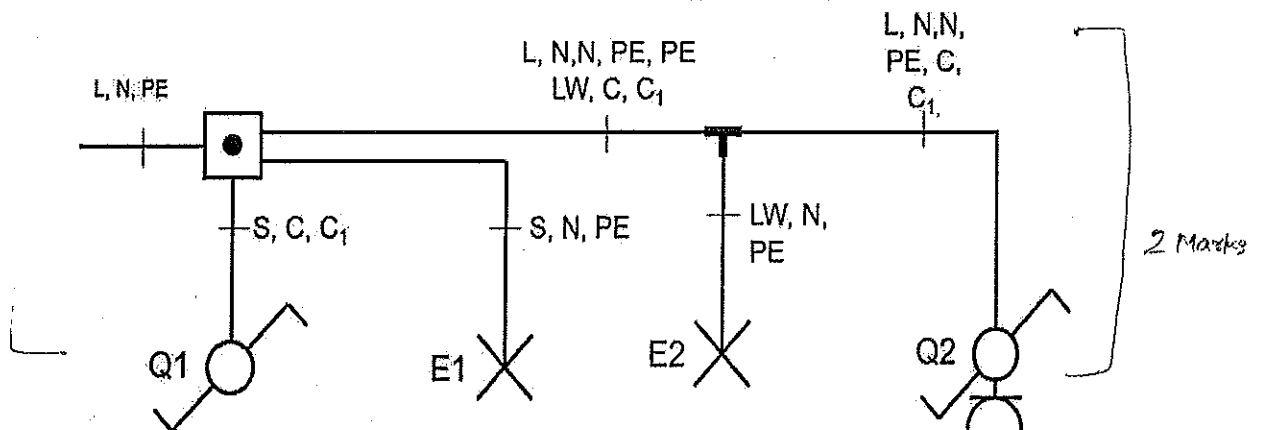
Show the connection in circuits with all the components. Parts of the same component are represented in a single group. It is the best diagram to do the connections.

1.5 Marks

3. Distribution box is used for the distribution of supply to other electrical component and to make connections completely insulated.

Scheme 3 - Circuit with socket. Enter the wire numbers.

1.5 Marks







Registration No.....

**School of Electrical Skills**  
**First Semester, Second In-Semester Examination**  
**Winter Semester, B.-Voc. Program, Session:2017-18**

**Course Code: ELE1002**

**Time: 1 Hour**

**Course Name: Electrical Technician**

**Max. Marks: 20**

**Instructions:** Answer all questions from section A, each question carries one mark. Answer all questions from section B, each question carries two marks. Answer all questions from section C, each question carries three marks.

**Section – A**

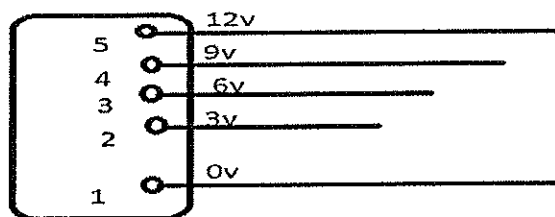
**(5x1=5) Marks**

1. Which of the following is non-conductor?  
(a) copper      (b) distilled water      (c) salt water      (d) iron
  
2. What is the numeric value of charge on an electron?  
(a)  $-1.6 \times 10^{-19} \text{ C}$       (b)  $-1.6 \times 10^{-23} \text{ C}$       (c)  $+1.6 \times 10^{-19} \text{ C}$       (d)  $+1.6 \times 10^{-23} \text{ C}$
  
3. Which of the following is not a semiconductor?  
(a) germanium      (b) silicon      (c) quartz      (d) carbon
  
4. Nucleus of an atom is:  
(a) positively charged      (b) negatively charged      (c) electrically neutral      (d) none of these
  
5. Which are the charge carriers of semiconductors?  
(a) electrons and neutrons      (b) electron and nucleus      (c) electrons and holes      (d) holes and protons

**Section – B**

**(3x2=6) Marks**

1. What is an electric circuit? Write name different types of electric circuit.
2. Define ions and its types also.
3. What is the potential difference between terminal 5 and terminal 2 of the power supply unit?



Power Supply Unit

**Section – C**

**(3x3=9) Marks**

1. Explain any three effects of electric current with their occurrence.
2. Explain voltage generation with the help of diagrams and examples.
3. Define three types of current with their waveforms.





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**School of Electrical Skills**  
**First Semester, Second In-Semester Examination**  
**Winter Semester, B.-Voc. Program, Session:2017-18**

**Solution**

Course code: ELE1002 (2)

Course name: Electrical Technician

Max. Marks: 20

**Section – A**

**(5x1=5) Marks**

1. B
2. A
3. D
4. A
5. C

**Section – B**

**(3x2=6) Marks**

- ↓ Mark { 1. The interconnection of various electrical circuit elements in a prescribed manner to form a closed path is called an electric circuit. There are three types electric circuits
- ↓ Mark { (a) - DC circuits
- (b) - single phase AC circuits
- (c) - three phase AC circuits

- ↓ Mark { 2. Ions- atoms in which number of protons and the number of electrons differ are called ions. There are 2 types of ions positive ions and negative ions.
- ↓ Mark { If an atom is missing electrons, it is positively charged and is called a positive ion.
- If the atom has more electrons in the shells than protons in its nucleus, it is negatively charged and is called a negative ion.

3.  $V = v_5 - v_2 = 12V - 3V = 9V$

↓ Mark


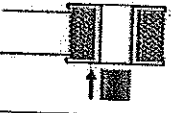
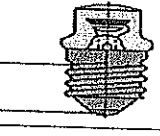
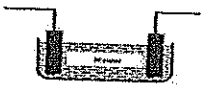

↓ Mark

Section - C

(3x3=9) Marks

2

1.

Designation	Illustration	Occur	Examples
heating effect		always	Heating, stove, soldering iron, fuse, fire accidents
magnetic effect		always	Electromagnets, electric motors, measuring instruments, Relays, contactors
lighting effect		by heat (glow or glow)	Incandescent lamp, electricity in gases in glow lamps and fluorescent lamps, LED. (LED)
chemical effect		Electricity in conductive liquids	Electrolysis for the extraction of metals and chemicals, electroplating
Effect on humans and animals		Electricity through living things	Accidents, electromedicine (eg electric shock), el. Pasture fences

1 Mark

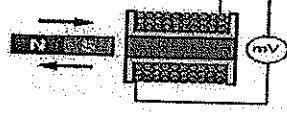
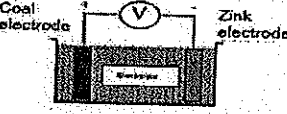
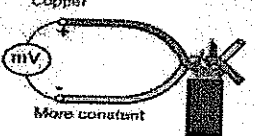
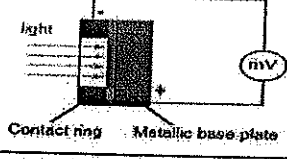
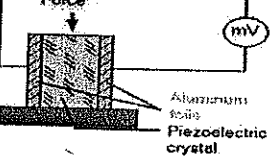
1 Mark

1 Mark

1 Mark

1 Mark

2.

Designation	Illustration	Examples
Induction (changing magnetic field induces a voltage in the coil)		- Generator in the power plant - Cycling Dynamo
Chemical voltage generation		- Batteries (galvanic elements) - Accumulators
Heating the junction of two different metals (Thermocouple)		- Temperature measurements (high temperatures)
Light entering the photoelement (Photovoltaic)		- Solar cells - Illuminance meter (luxmeter) - General renewable energy
Pressure on crystals		- Pressure sensors - Piezo Crystal Microphones - Ignition with lighter

1 Mark

1 Mark

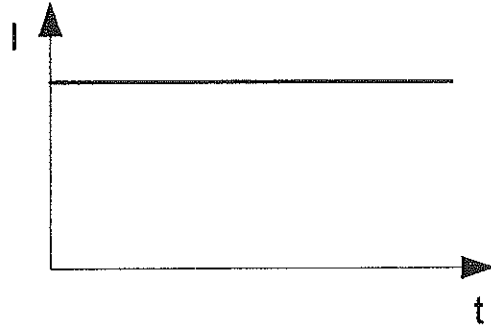
1 Mark

1 Mark

3. Three types of current are as follows:

(a) Direct current (DC)

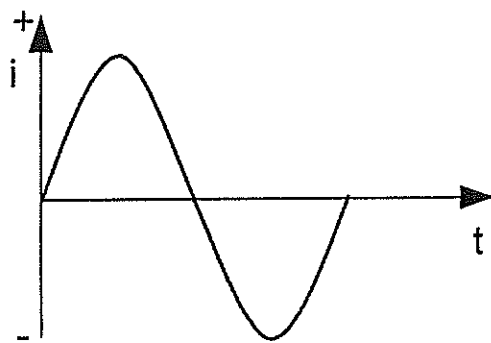
Electric current which flows in the same direction with same strength.



1 Mark

(b) Alternating current (AC)

Electric current which changes its strength and direction.

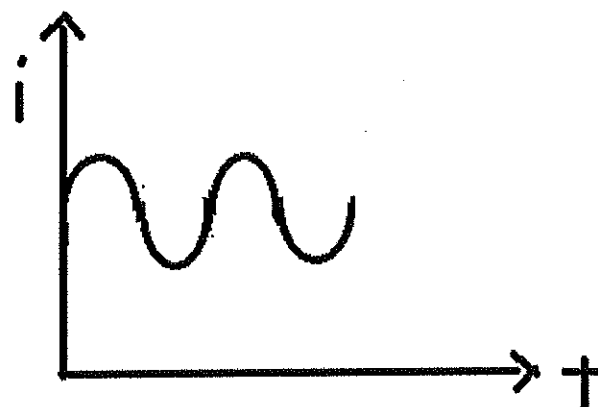


1 Mark

(c) Universal current (uc) or pulsating direct current

It is composed of an AC component and a DC component.

It is also known as superimposed current or pulsating direct current



1 Mark

100

100

( )

( )

100

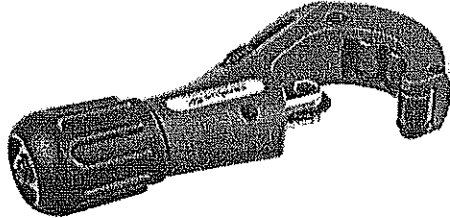


Section – C

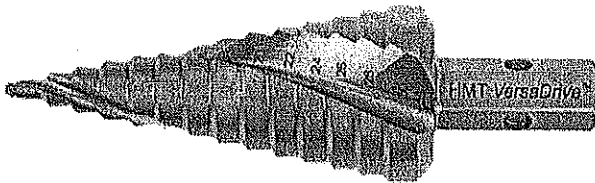
(3x3=9) Marks

1. Write the names and functions of the given pictures:

A:



B:



C:



2. Write down the five safety rules for carrying out work on electrical installations.
3. Write three steps which you take when you disconnect the main supply for any electrical work.



**School of Electrical Skills**  
**First semester, Second In-semester Examination**  
**Winter semester, B.-Voc. Program, Session:2017-18**

Course code: ELE1003

Course name: Maintenance Technical Electrical

Max. Marks: 20

**Solution:**

**Section – A**

1. B
2. D
3. C
4. A
5. B

**Section – B**

1 Mark → 1.  $16A = 2.5mm^2$  &  $40A = 10mm^2$   
16A is used for domestic appliance, air conditioners, industry machines,  
1 Mark → 40A is used for industrial devices, supply of a house, big motors,

1 Mark → 2.  $10A > 1.5mm^2$  and  $100A > 35mm^2$   
10A is used in home appliance like fans and sockets.  
1 Mark → 100A is used in supply for hotels, big houses and industries.

1.5 Mark → 3. Good strain relief and there should not be any cut on the wire which can make conductors visible and sometimes result in hazard.  
3.5 Mark → the protective earth should be longer than the other wires.

**Section – C**

1 Mark → 1. Pipe cutter: It is used to cut the PVC pipes.  
1 Mark → Step drill bit: It can be used to drill a range of different sized holes with a single bit.  
1 Mark → Multimeter: It can measure voltage, current and resistance between any two points.

2. Five safety rules:

- 1. Mask [ - Switch off the MCB. ]
- 1.5 Mask [ - Lock down the MCB box so that no one switch on the power supply. ]
- 0.5 Mark [ - Check that lines and equipment are dead. ]
- 0.5 Mark [ - check connections of the ground and short circuit phases ]
- 0.5 Mark [ - Check the insulations of all the wires. ]

3. [ - Mask MCB with the inscription "man at work" ] - 1 Mark

[ - Attach security lock

[ - Unscrew fuses and take with you ] 1 Mark

[ So that nobody else except myself can put the system under tension again ] 1 Mark



( )

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. This is essential for ensuring the integrity of the financial data and for providing a clear audit trail.

( )

2. The second part of the document outlines the various methods used to collect and analyze data. These methods include both qualitative and quantitative approaches, each with its own strengths and limitations.

3. The third part of the document provides a detailed overview of the data analysis process. This includes the selection of appropriate statistical tests, the interpretation of results, and the presentation of findings in a clear and concise manner.

( )



School of Electrical Skills

First semester, Second In-semester Examination  
Winter semester, B.-Voc. Program, Session:2017-18

Solution

Course code: ELE1004

Course name: Construction Electrician – II

Max. Marks: 20

Section A

(5x1=5) Marks

1. The resistance of voltmeter is:  
Ans: (b) Very high
2. A simple enclosed length of wire that has a low melting point is known as:  
Ans: (a) fuse
3. RMS value is related to:  
Ans: (a) Heating effect
4. How is the light output of lamps rated?  
Ans: (a) Lumens
5. Miniature circuit breaker is a small:  
Ans: (c) electromagnetic switch

(3x2=6) Marks

Section B

(5x1=5) Marks

1. What's the resistance of the circuit conductors when the conductor voltage drop is 3V and the current flowing in the circuit is 100A?

Answer:

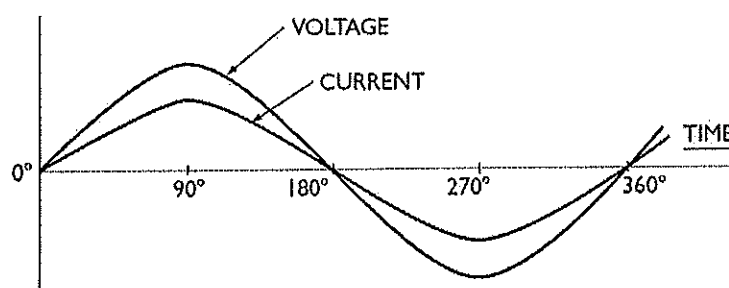
Since  $V=IR$  ] 1.5 Mark

Or  $R=V/I$

$R=3/100 = 0.03 \text{ ohms}$  ] 0.5 Mark

2. In a purely resistive circuit with an applied 50-hertz ac voltage, what is the relationship between the current and voltage?

Ans: Both Current and voltage are in same phase in a purely resistive circuit ] 0.5 Mark



Circuit Diagram

1.5 Mark

3. When connecting an ammeter in the circuit then what precautions must be taken?

Ans: <sup>1 Mark</sup> Always ammeter should be connected in series of the Load. Know whether the current is ac or dc, and use the appropriate ammeter. Be sure that the rating of the meter is large enough for the current being measured to prevent the meter from being damaged. 1 Mark

## Section C

(3 × 3 = 9) Marks

1. Differentiate between current-carrying and noncurrent-carrying conductor?

1.5 Mark { Ans: A conductor that is expected to carry current under normal operating conditions is called **current-carrying conductor**.

1.5 Mark { One that carries current only in the event of a malfunction of equipment or wiring is called **noncurrent-carrying conductor**. An equipment grounding conductor is a good example.

2. Explain D.C. Series and Parallel circuits.

1.5 Mark { Ans: In a series D.C. circuits, the current through each of the components is the same, and the voltage across the circuits is the sum of the voltages across each component.

1.5 Mark { In a parallel D.C. circuits, the voltage across each of the components is the same, and the total current is the sum of the currents through each component.

3. Explain the principle of Electric shock protection.

1 Mark { Ans: Whenever there is a potential difference across the human body then there are chances of electrical shock. An Electrical Shocks occurs when a person becomes a part of the electrical circuit. In general terms, a shock current of more than 50mA can be fatal. Electric shock may occur in two ways, through direct contact or indirect contact with live parts. Protection against actually touching live parts is provided by:

- 2 Marks {
1. Insulating Live Parts
  2. Placing barriers or enclosures around live parts
  3. Placing obstacles in front of live parts
  4. Placing live parts out of reach