

# Electro Critical Skills Resource Suite



## Entry Level Literacy and Numeracy Assessment for the Electrotechnology Trades

### Enrichment Resource

#### UNIT: Reading and Interpreting Information



managing apprentice progression

An E-Oz Energy  
Skills Australia project.



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# Learning Outcome

Can read and isolate relevant information and accurately interpret it to carry out trade related tasks.

## Performance Criteria

- Identifies specified data and information.
- Understands the meaning of the text.
- Understands key terms.



## Exercise 1

# Isolating Procedure for an Electric Circuit

Read the following text and complete the task that follows:

Before commencing work on electrical equipment, the circuit must be disconnected (isolated) from the supply to ensure the safety of the worker.

Any persons who may be affected by the circuit isolation should be informed before the power is turned off. This is to warn them that machinery may stop unexpectedly.

The circuit protective device must now be located and open circuited to isolate the supply. The circuit protective device may be either a circuit breaker or a fuse. In the case of a circuit breaker, switch it off and lock it off if possible. In the case of a fuse, remove the fuse element and replace the empty fuse carrier.

To make sure that the circuit stays isolated, attach a signed danger tag to the protective device.

Test the circuit with a functional voltage tester to ensure that the correct circuit has been isolated. (The voltage tester should be firstly operated on a known supply to make sure that it is functional).

If practical, connect a short circuit between all of the circuit conductors. This will cause the protective device to operate if the circuit is accidentally re-energised.

The circuit is now in a safe condition for you to commence work.



## Exercise 1

### TASK

Rewrite the following 7 procedural steps for isolating an electric circuit so that they are in the correct order:

- Test voltage tester
- Short circuit conductors
- Notify personnel of impending disruption to supply
- Test circuit to verify isolation
- Isolate the circuit
- Attach danger tag
- Locate protective device
- Test voltage tester

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7

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8

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Use the answer sheet to check your work.



## ANSWER

### ISOLATING PROCEDURE FOR AN ELECTRIC CIRCUIT

1. Notify personnel of impending disruption to supply
2. Locate protective device
3. Isolate the circuit
4. Attach danger tag
5. Test voltage tester
6. Test circuit to verify isolation
7. Test voltage tester
8. Short circuit conductors



## Exercise 2

# Procedure for Making a Three Core Extension Lead

Read the following text and complete the task that follows:

*You will need a three pin plug top, a three pin extension socket, a length of three core flex and a circuit tester.*

*Decide how much of the outer sheath of the flex needs to be removed (usually 100mm), cut the sheath taking care not to cut the insulation of the internal cores.*

*With the outer sheath removed find the length of the internal conductors needed by fitting them into the plug top (usually 22mm). Be sure that you can double over the conductors so that there is a bigger area to connect.*

*Cut away the insulation from each of the internal cores and twist the conductors together.*

*Slide the cord grip nut and the cover of the plug top onto the cable so that you can connect the conductors to the plug top.*

*Put each wire into the correct terminal using the colour coding of the cables. Make sure that the insulation is not clamped by the connector as this will make a bad connection. Now fit the cables into the anchoring paths.*

*Put the cover over the plug top so that the cover overlaps the top of the plug and screw on the collar.*

*Use the same steps for fitting the cord extension socket as you did for the plug top.*

*Using the multimeter check the connection between the plug pins and the socket pins' holes, check the polarity of the plug and the socket and that there are no short circuits between the pins.*

*The three core extension can now be safely used.*



## TASK

Rewrite the following 6 procedural steps for making a three core extension lead so that they are in the correct order.

- Test the circuit for connection
- Fit the wires
- Attach the plug top
- Remove the insulation
- Fit the cord extension socket
- Remove the sheath of the flex

1

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2

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6

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Use the answer sheet to check your work.





## ANSWER

### PROCEDURE FOR MAKING A THREE CORE EXTENSION LEAD.

1. Remove the sheath of the flex
2. Remove the insulation
3. Fit the wires
4. Attach the plug top
5. Fit the cord extension socket
6. Test the circuit for connection



### Exercise 3

## Electric Shock Survival

Read the Electric Shock Survival instructions on the following pages. Decide which picture below should go with each step in the instructions. Write the appropriate letter in the box above each step.

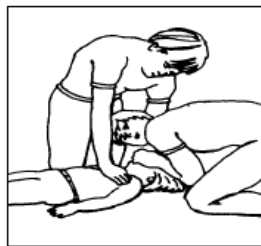
A



B



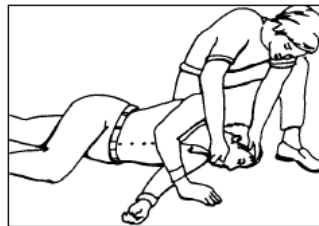
C



D



E



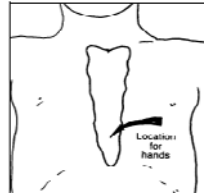
F



G



H



I



# Electric Shock Survival



## EMERGENCY

Electric shock may stun the victim and stop his or her breathing.

## DANGER

Check for your own safety and the safety of the casualty and bystanders.

## HIGH VOLTAGE

Wait until the power is turned off.

## LOW VOLTAGE

Immediately switch off the power. If this is not practicable, pull or push the casualty clear of the electrical contact using material such as wood, rope, clothing, plastic or rubber. Do not use metal or anything moist.

## RESUSCITATION

Immediately send for help without delay.

Check for response, gently shake and loudly shout. If no response then:

### ONE

- Turn the casualty on his/her side.
- Open mouth and check for any foreign material.
- If present, clear the airway using fingers, if necessary.

### TWO

- Place the casualty on his/her back.
- Tilt the head back and raise the chin forward.

### THREE

- Check for breathing, observe chest movement, listen and feel for breathing.
- If no breathing:
  - pinch the casualty's nose;
  - blow in the casualty's mouth.

### FOUR

- Give 5 quick breaths followed by 1 every 5 seconds (12 per min), until casualty starts to breath. For children under 2 years of age, place your mouth over the casualty's mouth and nose and give 20 small puffs per min.

### FIVE – Circulation – check for pulse

- Check carotid pulse for 5 seconds.

- If pulse absent:
- Position hands on lower half of breast bone.

### SINGLE OPERATOR

- Give 15 heart compressions followed by 2 full quick breaths. Depress breast bone 5 cm at the rate of 80 compressions a minute.

### TWO OPERATORS

- Give 5 heart compressions then 1 full quick breath without interrupting the rhythm at the rate of 60 compressions a minute.

## SIX



- When casualty's pulse and natural breathing returns cease resuscitation and move the casualty into the **recovery** or **coma** position.
- Keep a constant watch on the casualty, to ensure they do not cease breathing again, until trained assistants take over.
- Check the pulse after the first minute and then every two minutes. When the pulse returns, continue mouth to mouth until breathing returns.

NOTE: This information is provided for guidance only. It is recommended that persons associated with the installation of electrical equipment or repair of electrical installations obtain formal training in current resuscitation methods



## ANSWER

### ELECTRIC SHOCK SURVIVAL

#### EMERGENCY

Electric shock may stun the victim and stop his or her breathing.

#### DANGER

Check for your own safety and the safety of the casualty and bystanders.

#### HIGH VOLTAGE

Wait until the power is turned off.

#### LOW VOLTAGE

Immediately switch off the power. If this is not practicable, pull or push the casualty clear of the electrical contact using material such as wood, rope, clothing, plastic or rubber. Do not use metal or anything moist.

#### RESUSCITATION

Immediately send for help without delay.

Check for response, gently shake and loudly shout. If no response then:

##### ONE



- Turn the casualty on his/her side.
- Open mouth and check for any foreign material.
- If present, clear the airway using fingers, if necessary.

##### TWO



- Place the casualty on his/her back.
- Tilt the head back and raise the chin forward.

##### THREE

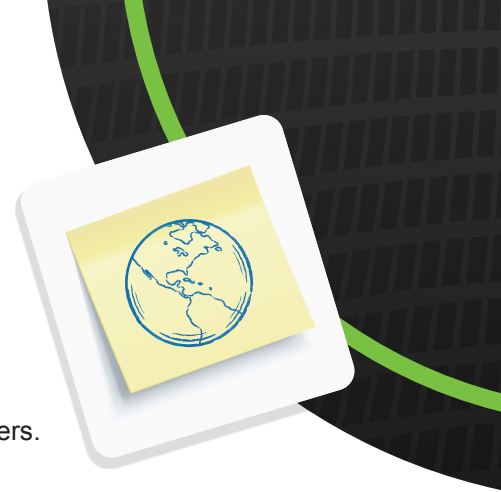


- Check for breathing, observe chest movement, listen and feel for breathing.
- If no breathing:
  - pinch the casualty's nose;
  - blow in the casualty's mouth.

##### FOUR



- Give 5 quick breaths followed by 1 every 5 seconds (12 per min), until casualty starts to breath. For children under 2 years of age, place your mouth over the casualty's mouth and nose and give 20 small puffs per min.



## ANSWER

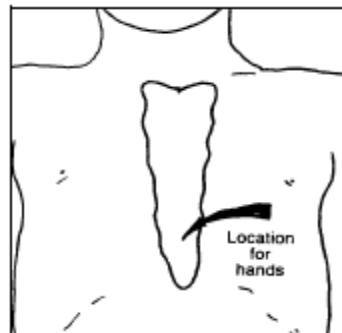
### ELECTRIC SHOCK SURVIVAL

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#### FIVE – Circulation – check for pulse



- Check carotid pulse for 5 seconds.



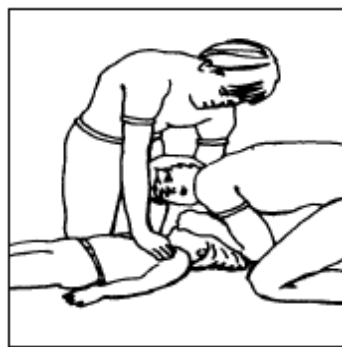
- If pulse absent:
  - Position hands on lower half of breast bone.

#### SINGLE OPERATOR



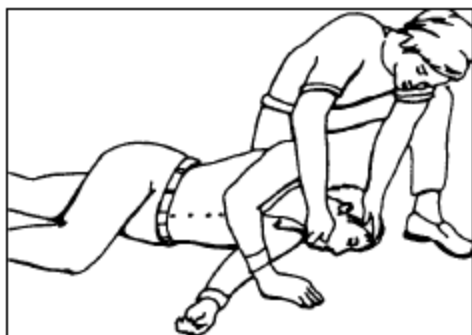
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#### TWO OPERATORS



- Give 5 heart compressions then 1 full quick breath without interrupting the rhythm at the rate of 60 compressions a minute.

#### SIX



- When casualty's pulse and natural breathing returns cease resuscitation and move the casualty into the **recovery** or **coma** position.
- Keep a constant watch on the casualty, to ensure they do not cease breathing again, until trained assistants take over.

- Check the pulse after the first minute and then every two minutes. When the pulse returns, continue mouth to mouth until breathing returns.

NOTE: This information is provided for guidance only. It is recommended that persons associated with the installation of electrical equipment or repair of electrical installations obtain formal training in current resuscitation methods

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## Exercise 4

# Electricity at Work

Read the text below to gain an understanding of its meaning and then complete the task that follows.

When .....flows in a conductor, heat is produced. This effect is used in .....such as electric radiators, electric kettles, cooking ranges and electric blankets.

An .....lamp produces light because the filament is heated to a very high temperature. To produce heat, electrical energy is converted to .....energy.

Heat is developed in a .....because of its resistance to the electric current. . All conductors have a certain amount of ..... so heat is always produced when current flows.

A recently developed device in the electrical trade provides protection against faults which cause current to flow to .....such a fault causes a magnetic .....in the core of the device resulting in the development of a voltage in the sense coil.

The electronics will then produce an output that operates a trip ..... making the contacts open. This immediately .....the appliance from the supply and avoids an electrical ....., possibly saving someone's life.



Use the answer sheet to check your work.



## TASK

Fill the gaps with words from the following list. Use the glossary of electrical terms to check the meaning of the words. Make sure that you choose the best word to keep the sense of the text.

electrical	thermal
coil	isolates
energy	conductor
incandescent	core
shock	resistance
current	vertical
accessory	appliances
field	earth

### NOTE:

There are more words listed than will be needed to complete the task.





