

6.7 AKTIVITI PERBINCANGAN

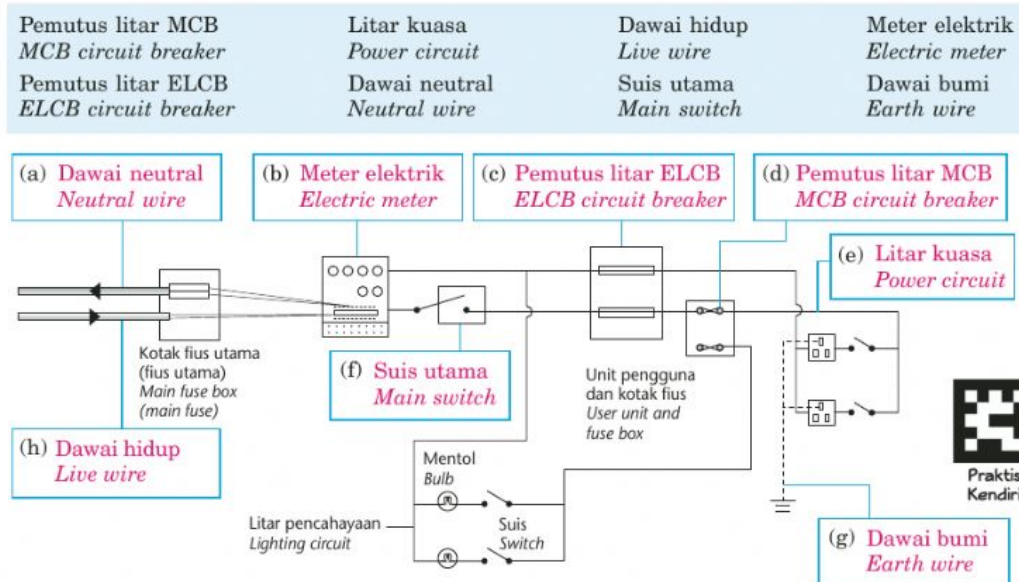
Sistem pendawaian elektrik di rumah The electrical wiring system at home

PBD
Kontekstual

Buku teks m/s 188 – 189

- 1 Isi di dalam petak tentang sistem pendawaian elektrik di rumah. TP2

Fill in the boxes on the electrical wiring system at home.



- 2 Daripada maklumat di 1, nyatakan bahagian pendawaian elektrik berdasarkan fungsinya. TP2
From the information in 1, state the parts in an electrical wiring system relating to their functions.

Bahagian/Part	Fungsi/Function
(a) Dawai hidup Live wire	Membawa arus elektrik ke alat elektrik. Carries electric current to an electrical appliance.
(b) Dawai neutral Neutral wire	Mengembalikan arus elektrik ke pencawang bahagian. Returns electric current to a branch substation.
(c) Dawai bumi Earth wire	Menghubungkan alat elektrik terus ke Bumi. Connects an electrical appliance directly to the Earth.
(d) Suis utama Main switch	Memutuskan bekalan arus untuk sementara apabila arus tidak diperlukan (contohnya semasa membaiki dawai elektrik yang rosak). Disconnects the current supply temporarily when it is not needed (such as during repairing damaged wiring).
(e) Pemutus litar ELCB ELCB circuit breaker	Memutuskan bekalan arus di rumah apabila arus yang berlebihan mengalir melaluinya. Cuts off the current supply in the house when excessive current flows through it.
(f) Meter elektrik Electric meter	Menyukat tenaga elektrik yang digunakan di dalam rumah. Measures the electrical energy that is used in the house.
(g) Pemutus litar MCB MCB circuit breaker	Mengasingkan litar akhir ke bahagian lain peralatan elektrik seperti alat penyaman udara dan mengawal kuantiti arus yang mengalir melaluinya. Separates the final circuit into the other parts of electrical equipment like air conditioner circuit and controls the quantity of current flowing through it.

Tujuan

Untuk memerhatikan struktur palam 3-pin dan melengkapkan pendawaian palam 3-pin
To observe the structure of a 3-pin plug and complete the wiring in a 3-pin plug

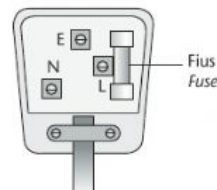
Bahan dan Radas

Palam 3-pin, dawai untuk palam 3-pin, pensel warna, pemutar skru
3-pin plug, wires for the 3-pin plug, coloured pencils, screwdriver

Prosedur



Rajah (a)/Diagram (a)



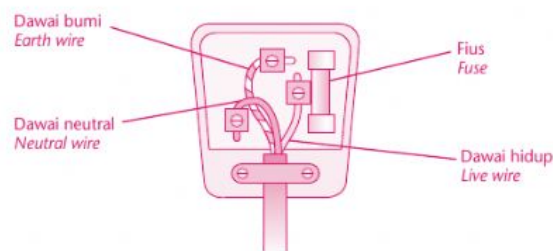
Rajah (b)/Diagram (b)

- Perhatikan struktur luaran palam 3-pin seperti yang ditunjukkan dalam Rajah (a). Kenal pasti pin yang berlabel:
Observe the external structure of a 3-pin plug as shown in Diagram (a). Identify the pins labelled:

L – untuk dawai hidup/for live wire
E – untuk dawai bumi/for earth wire
N – untuk dawai neutral/for neutral wire

- Perhatikan struktur dalaman palam 3-pin seperti yang ditunjukkan dalam Rajah (b).
Observe the internal structure of a 3-pin plug as shown in Diagram (b).
- Sambungkan dawai neutral (N), dawai hidup (L) dan dawai bumi (E) kepada bahagian yang betul dalam palam 3-pin dengan pemutar skru.
Connect the neutral (N), live (L) and earth (E) wires in the plug correctly with the screwdriver.
- Lukis, label dan warnakan sistem pendawaian dalam palam 3-pin.
Draw, label and colour the wiring system in a 3-pin plug.

Pemerhatian



Palam 3-pin/3-pin plug

Perbincangan

- Apakah fungsi fius dalam palam 3-pin? TP2
What is the function of the fuse in a 3-pin plug?
Untuk mengelakkan arus berlebihan daripada mengalir melaluinya.
To prevent _____ from flowing through it.
- Apakah dawai yang disambungkan ke fius dalam palam 3-pin? TP1
What is the wire which is connected to the fuse in a 3-in plug?
Dawai hidup/Live wire

- 3 Kenal pasti jenis dawai dan kod warna antarabangsa bagi dawai dalam palam 3-pin berdasarkan fungsinya. / Identify the types of wires and the international colour code of the wires in a 3-pin plug based on their functions.

Jenis dawai Type of wire	Warna dawai Colour of wire	Fungsi Function
(a) Dawai hidup Live wire	Perang Brown	Membawa arus elektrik ke peralatan elektrik Carries electric current to the electrical appliance
(b) Dawai neutral Neutral wire	Biru Blue	Membawa arus elektrik kembali ke sumbernya Carries electric current back to the source
(c) Dawai bumi Earth wire	Belang kuning dan hijau Yellow and green stripes	Membawa arus elektrik terbocor ke Bumi Carries leaked electric current to the Earth

- 4 Namakan palam yang ditunjukkan di bawah. Kemudian, tandakan (✓) di dalam petak bagi palam yang **tidak** disambungkan ke dawai bumi dan **tidak** mempunyai fuis. Name the plugs shown below. Then, mark (✓) in the box the plug which is **not** connected to an earth wire and does **not** have a fuse. TP1

☐


Palam 3-pin
3-pin plug

☒


Palam 2-pin
2-pin plug

BAB
6

- 5 Pilih jawapan yang betul tentang sistem pendawaian elektrik di rumah. TP2
Choose the correct answers on the electrical wiring system at home.
- Bekalan utama tenaga elektrik di rumah mempunyai voltan (240 V, 415 V).
The mains supply of electrical energy in a house has a voltage of (240 V, 415 V).
 - Arus elektrik dibekalkan ke rumah dalam bentuk (arus terus, arus ulang-alik).
Electricity is supplied to homes in the form of (direct current, alternating current).
 - Pendawaian (satu fasa, tiga fasa) digunakan di rumah-rumah yang memerlukan bekalan elektrik yang rendah atau sederhana, iaitu penggunaan tenaga elektrik yang kurang daripada 10 kW atau 50 A.
(Single-phase, Three-phase) wiring is used in houses that require low or moderate supply of electricity, i.e. the use of electricity which is less than 10 kW or 50 A.
 - Pendawaian (satu fasa, tiga fasa) biasanya digunakan dalam industri ringan dan berat yang memerlukan bekalan voltan yang tinggi, iaitu tenaga elektrik yang lebih daripada 10 kW atau 50 A.
(Single-phase, Three-phase) wiring is usually used in light or heavy industries that need high voltage supply, i.e. the use of electricity which is more than 10 kW or 50 A.



Kesimpulan

Palam 3-pin mengandungi tiga pin yang disambungkan ke dawai hidup (perang), dawai neutral (biru) dan dawai bumi (kuning berbelang hijau).
A 3-pin plug has three pins that are connected to the live wire (brown), neutral wire (blue) and earth wire (yellow with green stripes).

6.9 AKTIVITI PERBINCANGAN

Komponen keselamatan dalam sistem pendawaian Security components in wiring system

(PBD)
Kontekstual

Buku teks m/s 191 – 192

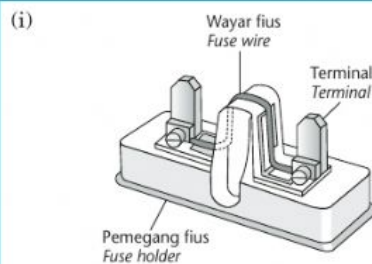
1 Jawab soalan-soalan di bawah tentang fius./Answer the questions below about fuse.

(a) Kenal pasti **dua** jenis fius di bawah.

Identify **two** types of fuse below.

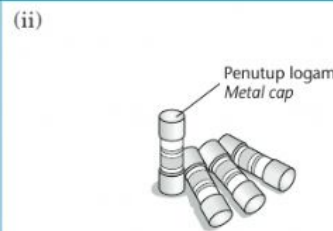
Fius kartrij/Cartridge fuse

Fius wayar boleh ganti/Replaceable fuse



Fius wayar boleh ganti/Replaceable wire fuse

- Wayar fius boleh diganti apabila sudah lebur.
The wire of the fuse can be replaced when melted.



Fius kartrij/Cartridge fuse

- Wayar fius tidak boleh diganti apabila sudah lebur. Sebagai ganti, suatu fius yang baharu perlu digunakan.
The wire of the fuse cannot be replaced when melted. Instead a new fuse must be used.

(b) Apakah yang akan berlaku kepada wayar fius jika arus yang berlebihan mengalir melaluinya?
What will happen to the fuse wire if excessive current flows through it? **TP2**

Dawai fius akan menjadi panas dan melebur.

The fuse wire will become and .

(c) Ramalkan apa yang akan berlaku kepada fius 1 A jika arus sebesar 2 A mengalir melaluinya.
Predict what will happen to a 1 A fuse if a current of 2 A flows through it.

Dawai fius akan melebur.

The fuse wire will .

(d) Jika suatu alat elektrik menggunakan arus sebesar 11 A, bulatkan nilai fius yang sesuai digunakan.
If an electrical appliance uses current of 11 A, circle the fuse value which is suitable to be used. **TP2**

1 A 2 A 3 A 5 A 10 A 13 A 15 A 30 A

2 Bulatkan komponen keselamatan selain fius yang terdapat dalam sistem pendawaian di rumah./Circle the safety components other than the fuse found in wiring system at home.

Suis utama
Main switch

Meter elektrik
Electric meter

Pemutus litar ELCB
ELCB circuit breaker

Konduktor kilat
Lightning conductor

Dawai bumi
Earth wire

Pemutus litar MCB
MCB circuit breaker

