THE APPENDICES WORTH TABBING

WHICH APPENDIX HOLDS THE TIME-CURRENT CURVES?

The contents list 17 appendices, but Appendix 7 and Appendix 17 are listed as deleted and Appendix 12 as not used, so 14 have content. Realistically five of them earn a tab. A quick tour of them:

APPENDIX 1 — BRITISH STANDARDS

The list of BS and other standards referenced by the book. It is the one to read if you want to fall asleep. Know it exists; don't study it.

APPENDIX 2 — THREE PAGES, ONE USEFUL TABLE

Appendix 2 runs **pp.434–436** — statutory regulations and associated memoranda. The only thing in it worth highlighting is the table at the very end, on **p.436**:

NOMINAL VOLTAGE AND ITS PERMITTED TOLERANCE

```
Nominal voltage to earth, U₀ = 230 V
Permitted tolerance = +10 % / -6 %

230 - 6 %  = 216 V
230 + 10 % = 253 V

In force since 1 January 1995
```

This answers a question raised earlier: *can the supply coming into a property be more or less than 230 V?* Yes — legitimately anywhere between **216 V and 253 V**.

> **How to mark it legally.**
> You **may** highlight around the box. You **may not** draw arrows or anything decorative. Better still: forget boxing it, just highlight the **bottom line** — the one with the 1995 date and the tolerance. A tab reading "Appendix 2" is fine, because that's what the page is.

APPENDIX 3 — TIME/CURRENT CHARACTERISTICS

- Where you get your **fault currents** and **disconnection times** for overcurrent devices. You've now been in it repeatedly across these modules.
- Appendix 3 prints, with each set of curves, a **table** giving the current needed to operate the device within **0.1 s** and within **5 s**. That is where the **t** in the adiabatic equation comes from: the device's operating time, read from Appendix 3.
- The **curved** part of the characteristic is **overload** protection; the **straight** part is the high fault current giving you the 0.1 s or 0.4 s trip.

- Worked from it: a **BS 88-2, 80 A** fuse needs **750 A** to operate in **0.4 s**. Find the 0.4 s column and read the current: **750 A**.

APPENDIX 4 — CURRENT-CARRYING CAPACITY AND CIRCUIT DESIGN

Enormous, and the one you'll live in during cable calculation work. Everything below sits in it.

SYMBOL	WHAT IT IS
C_A	**Ambient temperature** — the air temperature around the cable
C_I	**Thermal insulation** around the cable
C_G	**Grouping** — the number of cables or **circuits** grouped on the same run
C_C	Cable **buried in the ground** (in a duct or direct) — **0.9**
C_F	The **BS 3036** semi-enclosed fuse factor — **0.725**
I_z	The **operating current including the fusing factor**, for operation within the conventional time after a device protecting against overload
I_b · I_n · I_z	All defined here as well as in Part 2 — and the formula for the tabulated rating you need: $I_t \geq I_n$ **÷ the rating factors**

> **C_G is grouping of *circuits*, not just cables.**
>
> And worst case applies: if five circuits share a run and some are switched off, you still apply the grouping factor as though they were all there.

> **A lot of value in one appendix.**
>
> The rating factors and I_z are set out in Appendix 4. C_{min} (0.95) is at Reg 411.4.4, p.73. Highlight them, and tab the appendix only with words printed on the page.

Also in Appendix 4, and worth its own tab:

- **Table 4Ab** — voltage drop limits: **3 %** for lighting, **5 %** for everything else. At 230 V that's **6.9 V** and **11.5 V**. You won't have the On-Site Guide in the exam, so this is where you get them. Expect the question to want the volts, not the percentage.
- **Table 4B1** — ambient temperature rating factors. Example: 70 °C thermoplastic at a 40 °C ambient gives $C_A = 0.87$.
- **Installation reference methods** — how cables may be installed and what's permitted, including reference method 100.
- The **triple harmonics** table, if a question ever asks about harmonic content in particular cable types.
- The $I_z \geq I_n$ formulas, several versions for different circumstances.

APPENDIX 5 — EXTERNAL INFLUENCES

Any question about an external influence: Appendix 5 first, Chapter 52 second. Codes worth knowing:

- **AG** = **impact**. **AG1** = low severity — normal household and similar equipment.
- **AE** = presence of **foreign solid bodies** — the IP-rating end of things.
- **BA4** = instructed person, **BA5** = skilled person.
- **Temperature** is an external influence too — which is why the sauna question is really an external-influence question.

> ✋ **The tab rules, restated because they matter.** A tab may carry **only something already printed on that page** — "C_F" where C_F is on the page, "Table 54.7" on the table. You may **not** add extra wording, and you may **not** pencil in page numbers or cross-references. Nothing hand-written goes in the book, in any form.

> **Tab what you won't remember.**
> Prioritise **Table 54.7**, the **k value tables**, the **C factors** — the ones you'd otherwise flick past for ages. Printed sticker sets carry printed headings; use them as they come.

- **Appendix 1** · British Standards
- **Appendix 2** · p.436 · 230 V nominal · **+10 % / −6 %** · 216–253 V ★
- **Appendix 3** · time/current characteristics · BS 88-2 80 A at 0.4 s = 750 A
- **Appendix 4** · C_A C_I C_G C_F · I_b I_n I_z I_2 ★
- **Table 4Ab** · voltage drop 3 % / 5 % ★
- **Table 4B1** · ambient temperature · 40 °C = 0.87
- **Appendix 5** · external influences · AG1, AE, BA4, BA5 ★

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