

## Distribution boards and Consumer Units

Attempt the following short answer questions concerning electrical distribution boards and consumer units.

Question 1: Briefly define the term 'Distribution Board'

Answer: An assembly containing switching or protective devices, e.g. fuses, circuit-breakers, residual-current operated devices, associated with one or more outgoing circuits fed from one or more incoming circuits... (IET BS7671:2018 Part 2 Definitions)

Question 2: Briefly define the term 'Consumer unit'

Answer: A particular type of distribution board...for the control and distribution of electrical energy, principally in domestic premises... (IET BS7671:2018 Part 2 Definitions)

Question 3: Identify the technical requirements of a circuit-breaker

Answer: A device capable of making, carrying and breaking normal load currents in a circuit, and when abnormal currents flow, such as in the case of short-circuit, to safely break or open the circuit automatically.

Question 4: What is the purpose of a 'highway distribution board'?

Answer: A distribution point for connecting one or more highway distribution circuits to a common origin e.g. street furniture. Street furniture supplying more than one circuit can itself be defined as a highway distribution board. (IET BS7671:2018 Part 2 Definitions)

Question 5: Briefly describe the technical requirements for a domestic consumer unit to protect against direct contact with live parts

Answer: a) A suitable plastic or metallic enclosure with suitable IP rating b) Barrier over the live line bus-bar c) Suitably protected double-pole main switch d) Correctly connected live conductors

See 421.1.201 BS7671:2018: - enclosures to be manufactured from noncombustible material or be enclosed in a cabinet or enclosure constructed of noncombustible material...

Question 6: With respect to final circuits in an electrical installation state one requirement concerning the method by which the circuits are to be isolated and protected.

Answer:

- i) Separate circuits to be provided for parts of the installation which need to be separately controlled, e.g. ring final circuits supplying socket-outlets upstairs and downstairs in a property.
- ii) Circuits are not affected by the failure of other circuits, so for example a fault in the power, socket-outlet circuit does not cause the loss of supply to the lighting circuits supplied from the same consumer unit. This means that a double-pole RCD should not be installed as the overall means of isolation for the supply to a consumers unit.