EUROPEAN TRADESMAN PROJECT
NOTES ON ELECTRICAL TESTS OF ELECTRICAL INSTALLATIONS

ELECTRICAL DISTRIBUTION BOARD
ELECTRICAL DISTRIBUTION BOARD
(For domestic installations)
OBJECTIVES OF COURSE

Students should be in position to:

• Report the use of electrical distribution board.
• Recognize the various categories of distribution boards.
• Recognize the various parts of distribution board.
• Understand the use of each mechanism or element inside the distribution board.
**METER CABINET (KWh meter)**

The supply from the distribution network of Electricity Authority is terminated in the meter cabinet.

The following components are found in the cabinet:

- Meter Kwh
- Miniature circuit breaker + Residual current device (MCB/RCD)

The supply of the distribution board is done directly from the MCB/RCD configuration in the meter cabinet.
DISTRIBUTION BOARDS

Distribution boards are used for the supply and control of electric installations.

More analytically they are used for:

- In order to separate the installation in various circuits in proportion of the install load.
- For better protection of circuits
- For maintenance purpose, so the rest of the circuits are not influenced.
- Each circuit can be individually isolated if a fault arises.
DISTRIBUTION BOARDS CATEGORIES

• Material of manufacture
  • Plastic
  • Metal

• From the number of phases
  • one phase
  • three phases
• From installation way
  • Surface mounded (for surface installations)
  • Wall mounted
DISTRIBUTION BOARDS INCLUDE

• Enclosure (Box)

• Main switch

• Miniature circuit breakers (MCB)`s) or Fuses

• Residual current devises (RCD), according to the regulations

• Neutral busbar

• Earth busbar

• Phase busbar
DISTRIBUTION BOARD PARTS

- Enclosure
- Neutral busbar
- Main switch
- Phase busbar
- Covering box
- RCD
- Phase busbar
- Main switch
- Earth busbar
- Neutral busbar
- Earth busbar
- MCB
CLAUSES OF REGULATIONS FOR DISTRIBUTION BOARDS

1. The distribution board is placed in accessible and distinct place.
2. The distribution board has a double pole main switch capable to turn off all the circuits for single phase installations and 4 pole isolator for 3 phase installations.
3. Each circuit has his own protective devise for overload (MCB or FUSE)
4. Neutral wires are connected with the same order as phase wires.
5. Distribution board must have labels for each circuits identifying the use of each circuit
6. Spaces must be covered to avoid accidental touch to live components.
7. Supply wires must be covered
8. The connection of Miniature circuit breakers (mcb) is done using busbars
USE OF EACH COMPONENT OR PART OF DISTRIBUTION BOARD

Main switch

- Double pole for one phase installations
- Three or four pole for three phase installations

Is placed at the beginning of the installation and is activated only manually, is used for isolating the installation from the supply. Its switching off simultaneously phase and neutral.
Miniature Circuit breakers (MCB)

- They are placed at the start of each circuit and its sole purpose is the protection of the circuit from potential short-circuit or overloading. It is automatically activated.
- The rating of MCB is chosen according to the installed load
  - Nominal rating
  - Type (B,C,D,E)
  - Short circuit current

  (e.g. 6kA)
Residual current devices (RCD)

Protection mechanism from leakage current, that is to say protection against electric shocks. For protection of sockets circuits or other circuits installed in humid spaces or exterior to the building, normal sensitivity $I\Delta N = 30\,mA$

Automatic leakage and overload breaker (RCBO)

Combined protection mechanism against short circuit and current leakage.
INSTALLATION ORDER

1. Main switch
2. MCB’s that supply other distribution boards (Floor distribution board, boiler room etc).
3. First are placed the higher rating MCB’s ending with the lower rating MCB’s

DISTRIBUTION BOARD POSITION

1. Central location of the installation
2. Accessible and distinct place.
3. Away from humid places
4. Wall suitability
5. Height over 1.4 meters
1. Name five clauses of regulations related to distribution boards.

2. Name the components needed for a distribution board used in a residential electrical installation with two sockets circuits, three lighting circuits, a point of electric cooker, and a point of water heater.

3. Which is the order that you would install the above circuits? Fill in the following table.

ORDER: 1 2 3 4 5 6 7
CURCUIT:
MCB: