**Questions and feedback of chapter 6**

We will have **4 feedback versions**:

**KCR**: Knowledge of correct response

**AUC**: Answer until correct feedback

**EFE:** Elaborated feedback (explanation)

**AUC+ EFE**: Answer until correct feedback + Elaborated feedback (explanation)

| Question | Feedback type KCR | Feedback type AUC | Feedback type EFE | Feedback type AUC+EFE |
| --- | --- | --- | --- | --- |
| 1. Which of following statement about earthing is not true?   1. It is a way for the leakage of current to the ground. 2. It protects the devices from electrical damage. 3. It protects people who are in touch with non-metallic parts of electrical equipment from electric shock. 4. It helps to prevent electric shock and fires. | 2 Possibilities:   * If the given answer was C: “Correct!” * If the given answer was A, B or D: “Incorrect! The right answer is C!” | 2 Possibilities:   * If the given answer was C: “Correct!” * If the given answer was A, B or D: “Incorrect! Try again!” until the right answer C is given. | 4 Possibilities:   * If the given answer was C: “Correct! Earthing aims to protect people from electric shock when they get in touch with the **metallic parts** of an electrical equipment.” * If the given answer was A: “Incorrect. The statement A is correct, because earthing does discharge the current to the ground. The right answer is C! Because earthing doesn’t aim to protect people who are in touch **with non-metallic parts** of electrical equipment from electric shock.” * If the given answer was B: “Incorrect. The statement B is correct, because earthing does protect the devices from electrical damage. The right answer is C. Because earthing doesn’t aim to protect people who are in touch **with non-metallic parts** of electrical equipment from electric shock.” * If the given answer was D: “Incorrect. The statement D is correct, because earthing does help to prevent electric shock and fires. The right answer is C! Because earthing doesn’t aim to protect people who are in touch **with non-metallic parts** of electrical equipment from electric shock.” | 4 Possibilities:   * If the given answer was C: “Correct! Earthing aims to protect people from electric shock when they get in touch with the **metallic parts** of an electrical equipment.” * If the given answer was A: “Incorrect! The statement A is correct, because earthing does discharge the current to the ground. Try again.” * If the given answer was B: “Incorrect! The statement B is correct, because earthing does protect the devices from electrical damage. Try again!” * If the given answer was D: “Incorrect! The statement D is correct, because earthing does help to prevent electric shock and fires. Try again!”   PS: Once the right answer C is chosen, students receive the feedback programmed for option C, they could move to next question. |
| 2. Pipe earthing   1. is the most economical method of earthing. 2. is the most resistant for corrosion. 3. offers better voltage transient protection. 4. requires excavating a larger soil surface area to be installed. | 2 Possibilities:   * If the given answer was A: “Correct!”   If the given answer was B, C or D: “Incorrect! The right answer is A!” | 2 Possibilities:   * If the given answer was A: “Correct!”   If the given answer was B, C or D: “Incorrect! Try again!” until the right answer A is given. | 4 Possibilities:   * If the given answer was A: “Correct! Pipe earthing is known as a low-cost and most used earthing method.” * If the given answer was B: “Incorrect. Strip earthing is the most resistant for corrosion. The right answer is A! Pipe earthing is known as a low-cost and most used earthing method.” * If the given answer was C: “Incorrect. Strip earthing offers better voltage transient protection. The right answer is A! Pipe earthing is known as a low-cost and most used earthing method.” * If the given answer was D: “Incorrect. Plate earthing requires excavating a larger soil surface area to be installed. The right answer is A! Pipe earthing is known as a low-cost and most used earthing method.” | 4 Possibilities:   * If the given answer was A: “Correct! Pipe earthing is known as a low-cost and most used earthing method.” * If the given answer was B: “Incorrect! Strip earthing is the most resistant for corrosion. Try again.” * If the given answer was C: “Incorrect! Strip earthing offers better voltage transient protection. Try again!” * If the given answer was D: “Incorrect! Plate earthing requires excavating a larger soil surface area to be installed. Try again!”   PS: Once the right answer A is chosen, students receive the feedback programmed for option A, they could move to next question. |
| 3. When doing earthing system for an individual house, we choose:   1. TN S system 2. IT system 3. TN C system 4. TT system | 2 Possibilities:   * If the given answer was D: “Correct!”   If the given answer was A, B or C: “Incorrect! The right answer is D!” | 2 Possibilities:   * If the given answer was D: “Correct!”   If the given answer was A, B or C: “Incorrect! Try again!” until the right answer D is given. | 4 Possibilities:   * If the given answer was D: “Correct! TT system is for domestic usage.” * If the given answer was A: “Incorrect. The TN S system is for industrial usage. The right answer is D! Because TT system is for domestic usage.” * If the given answer was B: “Incorrect. The IT system is for buildings which need constant current such as hospital, commercial boats. The right answer is D! Because TT system is for domestic usage.” * If the given answer was C: “Incorrect. The TN C system is for industrial usage. The right answer is D! Because TT system is for domestic usage.” | 4 Possibilities:   * If the given answer was D: “Correct! TT system is for domestic usage.” * If the given answer was A: “Incorrect. The TN S system is for industrial usage. Try again.” * If the given answer was B: “Incorrect. The IT system is for buildings which need constant current such as hospital, commercial boats. Try again!” * If the given answer was C: “Incorrect. The TN C system is for industrial usage. Try again!”   PS: Once the right answer D is chosen, students receive the feedback programmed for option D, they could move to next question. |
| 4. Which of the following is not a part of earthing system   1. Earthing lead 2. Earth continuity conductor 3. Earthing electrode 4. Fuse | 2 Possibilities:   * If the given answer was D: “Correct!”   If the given answer was A, B or C: “Incorrect! The right answer is D!” | 2 Possibilities:   * If the given answer was D: “Correct!”   If the given answer was A, B or C: “Incorrect! Try again!” until the right answer D is given. | 4 Possibilities:   * If the given answer was D: “Correct! Fuse is not an earthing system component.” * If the given answer was A: “Incorrect. Earthing lead is a part of earthing system which connects the earth continuity conductor with the earthing electrode. The correct answer is D! Fuse is not an earthing system component.” * If the given answer was B: “Incorrect. Earth continuity conductor is a part of earthing system through which metal sheaths of electrical appliances are connected with the earthing lead. The correct answer is D! Fuse is not an earthing system component.” * If the given answer was C: “Incorrect. Earthing electrode is the final part of earthing system which buried inside the earth. The correct answer is D! Fuse is not an earthing system component.” | 4 Possibilities:   * If the given answer was D: “Correct! Fuse is not an earthing system component.” * If the given answer was A: “Incorrect. Earthing lead is a part of earthing system which connects the earth continuity conductor with the earthing electrode. Try again.” * If the given answer was B: “Incorrect. Earth continuity conductor is a part of earthing system through which metal sheaths of electrical appliances are connected with the earthing lead. Try again!” * If the given answer was C: “Incorrect. Earthing electrode is the final part of earthing system which buried inside the earth. Try again!”   PS: Once the right answer D is chosen, students receive the feedback programmed for option D, they could move to next question. |
| 5. The color of earth wire is   1. blue 2. red 3. green with yellow 4. blue with yellow | 2 Possibilities:   * If the given answer was C: “Correct!”   If the given answer was A, B or D: “Incorrect! The right answer is C!” | 2 Possibilities:   * If the given answer was C: “Correct!”   If the given answer was A, B or D: “Incorrect! Try again!” until the right answer C is given. | 4 Possibilities:   * If the given answer was C: “Correct! The color of earth wire is green and yellow.” * If the given answer was A: “Incorrect. Blue is the color of phase or neutral wire(please follow local wire color code standards). The right answer is C! The color of earth wire is green and yellow.” * If the given answer was B: “Incorrect. Red is the color of phase wire. The right answer is C! The color of earth wire is green and yellow.” * If the given answer was D: “Incorrect. Blue with yellow stripes does not represent any wire. The right answer is C! The color of earth wire is green and yellow.” | 4 Possibilities:   * If the given answer was C: “Correct! The color of earth wire is green and yellow.” * If the given answer was A: “Incorrect! Blue is the color of phase or neutral wire(please follow local wire color code standards). Try again.” * If the given answer was B: “Incorrect! Red is the color of phase wire. Try again!” * If the given answer was D: “Incorrect! Blue with yellow stripes does not represent any wire. Try again!”   PS: Once the right answer C is chosen, students receive the feedback programmed for option C, they could move to next question. |
| 6. To install an earth pit, I will not need   1. an earth pit cover 2. digging tools 3. safety glasses 4. residual current devices | 2 Possibilities:   * If the given answer was D: “Correct!”   If the given answer was A, B or C: “Incorrect! The right answer is D!” | 2 Possibilities:   * If the given answer was D: “Correct!”   If the given answer was A, B or C: “Incorrect! Try again!” until the right answer D is given. | 4 Possibilities:   * If the given answer was D:” Correct. You will not need residual current devices for earth pit installation as it is a part of the protection scheme but not of the installation process.” * If the given answer was A: “Incorrect. You do need an earth pit cover to cover the earth pit to protect it from damage. The right answer is D. You will not need residual current devices for earth pit installation as it is a part of the protection scheme but not of the installation process.” * If the given answer was B: “Incorrect. You do need digging tools to dig a hole for the earth pit. The right answer is D. You will not need residual current devices for earth pit installation as it is a part of the protection scheme but not of the installation process.” * If the given answer was C: “Incorrect. You do need safety equipment as safety glasses, boots. The right answer is D! You will not need residual current devices for earth pit installation as it is a part of the protection scheme but not of the installation process.” | 4 Possibilities:   * If the given answer was D: “Correct! You will not need residual current devices for earth pit installation as it is a part of the protection scheme but not of the installation process.” * If the given answer was A: “Incorrect. You do need an earth pit cover to cover the earth pit to protect it from damage. Try again.” * If the given answer was B: “Incorrect. You do need digging tools to dig a hole for the earth pit. Try again!” * If the given answer was C: “Incorrect. You do need safety equipment as safety glasses, boots. Try again!”   PS: Once the right answer D is chosen, students receive the feedback programmed for option D, they could move to next question. |
| 7. To measure the earth resistance value after an earth pit installation, I use   1. multimeter. 2. megohmmeter. 3. voltmeter. 4. earth resistance tester. | 2 Possibilities:   * If the given answer was D: “Correct!”   If the given answer was A, B or C: “Incorrect! The right answer is D!” | 2 Possibilities:   * If the given answer was D: “Correct!”   If the given answer was A, B or C: “Incorrect! Try again!” until the right answer D is given. | 4 Possibilities:   * If the given answer was D: “Correct! Earth resistance testers allow the measurement of earth electrode resistance and soil resistivity.” * If the given answer was A: “Incorrect. A multimeter measures total resistance through all possible paths between the test lead probes. The right answer is D. Earth resistance testers allow the measurement of earth electrode resistance and soil resistivity.” * If the given answer was B: “Incorrect. A Megohmmeter or insulation resistance tester, also colloquially known as megger, is a special type of [ohmmeter](https://en.wikipedia.org/wiki/Ohmmeter) used to measure the [electrical resistance](https://en.wikipedia.org/wiki/Electrical_resistance) of [insulators](https://en.wikipedia.org/wiki/Insulator_(electricity)). The right answer is D. Earth resistance testers allow the measurement of earth electrode resistance and soil resistivity.” * If the given answer was C: “Incorrect. The Voltmeter is designed to measure the voltage. The right answer is D. Earth resistance testers allow the measurement of earth electrode resistance and soil resistivity;” | 4 Possibilities:   * If the given answer was D: “Correct! Earth resistance testers allow the measurement of earth electrode resistance and soil resistivity.” * If the given answer was A: “Incorrect. A multimeter measures total resistance through all possible paths between the test lead probes. Try again.” * If the given answer was B: “Incorrect. A Megohmmeter or insulation resistance tester, also colloquially known as megger, is a special type of [ohmmeter](https://en.wikipedia.org/wiki/Ohmmeter) used to measure the [electrical resistance](https://en.wikipedia.org/wiki/Electrical_resistance) of [insulators](https://en.wikipedia.org/wiki/Insulator_(electricity)). Try again!” * If the given answer was C: “Incorrect. The Voltmeter is designed to measure the voltage. Try again!”   PS: Once the right answer D is chosen, students receive the feedback programmed for option D, they could move to next question. |
| 8. In general, it is recommended that, in India, the value of any earthing system resistance shall not be more than:   1. 0 Ω 2. 0.5 Ω 3. 5 Ω 4. 10 Ω | 2 Possibilities:   * If the given answer was C: “Correct!”   If the given answer was A, B or D: “Incorrect! The right answer is C!” | 2 Possibilities:   * If the given answer was C: “Correct!”   If the given answer was A, B or D: “Incorrect! Try again!” until the right answer C is given. | 4 Possibilities:   * If the given answer was C: “Correct! Ideally a ground should be of 0 Ω resistance. However, the NFPA and IEEE have recommended a value of 5Ω.” * If the given answer was A: “Incorrect. Although ideally a ground should be of 0 Ω resistance, the NFPA and IEEE have recommended a value of 5Ω. The right answer is C!” * If the given answer was B: “Correct! Ideally a ground should be of 0 Ω resistance. However, the NFPA and IEEE have recommended a value of 5Ω. The right answer is C!” * If the given answer was D: “Correct! Ideally a ground should be of 0 Ω resistance. However, the NFPA and IEEE have recommended a value of 5Ω. The right answer is C!” | 4 Possibilities:   * If the given answer was C: “Correct! Ideally a ground should be of 0 Ω resistance. However, the NFPA and IEEE have recommended a value of 5Ω.” * If the given answer was A: “Incorrect! Although ideally a ground should be of 0 Ω resistance, the NFPA and IEEE have recommended a higher value. Try again.” * If the given answer was B: “Incorrect! Ideally a ground should be of 0 Ω resistance, the lower the better. However, the NFPA and IEEE have recommended a higher value. Try again!” * If the given answer was D: “Incorrect! Ideally a ground should be of 0 Ω resistance, the lower the better. However, the NFPA and IEEE have recommended a higher value, but lower than 10 Ω. Try again!”   PS: Once the right answer C is chosen, students receive the feedback programmed for option C, they could move to next question. |