1. How many windings are on the secondary side of a distribution transformer? One

2. How is 120 V power connected to the secondary of a distribution transformer? Center tap and each end.

3. What are some advantages of a three-wire system? Two voltages, improved safety through grounded neutral, and reduced copper.

4. What is a combination panel board? Main disconnect switch in the same enclosure as the distribution circuit breakers.

5. Why is the neutral wire of service entrance not fused? Blown fuse could cause a hazardous situation with unequal voltages across loads designed for 120V.

6. Why is the neutral wire grounded at the service entrance? Limit shock hazard to 120V and to provide a path for opening the overcurrent device should an accidental ground occur.

7. What are the two methods for bringing the service conductors into a residential building? Overhead and underground.

8. What are the advantages of an underground service entrance? Looks better and less chance of accidental contact.

9. At what point in a service entrance does a customer’s responsibility begin? Supply authority connection.

10. What is an “Emily Knob”? Insulator rack.

11. What are the minimum and maximum heights for the supply conductors to connect to a residence? 3.5m and 9m

12. What is the recommended height of a meter base? 1.5-1.8m
13. What is the purpose of a service mast? Increase the clearance of supply conductors.

14. How far below the mast weather head is the insulator rack to be mounted? 150-300mm

15. How many straps must be installed on a service mast? Min of 3

16. What is the minimum distance that must be maintained from the roof to the bottom of a drip loop for a service entrance? 600mm

17. What are the two purposes of the messenger cable? Physical support for other two conductors and it is the neutral conductor.

18. What is the maximum distance for a supply span of triplex cable? 30m

19. How wide must marker tape be for underground cables? 100mm

20. What are the reasons for grounding and bonding? Protect life from danger of shock, limit voltages to ground to 150V, and open fuses and circuit breakers when there is a short circuit to ground.

21. What are three methods of grounding an electrical system? Artificial electrode, water system, and metal casing of a deep well.

22. What is a “Ufer” ground? Concrete-encased electrode.

23. What is a plate electrode? Metal plate with min .2m² surface area and min thickness dependant on material.

24. What is a rod electrode? Metal rod minimum 3m long and diameter based on material.

25. What table in the CEC is used to find the size of conductor for a grounded service? Table 17
26. What are the four acceptable method of connecting a grounding electrode to the ground wire? Bolted clamp, pipe fitting plug screwed into the pipe, cad weld, and silver solder.

Skip Task 3 & Go To 4

1. What percentage of the main floor area of a house must be used for calculating the size of service entrance? 100%

2. What percentage of the basement floor area of a house must be used for calculating the size of the service entrance? 75%

3. How is the basic load calculated for a residence? 5000 W for 1st 90 m² and 1000W for each additional 90 m² or portion thereof.

4. How is the range load calculated for a residence? 6000W for up to 12KW and 40% of balance.

5. What are considered “other loads” for calculating the size of service in a residence? Larger than 1500W. (Dryer and Water Heater)

6. What is the demand factor for swimming pool heating loads? 100%

Unit 4

1. What type of information is found in section 2 of the CEC? General

2. What are the two materials for conductors? Copper and aluminum

3. What is the range of wire sizes according to the AWG? No.40-2000 kcmil

4. What are the three most common types of wire insulation? Thermoplastic, rubber and thermoset.
5. What is the minimum size wire for branch circuits? No. 14 copper and No. 12 Aluminum.

6. Which table is used to determine conductor size for aluminum conductors in conduit? Table 4

7. How can exposed conductors get a free air rating? Spaced a cable diameter apart.

8. Which table is used to de-rate conductors in ambient temperatures above 30°C? 5a

9. Which table is used to de-rate conductors if there are more than three in a conduit or cable? 5c

10. What is the ampacity of 3-No.8 R90 aluminum conductors in a conduit? 30A

11. What is the ampacity of 4-No.8 R90 aluminum conductors in a conduit? 24A

12. What is the ampacity of 3-No.4 R90 aluminum conductors in free air? 105A

13. What is the ampacity of 3-No.4 R90 copper conductors in a conduit? 85A

14. What is the ampacity of 4-No.4 R90 copper conductors in a conduit? 68A

15. What is the minimum size neutral conductor that may be black but painted or taped white on the ends? No.2

16. What does a natural gray conductor indicate? Ungrounded or neutral

17. What does a green conductor indicate? Ground or bonding conductor.

18. What is the supply service? Wiring run by utility between the transformer and the point of connection at the consumers service.

19. What is the maximum height of branch circuit breakers at the main service entrance? 1.7m above floor.
20. What are some locations where service entrance equipment should not be installed? Stairwells, coal bins, and high ambient temperature areas.

21. What are the two main rules when installing branch circuits? Ampacity of conductors must be at least equal to the load and the overcurrent device must not be larger than the rating of the conductors.

22. What is the demand wattage for a water heater with two 3000 W elements if they are hooked up flip-flop? (Only one can be on at a time) 3000W

23. How many amps can be connected to a 15 A fuse? 12A (80%)

24. What are the five advantages to grounding and bonding? Limit voltage in lightening strike, protect life, prevent property damage, limit voltage to 150V to ground, facilitate overcurrent device operation.

25. What is the problem with a high impedance ground? Electricity takes the easiest path to ground so it may not take the ground path.

26. Which table in the CEC is used to determine the size of the system grounding conductor? Table 17

27. What size grounding conductor is required for a 100A service entrance? No. 8 AWG

Skip to end