Module 2 Unit 6, 7, 8

1. What is the definition of an ideal conductor?

2. How much does copper weigh compared to aluminum?

3. What is ductility?

4. What is malleability?

5. What are three problems with aluminum wire?

6. What is cold flow in an aluminum wire?

7. How is steel incorporated into electrical systems?

8. What is hard-drawn copper wire? Where is it used?

9. What is the purpose of an annealing oven for wire?

10. Where are busbars typically used?

11. What requirement of a stranded conductor will determine the number and size of the individual strands?

12. What is a compact concentric wire?

13. What are the four conditions that must be met by conductor insulation?

14. What are five insulating materials for conductors?

15. What are the two colors for the identified conductor in a circuit?

16. What are two methods for identifying a ground or bonding wire?

17. Where would the largest conductors be found in a residential installation?

18. What is the most common application for NMD-90 sheathed cable?

19. What are the important features of fixture wire?

20. What is low voltage according to the CEC?

21. What is the term used to describe circuits of less than 30V according to the CEC?

22. Give some examples of Class 2 circuits.
23. List three of the most common cable assemblies in residential construction.

24. What is “loomex”?

25. What is NMW cable?

26. What is NMU cable?

27. What are two limitations on Non-metallic sheathed cable?

28. What is another name for Armored Cable?

29. What are the voltage ratings for TECK cable?

30. How many PVC jackets are on teck cable?

31. What is corflex?

32. What is the powder in a mineral-insulated cable?

33. What is the greatest advantage of mineral-insulated cable?

34. What is the limitation of light-weight, mineral-insulated cable?

35. How are terminations made for MIC cable?

36. What is NSC (neutral support cable) typically used for?

37. What are flexible cables typically used for?

38. What is the difference between “SJ” and “S” flexible cord?

39. What is flat-conductor cable used for?

40. What determines the ampacity of a panel?

41. How are splitter boxes rated for amperage?

42. What is busway or busduct?

Unit 7

1. What is a “mil”?

2. What is the cross-sectional area of a conductor? (Physically)
3. What is a “circular mil”?

4. What is “KCM”?

5. What is “MCM”?

6. How are rectangular bus bars measured?

7. What type of wire is measured with a wire gauge?

8. What is the smallest wire size manufactured?

9. How do you calculate CM for a conductor when you know mils?

10. How do you calculate mils for a conductor when you know the CM?

11. How do you calculate SMA for a conductor when you know CMA?

12. What is the SMA for a busbar measuring ½” x 1 ½”?

13. What is the CMA for the busbar in question 12?

14. What are the specifications for No.10 wire? (CM, mils, and Resistance)

15. What would you estimate the resistance per 1000’ of No.6 wire to be, based on the values given for #10?

16. What would you estimate the CM of #6 wire to be, based on the values given for No.10?

17. What happens to the resistance of wire as the gauge number gets larger?

18. What factors help determine the material for a conductor?

19. What is the relationship between resistance and conductance? (Think about it)

20. When is resistance in an electric circuit a good thing?

21. What are the four factors that affect conductor resistance?

22. What is the formula to find the resistance of a length of wire?

23. What is the resistance of 100’ of No.14 copper wire?

24. What is the resistance of 2000’ of No.2 aluminum wire?
25. Which materials have a constant (regardless of temperature change) resistance?

26. What factors affect the ampacity rating of conductors?

27. What is the maximum allowable ampacity for a No.12 TW copper conductor in a cable according to the CEC?

28. What is the maximum allowable ampacity for a No.10 TW copper conductor in a cable according to the CEC?

29. What is the maximum allowable ampacity for a No.000 TW copper conductor in a cable according to the CEC?

30. What is the maximum allowable ampacity for a No.12 TW aluminum conductor in a cable according to the CEC?

31. What is the maximum allowable ampacity for a No.8 TW aluminum conductor in a cable according to the CEC?

32. What is the maximum allowable ampacity for a No.00 TW aluminum conductor in a cable according to the CEC?

33. What is the maximum allowable ampacity for a No.10 R90 aluminum conductor in free air according to the CEC?

34. What is the maximum allowable ampacity for a No.2 R90 aluminum conductor in free air according to the CEC?

35. What is the maximum allowable ampacity for a No.0000 R90 aluminum conductor in free air according to the CEC?

36. What is the maximum allowable ampacity for a No.10 R90 copper conductor in free air according to the CEC?

37. What is the maximum allowable ampacity for a No.3 R90 copper conductor in free air according to the CEC?

38. What is the maximum allowable ampacity for a No.10 TW copper conductor if there are 15 in a conduit?

39. What is the maximum allowable ampacity for a No.3 TW copper conductor if there are 5 in a conduit?

40. What is the maximum allowable ampacity for a No.2 R90 aluminum conductor if there are 10 in a conduit?
41. What is the maximum allowable ampacity for a No. 10 TW copper conductor in a conduit when the ambient temperature will be 40 degrees C?

42. What is the maximum allowable ampacity for a No. 4 R90 copper conductor in a conduit when the ambient temperature will be 40 degrees C?

43. What is the maximum allowable ampacity for a No. 10 TW aluminum conductor in a conduit when the ambient temperature will be 50 degrees C?

44. What is the maximum allowable ampacity for a No. 8 TW aluminum conductor in a conduit when the ambient temperature will be 50 degrees C?

45. What is the maximum allowable ampacity for a No. 10 R90 aluminum conductor in a conduit when the ambient temperature will be 40 degrees C?

46. Which CEC table gives allowable ampacity for flexible cords?

47. Short cables made from a good conductive material have no line loss. True or False?

48. What are the three formulas for calculating line loss?

49. What is the formula for voltage drop?

50. What is “K” in the formulas for conductors?

Unit 8

1. What are the advantages of an Edison three-wire circuit?

2. Where is the neutral conductor connected to the transformer in an Edison three-wire circuit?

3. At what point is the neutral wire in a three-wire system to be grounded?

4. When does it become especially important for a system to be grounded?

5. What is a bonding conductor used for?

6. What is the result of a fault to ground in a piece of equipment that is properly bonded and grounded?

7. What is a balanced load condition in a three-wire circuit?

8. Can a circuit with both 120V and 240V loads be balanced?
9. What is the benefit of balanced loading in a three-wire circuit?

10. What is the phrase that describes the amount of current on the neutral wire of a three-wire circuit?

11. What is the result of an open or broken neutral wire in a balanced three-wire circuit?

12. What is the result of an open or broken neutral wire in an unbalanced three-wire circuit? (See figure 12)

13. Is the neutral conductor ever fused? Why?

14. What is Kirchhoff’s voltage law?

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15. What are three things you never do with a neutral conductor?

16. What is the maximum voltage that can be applied to one of the loads in a 240V three-wire system when the neutral wire is open?

17. What is the voltage across an open neutral in a balanced three-wire circuit?