

NAME: \_\_\_\_\_  
DATE: \_\_\_\_\_

COURSE: Basic Principles/Industrial Wiring  
COURSE#: ELC191  
TOPIC: Test Ampacity Correction/Voltage Drop (rev A)  
INSTRUCTOR: Mr. Frank R. Lombardo

Please answer the following questions.

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Section 1: Ampacity Derating.  
Calculate only the corrected ampacity of the following conductors.

1. 1 - #6 THWN-2 Copper at 80 Degrees F.

\_\_\_\_\_ Amps.

2. 1 - #10 THHN Copper at 75 Degrees C.

\_\_\_\_\_ Amps.

3. 1 - #8 THHN Copper at 150 Degrees F.

\_\_\_\_\_ Amps.

4. 1 - #12 THW Aluminum at 114 Degrees F.

\_\_\_\_\_ Amps.

5. 1 - #1 TW Copper at 104 Degrees F.

\_\_\_\_\_ Amps.



6. 4 - #6 TW Copper in one conduit.

\_\_\_\_\_ Amps.

7. 8 - #2 THW Copper in one conduit.

\_\_\_\_\_ Amps.

8. 12 - #8 RHW Copper in one conduit.

\_\_\_\_\_ Amps.

9. 21 - #3 THWN Aluminum in one conduit.

\_\_\_\_\_ Amps.

10. 41 - #12 THHN Copper in one conduit.

\_\_\_\_\_ Amps.

11. 5 - #1 THWN Copper conductors in one conduit at 97 Degrees F

\_\_\_\_\_ Amps.

12. 7 - #1/0 THHN Copper conductors in one conduit at 105 Degrees F

\_\_\_\_\_ Amps.

13. 21 - #10 THW Copper conductors in one conduit at 115 Degrees F

\_\_\_\_\_ Amps.



14. 9 - #4 THWN Aluminum conductors in one conduit at 125 Degrees F  
\_\_\_\_\_ Amps.

15. 11 - #2 THWN Copper conductors in one conduit at 135 Degrees F  
\_\_\_\_\_ Amps.

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Section 2: Conductor Sizing.

Calculate what size conductor needed for the following loads.  
Give the final amps needed for given load and the wire size. Use copper wire for all.

16. 15 A load 35 degrees C 5 current carrying wires continuous load  
\_\_\_\_\_ amps for TW  
\_\_\_\_\_ wire size for TW  
  
\_\_\_\_\_ amps for THW  
\_\_\_\_\_ wire size for THW  
  
\_\_\_\_\_ amps for THHN  
\_\_\_\_\_ wire size for THHN

17. 25 A load 36 degrees C 8 current carrying wires  
\_\_\_\_\_ amps for TW  
\_\_\_\_\_ wire size for TW  
  
\_\_\_\_\_ amps for THW  
\_\_\_\_\_ wire size for THW  
  
\_\_\_\_\_ amps for THHN  
\_\_\_\_\_ wire size for THHN



18. 22 A load 42 degrees C 2 current carrying wires continuous load

\_\_\_\_\_ amps for TW  
\_\_\_\_\_ wire size for TW  
  
\_\_\_\_\_ amps for THW  
\_\_\_\_\_ wire size for THW  
  
\_\_\_\_\_ amps for THHN  
\_\_\_\_\_ wire size for THHN

19. 33 A load 46 degrees C 7 current carrying wires

\_\_\_\_\_ amps for TW  
\_\_\_\_\_ wire size for TW  
  
\_\_\_\_\_ amps for THW  
\_\_\_\_\_ wire size for THW  
  
\_\_\_\_\_ amps for THHN  
\_\_\_\_\_ wire size for THHN

20. 20 A load 31 degrees C 11 current carrying wires continuous load

\_\_\_\_\_ amps for TW  
\_\_\_\_\_ wire size for TW  
  
\_\_\_\_\_ amps for THW  
\_\_\_\_\_ wire size for THW  
  
\_\_\_\_\_ amps for THHN  
\_\_\_\_\_ wire size for THHN



Section 3: Voltage Drop.

\*\*\*\*\*For "K"--- Use 12.9 for copper and 21.2 for aluminum\*\*\*\*\*

Find the voltage drop for each of the following single phase circuits:

21. 6 AWG aluminum 175 ft. 37 A

22. 4 AWG copper 95 ft. 78 A

Find the wire size for each of the following single-phase circuits, voltage drop at 3%.

23. 120 V 41 A 205 ft. copper wire

24. 240 V 60 A 80 ft. aluminum wire

Find the maximum distance for each of the following single-phase circuits, voltage drop at 3%.

25. 4 AWG aluminum 60 A 240 V

26. 2 AWG aluminum 80 A 240 V

Find the maximum load for each of the following single-phase circuits, voltage drop at 3%.

27. 8 AWG copper 208 V 145 ft.

28. 1/0 AWG aluminum 208 V 180 ft.

