Dakota County Technical College

ELLW 1160: Transformers I

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 4

Lab Hours/Week: *.*

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course covers the theory and applications of transformer principles of magnetic and electrical circuits for primary and secondary connections. Understanding of polarities is examined and applied. Use of the different types and possibilities of connections will also be covered, with the needed information for choosing the loading, transformer types and sizes, and the fusing of the same. Prerequisites: ELLW1130 and concurrent enrollment in ELLW1161

B. COURSE EFFECTIVE DATES: 03/21/1998 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

D. LEARNING OUTCOMES (General)

1. apply angular displacement
2. apply angular displacement to connections
3. apply Delta primary connections
4. apply Delta secondary connections
5. apply transformer grounding requirements
6. apply transformer safety work requirements
7. apply trouble shooting practices
8. apply Wye primary connections
9. apply Wye secondary connections
10. calculate CT ratings
11. calculate single phase coil currents
12. calculate VT ratings
13. define additive coil characteristics
14. define angular displacement
15. define impedance requirements
16. define paralleled transformer coils
17. define phasing sticks
18. define series transformer coils
19. define single phase parallel requirements
20. define subtractive coil characteristics
21. define transformer action
22. define transformer bank secondaries using Wye and Delta configurations load characteristics
23. define transformer principals
24. define transformer purposes
25. describe polarity testing
26. describe primary mains
27. describe secondary mains
28. describe three phase service requirements
29. determine alternative source phasing
30. determine bank paralleling requirements
31. determine open bank capacities
32. determine power and light single phase capacities
33. determine power factor
34. determine primary line fusing
35. determine single phase installation lists
36. determine single phase installation requirements
37. determine single phase line currents
38. determine single phase metering
39. determine single phase transformer capacities
40. determine three phase meter connections
41. identify a conventional transformer
42. identify a CSP transformer
43. identify a floating neutral connection
44. identify core constructions

45. identify Delta power and light bank connection
46. identify Delta power bank connection
47. identify demand meters
48. identify distribution transformer polarities
49. identify distribution transformer ratings
50. identify distribution transformer ratings
51. identify dual voltage design
52. identify instrument transformer polarities
53. identify link fuses
54. identify over current protection
55. identify over voltage protection
56. identify power transformer polarities
57. identify power transformer ratings
58. identify primary bushing placement
59. identify primary CT'S
60. identify primary VT'S
61. identify secondary bushing placement
62. identify secondary CT'S
63. identify single phase Delta primary connections
64. identify single phase Wye primary connections
65. identify single phasing
66. identify single voltage transformer design
67. identify standard connections
68. identify transformer losses
69. identify voltage polarities
70. list transformer categories
71. parallel [bank] single phase units
72. use phase rotation meter
73. use volt meter for phasing secondaries

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted