Unit 11 - Week 10

Assignment 10

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-04-08, 23:59 IST.

Linked Question (Q1 and Q2)

An MMC based AC-DC converter is applied for HVDC application where input AC voltage is 400kV at 50 Hz and output HVDC voltage is ±325kV. The rated power output of the converter is 500 MW. Sinusoidal PWM technique is used and modulation index of each arm voltage is 0.95.

1) Find the required number of cells in each arm of MMC, if 3.3kV IGBTS are used. Assume safety factor is 1.7 and neglect redundancy of cells. ***2 points***

- 200
- 300
- 225
- 335

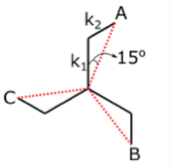
No, the answer is incorrect.
Score: 0
Accepted Answers:
335

2) The nominal DC bus rating of each cell is closest to ***2 points***

- 2kV
- 1kV
- 500V
- 750V

No, the answer is incorrect.
Score: 0
Accepted Answers:
2kV

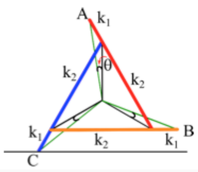
3) The value of k_1/k_2 in the following figure representing the output voltages of a zigzag transformer is ***2 points***



- 2.73
- 1.65
- 2.4
- 3.1

No, the answer is incorrect.
Score: 0
Accepted Answers:
2.73

4) find out the value of k_1/k_2 in the following figure representing the output voltages of an extended delta transformer. Assume θ=15° ***2 points***



- 1.73
- 0.577
- 2.73
- 1.65

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.577

Question (From 5 to 6)

A 3-phase Cascaded H-Bridge converter with a rectifier and multi pulse transformer and output of 3.3 kV, 6 MVA is driving a motor load with nominal power factor of 0.9 lag. Consider 3 H-Bridges are operating using sinusoidal phase shift PWM with 0.8 modulation index and carrier frequency is 1 kHz.

5) The DC bus voltage magnitude of each H-Bridge is closest to (Assume safety factor is 1.8) ***1 point***

- 2694.43 V
- 2020 V
- 1122 V
- 1497 V

No, the answer is incorrect.
Score: 0
Accepted Answers:
1122 V

6) To produce a DC bus voltage according to Q 5, the input rectifier side AC line voltage (rms) is closest to ***0 points***

- 2694.43 V
- 2020 V
- 1122 V
- 1497 V

No, the answer is incorrect.
Score: 0
Accepted Answers:
1497 V