Assignment 4

The due date for submitting this assignment is 4 PM on 2022-03-20, 20:59 EST.

Group B Phone: 123

A three-phase cascaded H-bridge converter is having 4 number of cells in each phase of the converter. The converter is operated using phase shifted FVIH technique (cell frequency f1 = 4 kHz and the fundamental frequency f = 50 Hz). The DC-link voltage of each cell is 300 V.

1. The switching frequency of each device in the converter is ______ kHz.
   - 4 kHz
   - 10 kHz
   - 16 kHz
   - 20 kHz
   - No, the answer is incorrect.

2. The first band of switching frequency harmonic at the output voltage of each cell is ______ kHz.
   - 1 kHz
   - 4 kHz
   - 6 kHz
   - 10 kHz
   - No, the answer is incorrect.

3. The first band of switching frequency harmonic at the output pole voltage of a phase is ______ kHz.
   - 2 kHz
   - 4 kHz
   - 6 kHz
   - 10 kHz
   - 20 kHz
   - No, the answer is incorrect.

4. The total number of carriers required are ______.
   - 24
   - 36
   - 48
   - 60
   - No, the answer is incorrect.

5. The required phase shift between the carriers is ______ degrees.
   - 0°
   - 60°
   - 90°
   - 120°
   - No, the answer is incorrect.

6. The main disadvantage of using phase-shifted FVRI is in a cascaded H-bridge converter is ______.
   - Unequal load distribution
   - Higher device current rating
   - Higher device voltage rating
   - Lower efficiency
   - No, the answer is incorrect.

7. A cascaded H-bridge converter with 3 number of cells in each phase of the converter and having DC-link voltage of each cell is 150 V. The converter can produce a minimum balanced fundamental line voltage peak as ______. 
   - 0 V
   - 300 V
   - 450 V
   - 600 V
   - No, the answer is incorrect.

8. In a cascaded H-bridge converter, there are 3 number of cells in each phase, which among the following combination of the operating frequency cells (after passing faulty cells) cannot produce an exploited voltage balanced line voltage.
   - f1 = 3 kHz, f2 = 5 kHz, f3 = 7 kHz
   - f1 = 4 kHz, f2 = 6 kHz, f3 = 8 kHz
   - f1 = 5 kHz, f2 = 7 kHz, f3 = 9 kHz
   - f1 = 6 kHz, f2 = 8 kHz, f3 = 10 kHz
   - No, the answer is incorrect.

9. The height of each carrier is, (Assume that the peak of sinusoidal reference is between 15 V)
   - 15 V
   - 5 V
   - 30 V
   - 45 V
   - No, the answer is incorrect.

10. The first band of switching frequency harmonic at the output pole voltage of a phase is ______ kHz.
    - 1 kHz
    - 5 kHz
    - 10 kHz
    - 15 kHz
    - No, the answer is incorrect.