Assignment 3

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment. Due on 2018-09-05, 23:59 IST.

Each question has “1” mark and there is no negative mark

1) An AC supply with an input AC line voltage of 400V at 50 Hz is connected with three-phase three-wire delta connected balanced load having \( Z_L = (4.0+j2.0) \) pu and a base impedance of 5\( \Omega \) per phase. It is to be realized as a unity power factor load on the AC supply system using shunt connected lossless passive elements (L and/or C).

Calculate compensator currents, \( A \)

- 8 A
- 6 A
- 5 A
- 7 A

No, the answer is incorrect. Score: 0

Accepted Answers: 8 A

2) Calculate the values of compensator elements (in farads or henries) in above question Number Q1,

- 61.66 micro F
- 63.66 micro F
- 51.66 micro F
- 58.66 micro F

No, the answer is incorrect. Score: 0

Accepted Answers: 63.66 micro F
4) A single-phase AC supply has Rms voltage of 230 V at 50 Hz and a feeder (source) impedance of 1.0Ω resistance and 4.0Ω inductive reactance after which a single-phase load having \( Z_L = (16 + j12) \, \Omega \) is connected. If a shunt compensator consisting of a lossless passive element (L or C) is used to raise the voltage to the input voltage (230 V) and make the unity power factor, calculate the value of the compensator element (in farads or henries)

- 129.51 microfarad
- 119.51 microfarad
- 139.51 microfarad.
- None of this

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

5) In above question Q4, The voltage drop across the source impedance after compensation is

- 40.12 V
- 38.12 V
- 40.63 V
- 40.92 V

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

6) A three phase AC 400 V, 50 Hz distribution system connected with three-phase three-wire shunt compensator consisting of lossless passive elements (L and/or C) Is employed to provide load balancing and power factor correction of a single-phase 50 kVA, 0.7 lagging power factor load connected between two lines (between phase A and B only). Calculate compensating current \( I_{ca} \) (which compensator is connected between phase A and B).

- 86.03 A
- 87.15 A
- 50.31 A
- 58.91 A

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

7) In above question A3Q6 the values of compensator elements (farads or henries) are …..
8) A three-phase four-wire unbalanced load having \( Z_{La} = (6.0 + j3.0) \) pu connected between phase A and neutral terminal is fed from an AC supply with an input line voltage of 415V at 50 Hz and a base impedance of 4.15\( \Omega \) per phase. It is to be realized as a three-phase balanced unity power factor load on the three-phase supply system using a shunt compensator consisting of lossless passive elements (L and/or C). Calculate the values of compensator elements (in farads) between phase A and B (assume compensator are delta connected).

- 39.38 microF
- 41.38 microF
- 42.38 microF
- 43.38 microF

No, the answer is incorrect.
Score: 0
Accepted Answers:
- 39.38 microF

9) In above question number Q8. Calculate compensator elements (in farads) between phase C and N.

- 57.075 microF
- 58.075 microF
- 59.075 microF
- 60.075 microF

No, the answer is incorrect.
Score: 0
Accepted Answers:
- 59.075 microF

10) In above question number Q8. Calculate its KVA rating.

- 7.012 KVA
- 7.112 KVA
- 7.212 KVA
- 7.312 KVA

No, the answer is incorrect.
Score: 0
Accepted Answers:
- 7.312 KVA