

Unit 7 - Week 6

Assignment 6

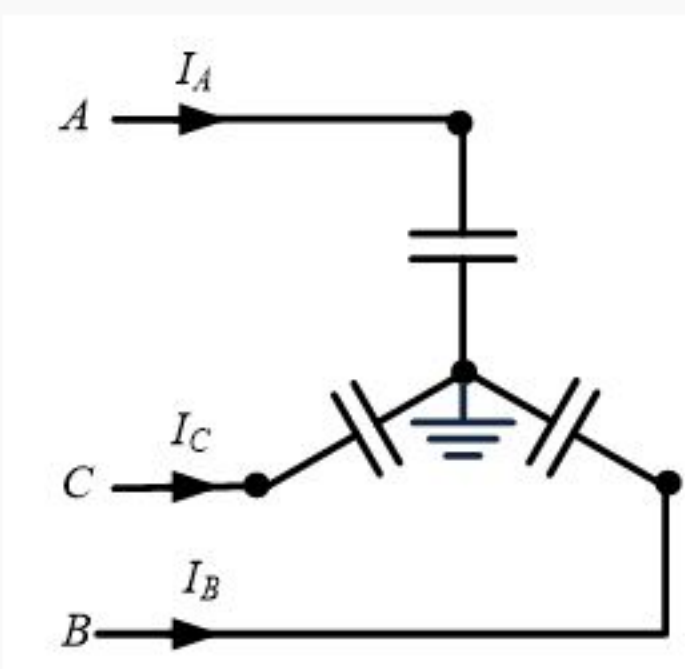
The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-09-11, 23:59 IST.

A) A three-phase wye connected capacitor bank of rating 200 kVAR, 415 V, is shown in the following figure. 4 points
If the line-to-line voltages at the bus at which it is connected are

$$V_{AB} = 440 \angle 0^\circ, V_{BC} = 440 \angle -120^\circ, \text{ and } V_{CA} = 440 \angle 120^\circ$$

then the line currents (A) injected by the capacitor bank (I_A, I_B, I_C) respectively are



- 98.3 \angle 60 $^\circ$, 98.3 \angle -60, and 98.3 \angle -180
- 295.0 \angle 60 $^\circ$, 295.0 \angle -60, and 295.0 \angle -180
- 885.0 \angle 60 $^\circ$, 885.0 \angle -60, and 885.0 \angle -180
- 56.7 \angle 60 $^\circ$, 56.7 \angle -60, and 56.7 \angle -180

No, the answer is incorrect. Score: 0

Accepted Answers: 295.0 \angle 60 $^\circ$, 295.0 \angle -60, and 295.0 \angle -180

2) A three-phase synchronous-generator with rated voltage of 11 kV is operating at constant power mode 2 points with pf of 0.9 lagging. When it operates at rated voltage and full load, the current delivered by it is 35 A. If DG is operating at full load and terminal voltage of 11.5 kV, the current injected by DG is

- 28.92 A
- 31.81 A
- 33.48 A
- 38.50 A

No, the answer is incorrect. Score: 0

Accepted Answers: 33.48 A

Data for Q. 3, to Q. 5: For 5 bus single phase distribution system, load and line data are given on the following table. The voltage at bus 1 is 12 \angle 0 $^\circ$ kV. The load flow problem is solved using backward-forward approach, assuming initial voltages at all the buses to be 12 \angle 0 $^\circ$ kV.

Bus i	Line Data		Load at bus j		
	Bus j	$R(\Omega)$	$X(\Omega)$	$P_L(\text{kW})$	$Q_L(\text{kVAR})$
1	2	0.4	0.7	200	150
2	3	0.3	0.4	500	200
3	4	0.5	0.6	400	300
2	5	0.3	0.4	300	200

3) During the first iteration, the load current I_5 is 2 points

- 30.05 \angle -33.69
- 41.67 \angle -36.87
- 20.83 \angle -36.87
- 44.88 \angle -21.80

No, the answer is incorrect. Score: 0

Accepted Answers: 30.05 \angle -33.69

4) During the first iteration the line current I_{12} is 4 points

- 176.11 \angle -35.24
- 115.47 \angle -39.24
- 105.29 \angle -36.28
- 136.49 \angle -31.26

No, the answer is incorrect. Score: 0

Accepted Answers: 136.49 \angle -31.26

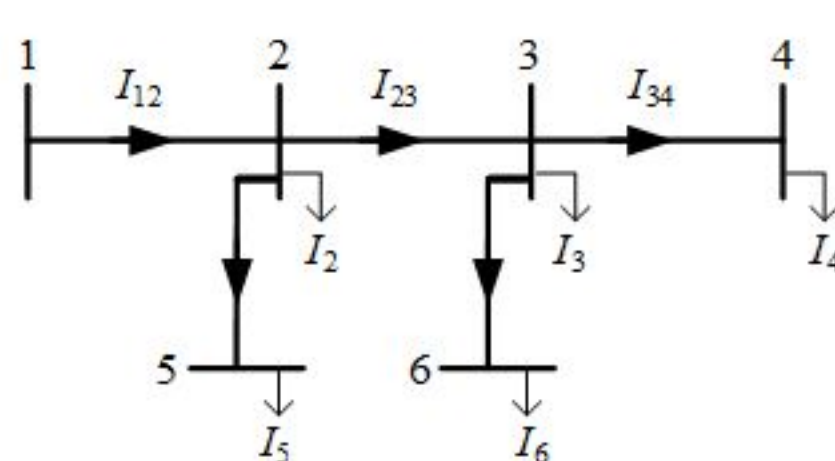
5) At the end of first iteration, voltage at bus 5 is 4 points

- 11.83 \angle -0.38
- 11.89 \angle -0.28
- 11.89 \angle -0.38
- 11.83 \angle -0.28

No, the answer is incorrect. Score: 0

Accepted Answers: 11.89 \angle -0.28

Data for Q. 6. to Q. 10.: The table below gives the converged results of line-flows of the single-phase distribution system shown in the following figure using the Backward/forward sweep algorithm. The voltage at bus 1 is 11 \angle 0 $^\circ$ kV.



Start Bus (i)	End Bus (j)	R (Ω)	X (Ω)	Line flows (A)
1	2	0.4	0.5	157.89 \angle -21.12
2	3	0.7	0.9	88.08 \angle -19.21
3	4	0.9	1.1	47.30 \angle -12.10
2	5	0.7	1.0	33.17 \angle -34.03
3	6	1.0	1.5	41.56 \angle -27.31

6) The voltage (kV) at bus 4 is 2 points

- 10.78 \angle -0.78
- 10.57 \angle -0.35
- 10.78 \angle -0.35
- 10.57 \angle -0.78

No, the answer is incorrect. Score: 0

Accepted Answers: 10.78 \angle -0.78

7) The voltage (kV) at bus 5 is 2 points

- 10.58 \angle -0.78
- 10.58 \angle -0.34
- 10.87 \angle -0.78
- 10.87 \angle -0.34

No, the answer is incorrect. Score: 0

Accepted Answers: 10.87 \angle -0.34

8) The load at Bus no. 5 is 4 points

- 400 + j200 kVA
- 300 + j200 kVA
- 400 + j100 kVA
- 500 + j150 kVA

No, the answer is incorrect. Score: 0

Accepted Answers: 300 + j200 kVA

9) The voltage drop between bus 3 and bus 4 is 2 points

- 59.80 \angle 38.61 V
- 59.80 \angle 22.28 V
- 67.23 \angle 38.61 V
- 67.23 \angle 22.28 V

No, the answer is incorrect. Score: 0

Accepted Answers: 67.23 \angle 38.61 V

10) Total power loss in the distribution system is 4 points

- 25.69 kW
- 19.91 kW
- 32.67 kW
- 24.50 kW

No, the answer is incorrect. Score: 0

Accepted Answers: 19.91 kW