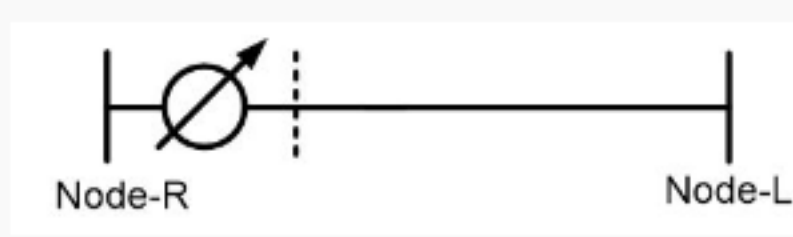


Unit 6 - Week 5

Assignment 5

The due date for submitting this assignment has passed. **Due on 2019-09-04, 23:59 IST.**
As per our records you have not submitted this assignment.

Data for the Q.1, Q.2, and Q.3: A Type-B step-voltage regulator is installed to regulate the voltage on a 6900 V single-phase lateral as shown in the following figure.



The R and X settings in the compensator circuit are $R=1\Omega$ and $X=2\Omega$. The potential transformer and current transformer ratings are:

$$N_{pt}=6900/120, \quad CT_p=600 \text{ A} \quad \text{and} \quad CT_s=5\text{A}.$$

The voltage level of relay is set between 122-120 V (i.e. bandwidth of 2 V). When regulator is set at the normal (0) tap position, the source-end voltage and current are $6900\angle 0^\circ$ and 450 A at power factor 0.9 lagging, respectively.

1) The equivalent line impedance between the regulator and load center is **2 points**

- $0.48 + j 0.96 \Omega$
- $0.58 + j0.98 \Omega$
- $0.32 + j1.20 \Omega$
- $1.67 + j3.33 \Omega$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $0.48 + j 0.96 \Omega$

2) The estimated voltage at the end of the feeder is **4 points**

- $7021.1\angle -1.89^\circ$
- $6697.2\angle -3.12^\circ$
- $7143.7\angle -1.56^\circ$
- $6524.6\angle -2.58^\circ$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $6524.6\angle -2.58^\circ$

3) The tap positions of voltage regulators that will hold the load center voltage at the desired voltage within the bandwidth **4 points**

- 3
- 6
- +10
- +3

No, the answer is incorrect.
Score: 0

Accepted Answers:
+10

4) The effective regulation ratio of "Type-A" regulator can be determined using following expression **2 points**

- $1 \mp 0.00625 * \text{Tap}$
- $1 \pm 0.00625 * \text{Tap}$
- $1/(1 \pm 0.00625 * \text{Tap})$
- $1/(1 \mp 0.00625 * \text{Tap})$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $1 \pm 0.00625 * \text{Tap}$

5) If the primary and secondary voltages of a standard (± 16 tap) B-Type single-phase regulator are 2402 V **2 points** and 2614 V respectively, the tap position of the regulator is

- +13
- 13
- +3
- 3

No, the answer is incorrect.
Score: 0

Accepted Answers:
+13

Data for the Q.6, Q.7, and Q.8: Consider a single phase, 230V, 15 kW load connected at a node.

6) If the load is modeled as constant-impedance and operated at voltage 215 V, the power consumed by the load is **2 points**

- 17.16 kW
- 13.11 kW
- 14.02 kW
- 16.04 kW

No, the answer is incorrect.
Score: 0

Accepted Answers:
13.11 kW

7) If the load is modeled as constant-current and operated at voltage 215 V, the power consumed by the load is **2 points**

- 17.16 kW
- 13.11 kW
- 14.02 kW
- 16.04 kW

No, the answer is incorrect.
Score: 0

Accepted Answers:
14.02 kW

8) If the load is modeled as mix-load (50% PQ, 10% I, and 40% Z) and operated at voltage 215 V, the power consumed by the load is **2 points**

- 14.15 kW
- 14.41 kW
- 15.63 kW
- 15.97 kW

No, the answer is incorrect.
Score: 0

Accepted Answers:
14.15 kW

Data for the Q.9, Q.10, and Q.11: The unbalanced star-connected load rated at 415 V are given as follows:

Phase A: 4 kVA 0.8 power factor lagging
Phase B: 3 kVA 0.8 power factor lagging
Phase C: 8 kVA 0.8 power factor lagging

The loads are connected across balanced supply of 400 V.

9) If the loads are modeled as constant power, the magnitudes of current supplied to the loads are **2 points**

- 16.69 A, 12.52 A, and 33.39 A
- 16.09 A, 12.07 A, and 32.18 A
- 16.46 A, 12.34 A, and 32.91 A
- 17.32 A, 12.99 A, and 34.64 A

No, the answer is incorrect.
Score: 0

Accepted Answers:
17.32 A, 12.99 A, and 34.64 A

10) If the loads are modeled as constant impedance, the magnitudes of current supplied to the loads are **4 points**

- 16.69 A, 12.52 A, and 33.39 A
- 16.09 A, 12.07 A, and 32.18 A
- 16.46 A, 12.34 A, and 32.91 A
- 17.32 A, 12.99 A, and 34.64 A

No, the answer is incorrect.
Score: 0

Accepted Answers:
16.09 A, 12.07 A, and 32.18 A

11) If the loads are modeled as 20% PQ, 20% I, and 60% Z, the magnitudes of current supplied to the loads are **4 points**

- 16.69 A, 12.52 A, and 33.39 A
- 16.09 A, 12.07 A, and 32.18 A
- 16.46 A, 12.34 A, and 32.91 A
- 17.32 A, 12.99 A, and 34.64 A

No, the answer is incorrect.
Score: 0

Accepted Answers:
16.46 A, 12.34 A, and 32.91 A

Course outline

How to access the portal

Week 1

Week 2

Week 3

Week 4

Week 5

- Modelling of Step Voltage Regulators – Part IV
- Load Models in Distribution System - Part I
- Load Models in Distribution System - Part-II
- Modelling of Distributed Generation
- Applications and Modeling of Capacitor Banks

Quiz : Assignment 5

- Solution for Assignment 5

Week 6

Week 7

Week 8

WEEKLY FEEDBACK

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