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Courses » Computer Aided Power System Analysis

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## Unit 11 - Week 10

Register for  
Certification exam

### Course outline

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Week 10

- Power system state estimation (Contd.)
- Power system state estimation (Contd..)
- Power system state estimation (Contd...)
- Fault Analysis

## Assignment 10

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2019-04-10, 23:59 IST.**

1) **Note: For solving this assignment, a computer program for implementing state estimation for an AC grid program needs to be developed.**

Consider the line data of the small 5 bus example system given in lecture 10. In this system, a total of 12 measurements have been taken as follows (all values are in

p.u.):  $P_{12} = 0.00759$ ;  $Q_{12} = -0.04376$ ;  $P_{15} = 0.96627$ ;  $Q_{15} = 0.28241$ ;

$P_{23} = 0.49666$ ;  $Q_{23} = -0.13566$ ;  $P_{34} = 1.22340$ ;  $Q_{34} = 0.65338$ ;

$P_{35} = 0.28310$ ;  $Q_{35} = 0.18319$ ;  $P_{45} = -0.33928$ ;  $Q_{45} = -0.12818$ .

In the above notations,  $P_{ij}$  ( $Q_{ij}$ ) denotes the real (reactive) power flow over the line 'i-j' measured at bus 'i'. Assume the standard deviation for all measurements is equal to 0.02 and  $\epsilon$  (convergence threshold) =  $1.0e^{-12}$ . Upon performing the state estimation, the following quantities are obtained (after convergence):

Estimated voltage magnitude (in p.u) of bus 4 is:

**No, the answer is incorrect.****Score: 0****Accepted Answers:***(Type: Range) 0.88,0.89***2 points**

2) Estimated voltage angle (in degree) of bus 4 is:

**No, the answer is incorrect.****Score: 0****Accepted Answers:***(Type: Range) -13.00,-12.00*

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Interaction Session

Score: 0

Accepted Answers:  
(Type: Range) 0.94,0.941

2 points

4) Estimated voltage angle (in degree) of bus 5 is:

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Range) -7.0,-6.5

2 points

5) Estimated voltage magnitude (in p.u) of bus 2 is:

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Range) 1,1.005

2 points

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