Assignment 8

The due date for submitting this assignment has passed. Due on 2019-03-27, 23:59 IST.
As per our records you have not submitted this assignment.

1) Consider a 60 Hz, two area power system connected by a tie-line with the following characteristics:

<table>
<thead>
<tr>
<th></th>
<th>Area 1</th>
<th>Area 2</th>
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<tbody>
<tr>
<td>R (speed regulation)</td>
<td>0.01 pu</td>
<td>0.02 pu</td>
</tr>
<tr>
<td>D (frequency sensitivity of load)</td>
<td>0.8 pu</td>
<td>1.0 pu</td>
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<tr>
<td>Base MVA</td>
<td>500</td>
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</tr>
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A load increase of 100 MW occurs in area 1. Find out the steady-state frequency (in Hz) at the load change.

a. 59.88
b. 59.92
c. 60.08
d. 60.12

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

2)
Consider a 60 Hz, two area power system connected by a tie-line with the following characteristics:

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A load increase of 100 MW occurs in area 1. Choose the correct option regarding the change in the tie-line power flow.

a. Tie line power flow from area 2 to area 1 will be increased.

b. Tie line power flow from area 1 to area 2 will be increased.

c. There is no change in the tie-line power flow.

d. Cannot be ascertained as data is insufficient.

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

3) Consider a 60 Hz, two area power system connected by a tie-line with the following characteristics:

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A load increase of 100 MW occurs in area 1. What is the magnitude of the change in tie-line power flow at steady-state?

a. 0

b. 33.4 MW

c. 33.6 MW

d. 100 MW

No, the answer is incorrect.
Score: 0
4) Consider a 60 Hz, two area power system connected by a tie-line with the following characteristics:

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A load increase of 100 MW occurs in area 1. What is the steady-state change in the mechanical power output (in MW) of the prime mover in area 1?

a. 32.9 – 33.0
b. 33.5 – 33.6
c. 98.8 – 98.9
d. 65.8 – 65.9

No, the answer is incorrect.
Score: 0

Accepted Answers: 

5) Consider a 60 Hz, two area power system connected by a tie-line with the following characteristics:

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A load increase of 100 MW occurs in area 1. What is the steady-state change in the mechanical power output (in MW) of the prime mover in area 2?

a. 32.9 – 33.0
b. 33.5 – 33.6
c. 98.8 – 98.9
d. 65.8 – 65.9
6) \( \text{No, the answer is incorrect.} \)
\( \text{Score: 0} \)
\( \text{Accepted Answers:} \)
\( a \)

Consider a 60 Hz, two area power system connected by a tie-line with the following characteristics:

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A load increase of 100 MW occurs in area 1. What is the steady-state change in the total load in area 1 (in MW) due to change in frequency?

a. 0.32 – 0.34  
b. 0.65 – 0.67  
c. 0.52 – 0.54  
d. 0.60 – 0.62  

\( \text{No, the answer is incorrect.} \)
\( \text{Score: 0} \)
\( \text{Accepted Answers:} \)
\( c \)

7) \( \text{1 point} \)
Consider a 60 Hz, two area power system connected by a tie-line with the following characteristics:

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A load increase of 100 MW occurs in area 1. What is the steady-state change in the total load in area 2 (in MW) due to change in frequency?

a. 0.32 – 0.34
b. 0.65 – 0.67
c. 0.52 – 0.54
d. 0.60 – 0.62

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

8)
The objective of Automatic Generation Control (AGC) is:

i. To hold system frequency at or very close to a specified nominal value.
ii. To maintain the correct value of interchange power between control areas.
iii. To maintain each unit’s generation at the most economic value.

a. Only i
b. Only ii
c. i & ii
d. i, ii & iii

No, the answer is incorrect.
Score: 0
Accepted Answers:
d
Consider a two area power system connected by a tie-line. At a certain time instant, it is observed that the frequency of the system has increased and the power flow in the tie-line from Area 2 to Area 1 has decreased. What could be the possible reason for the above change?

a. Generation in Area 1 has decreased  
b. Load in Area 1 has decreased  
c. Generation in Area 2 has decreased  
d. Load in Area 2 has decreased.

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

10) A 60 Hz small system consists of 4 identical 500 MVA generating units feeding a total load of 1020 MW. The inertia constant H of each unit is 5.0 on 500 MVA base. The total load varies by 1.5% for 1% change in frequency. The speed regulation characteristic R is 2.40 Hz/p.u MW. When there is a sudden drop in load by 20 MW, find the steady-state frequency (in Hz) assuming that the speed governor loop is active.

a. 59.977  
b. 60.800  
c. 60.029  
d. 60.023

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