Unit 3 - Week 1

Assignment 1

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

Due on 2019-02-13, 23:59 IST.

1) Instability study in a Power System may be concerned with
   i. Maintaining synchronism among the synchronous generators
   ii. Stability and control of voltage
      a. Only i
      b. Only ii
      c. Both i & ii
      d. Neither i nor ii

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

2) The steady-state speed of a 6-pole, 3-phase, 60 Hz synchronous generator (in rps) is:
   a. 16.67
   b. 20
   c. 1000
   d. 1200

No, the answer is incorrect.
Score: 0

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The synchronous speed (in electrical radian/sec) for the synchronous machine mentioned in Question No 2 is:

- a. 313 - 315
- b. 156 - 158
- c. 124 - 127
- d. 376 - 378

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

4)

The ratings of two 3-phase synchronous generators A & B are as follows:

Generator A: 3-phase, 6.6 kV, 50 Hz, 6 poles
Generator B: 3-phase, 11 kV, 50 Hz, 4 poles

The two generators operate in two isolated control areas (not inter-connected). Following a disturbance, Generator A undergoes a transient for 3 seconds and its speed varies between 995 and 1005 rpm in the transient period, while Generator B continues to operate at 1500 rpm, i.e., it is operating at steady state. At t=1 sec (the disturbance occurs at t= 0 sec) currents in damper windings are present in:

- a. Only Generator A
- b. Only Generator B
- c. Both Generator A & Generator B
- d. Cannot be ascertained from the given data

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

5)

The rated current (in kA) of a 3-phase, Y-connected, 50 Hz, 100 MVA, 11 kV, 4-pole alternator is:

- a. 3.0 – 3.1
- b. 6.8 – 6.9
- c. 9.05 – 9.15
- d. 5.2 – 5.3

No, the answer is incorrect.
Score: 0
Accepted Answers:
6) For balanced rated operation of the alternator mentioned in question 4, the peak value of the rotating magnetic field (in kA-Turns) is: (Assume each stator phase has 100 turns)

- a. 1110 – 1115
- b. 785 – 790
- c. 370 – 375
- d. 490 – 495

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

7) The self-inductance of phase-A of the stator winding of a 555 MVA, 24 kV, 0.9 p.f. 60 Hz, 2 pole synchronous generator is found to be 3.3216 mH when the direct axis (d axis) coincides with the phase-A axis and 3.23 mH when the direct axis (d axis) is in quadrature (consider electrical degrees) with the phase-A axis.

Find the value of stator self-inductance (in mH) when the direct axis (d axis) leads the phase-A axis by 45° electrical.

- a. 3.15 – 3.20
- b. 3.25 – 3.30
- c. 3.35 – 3.40
- d. 3.45 – 3.50

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

8) For the data given in Question No. 7, what will be the maximum value of the self-inductance (in mH) of phase A.

- a. 3.10 – 3.15
- b. 3.20 – 3.25
- c. 3.40 – 3.45
- d. 3.30 – 3.35

No, the answer is incorrect.
Score: 0
Accepted Answers: d
9) For the data given in Question No. 7, what will be the minimum value of the self-inductance (mH) of phase A.
   a. 3.10 – 3.15
   b. 3.20 – 3.25
   c. 3.40 – 3.45
   d. 3.30 – 3.35

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

10) The stator mutual inductance measured between phase A and phase B of the machine mentioned in Question 7 is found to be -1.6608 mH when the direct axis (d axis) coincides with the phase of the stator winding and is found to be -1.615 mH when the direct axis leads the phase A axis 90° electrical quadrature.

   Find the value of the mutual stator inductance (in mH) between phase A and phase B when the direct axis (d axis) leads the phase-A axis by 45° electrical.
   a. -1.38 to -1.43
   b. -1.47 to -1.52
   c. -1.57 to -1.62
   d. -1.64 to -1.69

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

11) For the data given in Question No. 10, what will be the maximum magnitude of the mutual inductance (in mH) between phase A and phase B.
   a. -1.65 to -1.70
   b. -1.75 to -1.80
   c. -1.55 to -1.60
   d. -1.45 to -1.50

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

12)
For the data given in Question No. 10, what will be the minimum magnitude of the mutual inductance (in mH) between phase A and phase B.

- a. 1.38 to 1.43
- b. 1.47 to 1.52
- c. 1.57 to 1.62
- d. 1.64 to 1.69

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