B.E. Sixth Semester (Electrical & Electronics Engineering) (CGS)

10391 : Electrical Power - II : 6 EX 03

P. Pages : 2 | **AU - 2763**

Time : Three Hours | Max. Marks : 80

Notes :
1. Answer **Three** question from Section A and **Three** question from Section B.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answer necessary with the help of neat sketches.
5. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION – A

1. a) Draw and explain zero sequence network for various types of transformer connections. **7**

b) Prove that symmetrical transformation is power invariant. **7**

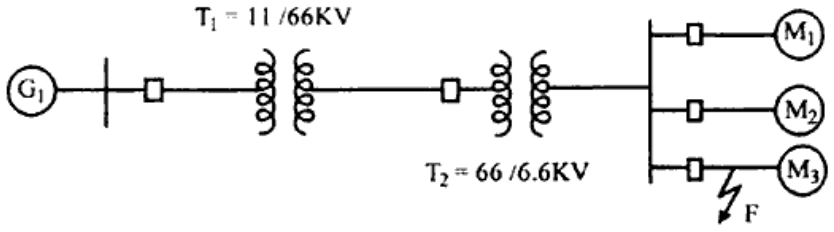
OR

2. a) Explain: **7**
i) Sequence impedance
ii) Sequence network

b) What is α (alpha) operator? How will you represent the phase quantities in terms of symmetrical components & Vice versa? **7**

3. a) Explain the various types of current limiting reactors with their advantages & disadvantages. **6**

b) A 25MVA, 11KV, generator with xd" = 20% is connected through a transformer, line and a transformer to a bus that supplies three identical motors as shown in fig. (3). Each motor has xd" = 25% & xd' = 30% on a base of 5MVA. 6.6KV. The three phase rating of transformer is 25MVA. 66/6.6KV with leakage reactance of 10%. The bus voltage at motor is 6.6 KV when three phase fault occurs at the point 'F'. Determine the subtransient fault current. Assuming reactance of transmission line 15% on the base of 25MVA, 66KV and system is operating at no load when fault occurs. **7**



OR

4. a) Describe the three phase symmetrical short circuit of an unloaded alternator with the help of circuit and waveforms. **7**

b) Write a short note on Tie bar system. **6**

5. a) Develop an equivalent network showing the interconnection of sequence network to simulate single line to ground fault. **6**

   b) A 25MVA, 13.2KV alternator with solidly grounded neutral has a subtransient reactance of 0.25p.u. The negative and zero sequence reactances are 0.35 and 0.1 pu respectively. A single Line to Line fault occurs at the terminal of an unloaded alternator. Determine fault current and Line to Line voltages. **7**

OR

6. a) A 3ϕ, 11KV, 10 MVA alternator has sequence reactance of $x_0 = 0.05$ pu, $x_1 = x_2 =$ 0.15pu. If the generator is on no load, find the ratio of fault current for LG fault to that when all the three phases are dead short circuited. **6**

   b) Draw the equivalent network for line to line fault when fault occurs through impedance Z_F on lines 'a' & 'b'. Line 'c' is healthy. **7**

SECTION – B

7. a) State and explain various causes of overvoltages and their harmful effects on power system. **7**

   b) Explain the phenomenon of lightning. What are the various types of lightning stroke? **7**

OR

8. a) What do you meant by lightning arrestors? State the various types of lightning arrestors? And also explain valve type lightning arrestors with suitable diagram. **8**

   b) Explain: **6**
   i) BIL ii) Insulation Co-ordination.

9. a) Discuss why DC transmission is superior to AC transmission for long distance. **6**

   b) Draw and Explain general layout of HVDC system. **7**

OR

10. a) What is ground return? What are the problems associate with use of ground as return conductor? **7**

    b) Explain different types of HVDC links. **6**

11. a) Compare FACTS with AC transmission system. **6**

    b) Explain with the neat diagram the working of TCSC. **7**

OR

12. a) What are different types of FACTS controllers? How are they connected in line? Explain in brief. **7**

    b) Explain the working of SVC in details. **6**

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