Section-C

Question 7. **[Marks: 10]**

A 25 MVA, 13.2 kV alternator with solidly grounded neutral has a sub-transient reactance of 0.25 p.u. The negative and zero sequence reactances are 0.35 and 0.1 p.u. respectively. A single line to ground fault occurs at the terminal of an unloaded alternator, determine the fault current and the line-to-line voltages. Neglect resistance.

Question 8. **[Marks: 10]**

What do you mean by voltage stability? what are the different techniques adopted for reactive power compensation?

Question 9. **[Marks: 10]**

Find the expression of fault current for line to line fault. draw equivalent circuit also.

Roll No.:.....

National Institute of Technology, Delhi

Examination: B. Tech. (End- sem. 2016-17) (Make-Up)

Branch:	Electrical and Electronics
Title of the course:	Power System-II
Semester:	5^{th}
Course code:	EE-303
Time:	3 hours
Maximum Marks:	50

Note : **1.** There are 4 pages in the question paper. Please check all.

2. Answer all the Sections.

3. Attempt any 4 questions from section-B.

4. Attempt any two questions from section-C.

5. Do not write anything on the question paper except Roll number

6. Assume any data suitably if found missing

Question 1: Give the correct answer: **[Marks: 1*10]**

i. **The most severe fault is**
(a) LG **(b)** LL
(c) LLG **(d)** LLL

ii. **Fault current is maximum when the neutral is**
(a) ungrounded
(b) solidly grounded
(c) grounded through resistance
(d) grounded through reactance

iii. **When the distance between the overhead line and ground increases then the value of capacitance formed between the overhead line and ground will**
(a) increases **(b)** decreases
(c) same **(d)** may increase or may decrease

iv. **Which type of fault remains balanced even after the fault**
(a) LG **(b)** LL
(c) LLG **(d)** LLL

v. **What is the unit of constant A?**
(a) Ohm **(b)** mho
(c) Unit less **(d)** None of the above

vi. **Reactances grounding is done when fault current is**
(a) 15% of I_{SC} **(b)** 25% of I_{SC}
(c) 50% of I_{SC} **(d)** 80% of I_{SC}

vii. **If $V_S = V_r = 33kV$ for three phase transmission and reactance is 13 ohms per phase. What will be the maximum power transmission per phase?**
(a) 27.923 MW **(b)** 83.77 MW
(c) 29 MW **(d)** Cannot be determined

viii. **A 132 kV three phase, 50 Hz overhead line is 50 km and has a capacitance to earth for each line of 0.0157 μF/km. What will be the inductance of the arc suppression coil suitable for the system? (π=3.1416)**
(a) 4 henrys **(b)** 4.3 henrys
(c) 4.9 henrys **(d)** 2 henrys

ix. **For voltage stability, compensation capacitors are placed**
(a) near the generator **(b)** in series with load
(c) parallel with the load **(d)** None

x. **If $I_{a1} = I_{a2} = I_{a0}$, then suggest the type of fault.**
(a) L-G **(b)** L-L
(c) LLG **(d)** LLL

Section-B

Question 2. **[Marks: 5]**
Find Average three phase power in terms of sequence component.

Question 3. **[Marks: 5]**
Find ABCD parameters for nominal-π network.

Question 4. **[Marks: 5]**
Derive the expressions for active and reactive power flowing through transmission line in terms of ABCD parameters.

Question 5. **[Marks: 5]**
In case of LG fault what will happen when the neutral is isolated. Explain in detail.

Question 6. **[Marks: 5]**
Draw and explain Receiving end power circle diagram.