

Total No. of Questions :10]

SEAT No. :

P2878

[4958]-1067

[Total No. of Pages :3

**T.E. Electrical
Power System - II
(2012 Course) (Semester - II)**

Time : 2½ Hours

[Max. Marks :70]

Instructions to the candidates:

- 1) *All question are compulsory.*
- 2) *Figures to the indicates full marks.*

Q1) a) Derive power flow equation for receiving end side of transmission line. [6]

b) Write short note on “HVDC lines in India” [4]

OR

Q2) a) Explain constant current control in HVDC transmission system. [6]

b) Explain interference of radio and television signals in EHVAC transmission line. [4]

Q3) a) Derive ABCD constant in case of long transmission lines. [6]

b) Explain phenomena of corona in EHVAC power transmission. [4]

OR

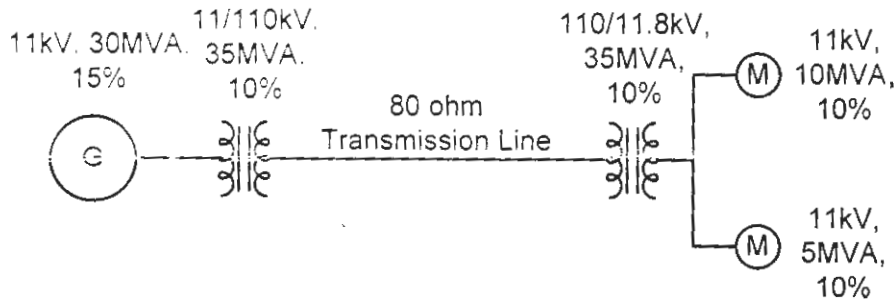
Q4) a) Derive the formula for critical disruptive voltage in corona. [6]

b) Compare bipolar and mono polar HVDC system. [4]

Q5) a) Derive Y_{BUS} matrix using singular transformation method for ‘n’ bus system. [8]

b) Draw per unit reactance diagram of following system assuming base of 30MVA, 11kV on generator. [9]

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OR

Q6) a) What are the advantages of per unit system? How the base impedance is converted to per unit system? What formula is to be used if base of per unit values is to be changed? [8]

b) Derive power flow equation for 'n' bus system. [9]

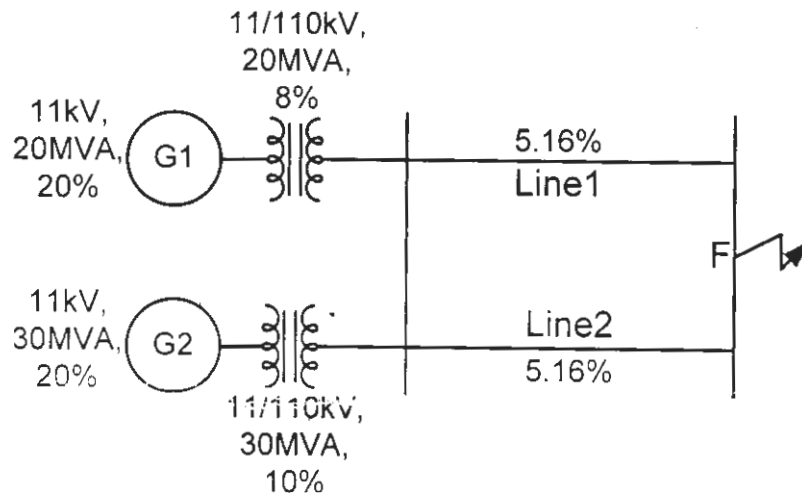
Q7) a) Write a short note on Selection of Circuit breakers. [8]

b) A three phase 11kV, 5MVA generator has a direct axis steady state reactance of 20%. It is connected to a 3MVA transformer having 5% leakage reactance and ratio of 11/33kV. The 33kV side is connected to a transmission line having 30ohm reactance. A three phase fault occurs at other end of transmission line. Calculate steady state fault MVA and current assuming no load prior to the fault. Take base of 11kV,5MVA on generator. [9]

OR

Q8) a) Draw and explain sub-transient, transient and steady state impedance of an alternator. [8]

b) For the following system if the three phase fault is occurred at point F Determine fault current supplied by each generator. All impedances are given on their individual rating. Take base of 11kV , 30MVA on generator side. [9]



- Q9) a)** A delta connected load is connected to three phase supply. One line of supply is open. The current in other two lines is $20\angle 0^\circ$ A and $20\angle 180^\circ$ A. Find symmetrical components of the line currents. [8]
- b) Derive formula for fault current in case of LL fault. [8]

OR

- Q10) a)** A 3-phase 11kV, 10MVA alternator have $X_0 = 0.05$ pu, $X_1 = X_2 = 0.15$ pu. It is on no load and rated terminal voltage. Find the ratio of the line currents for a single line to ground fault to three phase fault if (a) neutral is solidly grounded (b) neutral is grounded through $X_n = 0.062$ pu. [8]
- b) Derive formula for fault current in case of LLG fault. [8]

