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Total No. of Questions : 08

M.Tech.(Power System)   (Sem.–3)
EHVAC AND HVDC TRANSMISSION SYSTEM
Subject Code : MTPS-301C
M.Code : 72136

Time : 3 Hrs.   Max. Marks : 100

INSTRUCTION TO CANDIDATES :
1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**
3. **Unless stated otherwise, the symbols have their usual meanings in context with subject. Assume suitably and state additional data required, If any.**

Q1) a) Why there is necessity of EHVAC transmission? Enlist the merits and demerits of EHVAC and HVDC transmission system. (15)

   b) Discuss some of the recent trends in HVDC transmission system (5)

Q2) a) What are the prime functions of HVDC link? Discuss and explain constant current and extinction angle control characterstics at the rectifier end. (13)

   b) Give the schematic diagram of HVDC system. (7)

Q3 a) What are the various types of filters that are employed in HVDC converter station? Explain working of shunt and series active filter. (10)

   b) Discuss the parallel operation of EHVAC and HVDC system. (10)

Q4) Explain the necessity of reactive power support in high voltage system. Compare various VAR systems in terms of static and dynamic performance. (20)

Q5) Explain the solution algorithm of AC-DC power flow. (20)

Q6) a) Derive an expression for voltage gradient on the surface of conductor and power loss due to corona in foul weather conditions (10)

b) For 400 KV, calculate the maximum surface voltage gradient on the central conductor in horizontal configuration at maximum operating voltage of 420 KV rms. Data given is (10)

H = 13m

S = 11m

N = 2 sub-conductor each of r=0.0159m

B = 0.45m

Q7) a) Explain the phenomena of radio interference in EHVAC lines. Give the method to reduce its level below the permissible limits. (10)

b) Name the faults to which converter station is subjected. Discuss briefly its protection against faults. (10)

Q8) a) Give the mathematical modeling of DC link controller for DC power flow. (10)

b) Draw and explain the converter control characteristics. (10)

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.