Registration no: | | | | | | | | | | |

Total Number of Pages: 01 **M.TECH**
EEPE 201

2nd Semester M Tech Examination – 2015
HVDC TRANSMISSION AND FACTS
BRANCH(S): POWER ELECTRONICS/POWER ELECTRONICS AND DRIVES/POWER ELCTRONICS AND ELECTRICAL DRIVES/ POWER SYSTEM ENGINEERING

Time: 3 Hours **Max marks: 70**

Q.CODE:T287

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 Answer the following questions: (2 x 10)

a) What is the importance of surge impedance loading?
b) Explain the operation of converter when overlap angle is greater than 60^0.
c) Compare ROW for DC And AC Transmission.
d) Compare reliability of DC Transmission as compared AC system.
e) What is commutating emf?
f) Show the configuration of double tuned filter; also give its impedance characteristics as a function of frequency.
g) What is a Synchronous condenser?
h) Give the steady state V-I characteristic of the SVC and STATCOM.
i) Give the basic Thyristor controlled series Capacitor scheme.
j) Midpoint shunt compensation can significantly increase the transmittable power. Explain.

Q2 Explain two and three valve conduction mode of a converter. Derive the expression for average output voltage. (5+5)

Q3 a) Compare power transfer capability of bipolar DC line with 3-Phase AC line. (5)
b) Explain the operation of 12 pulse converter and show the output waveform. (5)

Q4 a) How harmonics can be eliminated in HVDC Transmission. (5)
b) Derive the equivalent circuit of an inverter. (5)

Q5 a) For a 3 phase bride circuit, the secondary voltage on transformer side is 400kV rms with reactance X=40Ω.find the DC output voltage, overlap angle if output current is 2000A and firing angle $\alpha=15^0$. (6)
b) What are different types of HVDC links? (4)

Q6 Explain about power flow and dynamic stability consideration of a transmission interconnection. (10)

Q7 Explain the operating principle of TSC-TCR type compensator. (10)

Q8 Write short notes on any two (5 x 2)

a) Generation of harmonics by Converters
b) UPFC
c) TCSC
d) STATCOM