Registration No :

Total Number of Pages : 01   **B.Tech**
                                                                                       PEE6J003

6th Semester Regular / Back Examination 2018-19
HVDC TRANSMISSION
BRANCH : ELECTRICAL
Max Marks : 100
Time : 3 Hours
Q.CODE : F630

Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.
The figures in the right hand margin indicate marks.

Part- I

Q1   **Only Short Answer Type Questions (Answer All-10)**   **(2 x 10)**
  a)   Mention the types of power losses in thyristor of a converter.
  b)   What are the factors to be considered for planning HVDC transmission?
  c)   What is LASCR? How does it differ from a conventional SCR
  d)   Mention the assumptions for analysis of 6 pulse converter?
  e)   Draw the schematic diagram of three & two valve conduction mode
  f)   What are the components present in AC & DC filter?
  g)   How to protect against dc line faults?
  h)   What is meant by neglecting overlap in graetz in bridge circuit
  i)   Explain in two lines about choice of voltage level in DC transmission
  j)   What is the role of SVC at a Converter station?

Part- II

Q2   **Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)**   **(6 x 8)**
  a)   Write the Comparison between AC and DC transmission?
  b)   Write the special features of converter transformers?
  c)   Write short note on Commutation failure.
  d)   Explain the application of dc transmission.
  e)   Give neat sketch of converter station and explain each of the components.
  f)   Explain about the overvoltage protection systems in Converter Stations.
  g)   Explain in brief about converter control characteristics.
  h)   Explain the operation of a 6 pulse converter with a neat circuit diagram?
  i)   Draw the schematic diagram for 12 pulse converter and explain the operation.
  j)   Prove that insulation required for D.C. system is 0.866 times that required for A.C. system. Assume the power transmitted, percentage losses and size of conductors are same for both systems.
  k)   Obtain a relation between firing angle and power factor angle in a 3φ bridge rectifier.
  l)   Discuss the various sources of reactive power for HVDC converters.

Part-III
Only Long Answer Type Questions (Answer Any Two out of Four)

Q3   Explain that the rating of the valve used in gratez circuit is 2.094Pd where Pd is dc power transmitted.   **(16)**

Q4   Explain in detail the concept of reactive power requirement in hvdc converters   **(16)**

Q5   Why are harmonics generated in HVDC converter and what are the problems associated with the harmonics. Suggest some remedial measures.   **(16)**

Q6   With the block diagram, discuss the principle of operation of a basic power controller.   **(16)**