Roll No .....

# EX - 7201

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## B.E. VII Semester

Examination, December 2012

## EHV AC & DC Transmission

**(Elective)**

*Time : Three Hours*

*Maximum Marks : 100* *Minimum Pass Marks :35*

*Note : Solve any Five Questions. Assume suitable data if necessary.*

I. a) Draw the schematic diagram of HVDC transmission system and discuss function of each component. 10

b) Discuss the limitation of HVDC transmission system. 10

OR

II. a) For same value of power transmission compare the HVAC and HVDC lines. 10

b) Explain the extinction angle control of HVDC links. 10

III. a) Discuss the benefits of FACTS technology. 10

b) Suggest a FACT device to improve the voltage profile of transmission line. Also explain its working principle. 10

OR

IV. a) List the applications of static synchronous series compensator (SSSC) and explain its working principle. 10

b) Draw the schematic diagram of UPFC and explain its

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V. a) Discuss the size of filter and minimum cost filters in HVDC station. 10

b) What are the potential applications of multi-terminal HVDC systems? 5

c) Explain the need for rectifier compounding in HVDC system. 5

OR

VI. a) Explain various types of converter faults. 10

b) Explain the protection scheme against the over currents in converters. 10

VII. a) Discuss the advantages of parallel operation of HVAC and HVDC systems. 10

b) Give the classification of earth electrode used in HVDC system with regards to purpose, location and configuration. Discuss troubles with earth current and their remedial measures. 10

OR

VIII. With the help of neat diagram of 3 - $\phi$ , 6-pulse HVDC voltage for $\alpha = 60°$ and $90°$. Discuss why 3-$\phi$, 12-pulse converters are used in HVDC system. HOW 12-pulse output are achieved. 20

IX. What are lightening and switching over voltages? Why the steep fronted surges are more dangerous to power system equipment? List the methods to protect the connected apparatus in the power system due to over voltages? 20

OR

X. Define the term (a) wave length (b) surge impedance loading (c) velocity of propagation in case of long transmission line. Derive the expression for incident and reflected wave for a long transmission line. 20