Printed pages: 02 Sub Code: NEE-041

Paper Id: 120815 Roll No: [redacted]

**B TECH**
**(SEM VIII) THEORY EXAMINATION 2017-18**
**EHV AC & DC TRANSMISSION**

**Time: 3 Hours** **Total Marks: 100**

**Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.

## SECTION A

**1. Attempt all questions in brief.** **2 x10 = 20**

a. What do you mean by bundled conductor?
b. What is the need of high voltage transmission?
c. Explain the principle of half wave transmission.
d. What is the effect of Radio interference on EHV AC lines?
e. Why the testing of high voltage lines is necessary?
f. What are the effects of pollution on high voltage transmission?
g. What are the advantages of HVDC transmission over HVAC transmission?
h. What are the problems associated with the HVDC transmission
i. What are surge arresters?
**j.** What are the applications smoothing reactor?

## SECTION B

**2. Attempt any three of the following:** **10 x 3 = 30**

a) Derive the relation for the maximum surface gradient for the bundled conductor having two conductors.
b) Explain overvoltage caused by the interruption of low inductive current and capacitive currents.
c) Explain methods for the generation of high DC voltage.
d) What is the principle of dc link control? Explain firing angle control and current &excitation angle control methods
e) Why are multiterminal DC system needed? What are the different types of MTDCused?

## SECTION C

**3. Attempt any one part of the following:** **10 x 1 = 10**

(a) Explaindistribution of voltage gradient on sub-conductorsof bundle and derive the relation for total field intensity.
(b) Compare AC and DC high voltage transmission and explain modern trends in EHV AC and DC transmission

**4. Attempt any one part of the following: 10 x 1 = 10**

(a) Explain Corona formation and factors affecting it also derive the formula for Corona loss and Corona current.

(b) Explain the generation of Corona pulses and give its properties.

**5. Attempt any one part of the following: 10 x 1 = 10**

(a) What are the methods of measurement of the high AC voltages? Explain anyone in detail.

(b) Explain the factors for designing of EHV lines under steady state conditions. Also give its limitations which will govern the design of lines.

**6. Attempt any one part of the following: 10 x 1 = 10**

(a) Describe with neat sketch different types of dc links. Why is bipolar line more commonly used?

(b) What do you mean by converter station of HVDC transmission system? Explain the effect of source inductance on the operation of converters.

**7. Attempt any one part of the following: 10 x 1 = 10**

(a) What are the noncharacteristic harmonics in HVDC systems? How are they generated?

(b) Discuss the nature and types of faults on DC side of converter stations. How are the faults sensed and cleared?