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Roll No. : .....

**324871(24)**

APR-MAY

**B. E. (Eighth Semester) Examination, 2020**

**(Old Scheme)**

**(Elect. & EEE Engg. Branch)**

**EHV AC & DC TRANSMISSION**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Attempt all questions. Part (a) is compulsory for each question. Attempt any two questions from part (b), (c) and (d).***

**Unit-I**

1. (a) Enlist the limitation of HVDC transmission system.

(Any two)

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- (b) Describe the operation of six-pulse GREATZ bridge circuit with detailed derivation. 7
- (c) Explain the modern trends of DC transmission technology. 7
- (d) Discuss the type of D.C. links used in DC transmission system. 7

**Unit-II**

2. (a) Define the term FACTS controller. 2
- (b) What is STATCOM? Explain its principle operation and draw the characteristics. 7
- (c) Describe the operation of TCR. 7
- (d) Explain the voltage profile along EHVAC line with light and heavy load. 7

**Unit-III**

3. (a) Define the term voltage instability. 2
- (b) An overhead conductor of 1.6 cm radius is 10 m

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- above the ground. The normal voltage is 133 kV (rms) to ground (230 kV) line to line. The switching surge experienced is 3.5 per unit. Taking  $K = 0.7$ , calculate the energy loss per km of line. Assume smooth conductors. 7
- (c) Explain the lighting phenomena in travelling waves. 7
- (d) Explain different protection system used against the overvoltage due to lighting. 7

**Unit-IV**

4. (a) What is the difference between even and odd harmonics. 2
- (b) What is smoothing reactor? Explain its functions to reduce harmonics in HVDC converters. 7
- (c) Explain converter station in HVDC transmission system. 7
- (d) Explain the designing of AC filters. 7

**Unit-V**

5. (a) Explain the term commutation failure? 2

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- (b) Describe the advantages and problems associated with EHVDC transmission system. 7
- (c) Explain HVDC converter firing angle control system. 7
- (d) Explain parallel operation of DC link with AC network. 7