

**B. Tech. Sem –VIII (Electrical Engg.) (2014 COURSE) (CBCS) :  
SUMMER - 2019**

**SUBJECT: ELECTIVE-IV EHV AND HVDC TRANSMISSION**

Day: Thursday  
Date: 30/05/2019

Time: 02.30 PM TO 05.30 PM  
Max. Marks: 60

**S-2019-2895**

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**N.B.**

- 1) All questions are **COMPULSORY**.
  - 2) Figures to the right indicate **FULL** marks.
  - 3) Assume suitable data, if necessary.
  - 4) Use of non-programmable **CALCULATOR** is allowed.
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- Q.1**
- a) What do you mean by reactive power compensation? What are the different methods of it for EHV transmission line? If it is not provided, then what will be impact on performance of line? **(05)**
  - b) Derive the equation of power transferred in EHV transmission line .On what factors it depends? **(05)**

**OR**

- Q.1**
- a) What are the limitations of high voltage transmission line? **(05)**
  - b) Describe the effect of bundled conductors on the performance of line. Sketch two configurations of bundled conductors and write down equation of line parameters. **(05)**
- Q.2**
- a) Compare between attenuation and distortion of travelling waves. **(06)**
  - b) Describe insulation coordination and its significance in EHV transmission line. **(04)**

**OR**

- Q.2**
- a) Sketch Bewely Lattice diagram and state its importance. **(06)**
  - b) Sketch voltage and current wave on a transmission line when it is open circuited at far end. **(04)**
- Q.3**
- a) What is the need of intermediate substation in long transmission line? Write down voltage equation of line in terms of propagation constant and describe its significance. **(06)**
  - b) What are the safe values of magnetic field for human and animals? State its effects on them. **(04)**

**OR**

- Q.3**
- a) Explain the principle and method of shunt compensation in EHVAC transmission line. **(06)**
  - b) When will you get electric shock? What is the significance of threshold currents? **(04)**

**P.T.O.**

**Q.4** Draw neat diagram of three phase six pulse converter. Describe its operation with voltage and current waveforms. Write down mathematical expression for DC output voltage. What is the maximum value of dc voltage available if converter transformer rating is 11kV: 400kV. **(10)**

**OR**

**Q.4** Describe the effect of delay angle and overlap angle on output voltage of rectifier with neat waveform and mathematical expression. **(10)**

**Q.5** Sketch schematic diagram of bipolar HVDC. State function and specifications of components used in the system. **(10)**

**OR**

**Q.5** Describe the stepwise procedure of changing bipolar mode to monopolar mode using Metallic Return Transfer Breaker (MRTB) with neat sketch. **(10)**

**Q.6** Draw block diagram and describe hierarchical levels of control in HVDC transmission system. **(10)**

**OR**

**Q.6** What are the salient features of HVDC protection? How it is different than HVAC protection system? **(10)**

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