

Roll No

MEPE - 302(B)**M.E./M.Tech. III Semester**

Examination, December 2014

EHV AC and DC Transmission (Elective-II)*Time : Three Hours***RGPVONLINE.COM***Maximum Marks : 70*

Note: Attempt any five questions. All questions carry equal marks.
Assume suitable data if necessary.

1. a) Discuss the Light HVDC power transmission system.
b) Describe 12-pulse operation of HVDC system. Why it is Preferred.
2. a) Compare the AC voltage transmission and DC voltage transmission of power with keeping in view of technical and economical aspects.
b) Derive the expression for average DC voltage across converter terminals when the overlap angle is 60° . State the assumptions made in the derivation.
3. a) Discuss the role of FACTS devices in EHV power transmission.
b) Explain how the power can be reversed in HVDC transmission.
4. a) Drive the relation between bus voltage and real power delivered at receiving end of the bus.
b) Explain the distributed series compensation and why it is needed in EHV lines.

5. a) Explain the nature of reflected components of voltage and current at the junction of two lines of surge impedances Z_1 and Z_2 .
b) Two stations are connected together by an underground cable having a surge impedance of 50Ω connected to an overhead line of surge impedance 500Ω . If a surge wave of 100kV amplitude travels along the cable towards the junction of the cable and line, determine the value of the reflected and refracted voltage and current waves at the junction.
6. a) Explain the constant extinction angle control of HVDC lines.
b) Discuss the difficulty in interruption of DC current. Draw the general arrangement of DC circuit breakers and explain its working.
7. a) Discuss the non-characteristics harmonics in HVDC converters. Also explain the effect of firing angle errors.
b) Discuss the reactive power requirement of HVDC converters and how it is supplied.
8. Write short notes on any three of the following :
 - a) Applications of HVDC Transmission.
 - b) Insulation Co-ordination.
 - c) Tuning of power lines.
 - d) Lightning Arrestors.
 - e) MTDC Systems.

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