Reg. No. : | | | | | | | | | | |

Question Paper Code: 31378

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Elective

Electrical and Electronics Engineering

01UEE912 - HVDC TRANSMISSION

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Compare AC and DC Transmission.
2. List the types of MTDC system.
3. What does the word pulse number refers to?
4. Indicate the need for smoothing reactor.
5. Identify the principal of control in DC link?
6. Classify the types of individual phase control and equidistant pulse control?
7. Name the sources of reactive power.
8. What is a need for filters.
9. What are the constraints in power flow analysis?
10. State the advantages of per unit system.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Explain the HVDC transmission based on VSC. (8)

(ii) Discuss about DC breakers and design problems. (8)

Or

(b) Discuss in detail about the planning of HVDC transmission and also the modern trends in HVDC technology. (16)

12. (a) Illustrate the analysis of two and three valve conduction mode using Graetz circuit. (16)

Or

(b) Write short note on

(i) Converter bridge characteristics (8)

(ii) Choice of converter configuration (8)

13. (a) Illustrate the individual phase control method for generating gate pulse of HVDC valves. (16)

Or

(b) (i) Explain the principle of operation of a basic power controller with the block diagram. (10)

(ii) Name some of the higher level controllers. Discuss any one of them. (6)

14. (a) (i) Differentiate between SVC and STATCOM. (6)

(ii) Explain in detail the working and control characteristic of thyristor controlled reactor. (10)

Or

(b) (i) Write brief notes on active filters. (6)

(ii) Derive an equation for harmonic voltage and current for single tuned filter and discuss the influence of network admittance. (10)

15. (a) (i) Describe the per unit system for DC quantities. (6)

(ii) Illustrate the modeling of DC links and solution of DC load flow. (10)

Or

(b) (i) Differentiate the simultaneous and sequential method of power flow analysis. (6)

(ii) Develop the flow chart of the AC-DC power flow. (10)
