Roll No. ..... **Total Pages : 03**

BT-7/M-20 37039

HVDC TRANSMISSION

EEcT-443-E

Time : Three Hours] [Maximum Marks : 100

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit.

Unit I

1. (a) Compare the HVDC transmission HVAC transmission with reference to the following factors : **10**

(i) Economics

(ii) Technical performance

(iii) Reliability.

(b) Discuss the role of HVD link in power transmission and types of them. **10**

2. (a) Draw the schematic diagram of a typical HVDC link showing the major equipment at either ends. **10**

(b) What is the role of bridge converter in HVDC system ? Explain 3-phase bridge type current source converter with overlap period less than 60 degrees. **10**

Unit II

3. (a) With block diagram, explain the hierarchical control structure for a DC link. **10**

(b) Define the following terms related to AC filters : harmonic distortion, telephone influence factor and telephone harmonics form factor. **10**

4. Why harmonic generation in HVDC converter and what are the problems associated with the harmonics ? Suggest some remedial measures. **20**

Unit III

5. (a) What are the various types of faults that occur in HVDC system ? Explain the causes and their effect on HVDC system. **10**

(b) Explain the over current protection scheme employed for HVDC converter. **10**

6. Explain the fault clearing process in HVDC poles. Explain how are the HVDC equipment protected against prolonged short circuit currents though there is no HVDC circuit breaker on HVDC pole side. **20**

Unit IV

7. (a) Discuss the need for interconnection of the AC-DC systems. Explain the merits of connecting HVAC systems by HVDC links. **10**

(b) State and explain various types of AC-DC system interaction. Explain in brief. **10**

8. (a) Define the term corona loss and radio interference. What is their effect on HVDC line ? **10**

(b) Discuss the importance of Corona loss in DC transmission. **10**