

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

QUESTION BANK

COURSE TITLE : HVDC TRANSMISSION

COURSE CODE : 23EE705

REGULATION : R23

| UNIT-II | | | | |
|----------------|--|-----------|-----------|-----------|
| S.No | Converter and HVDC System Control & Reactive Power Control in HVDC | BT | CO | PO |
| | Short Answer Questions | | | |
| 1 | Define DC link control in an HVDC transmission system. | BT1 | CO2 | PO1 |
| 2 | What are the main objectives of converter control in HVDC systems? | BT1 | CO2 | PO1 |
| 3 | What is firing angle control? | BT1 | CO2 | PO1 |
| 4 | Define extinction angle and explain its significance. | BT2 | CO2 | PO1 |
| 5 | What is current control in HVDC transmission? | BT1 | CO2 | PO1 |
| 6 | How does source inductance affect converter operation? | BT2 | CO2 | PO2 |
| 7 | What are the basic steps involved in starting an HVDC link? | BT2 | CO2 | PO1 |
| 8 | What is meant by power control in an HVDC system? | BT2 | CO2 | PO1 |
| 9 | Why is reactive power required in HVDC converter stations? | BT2 | CO2 | PO1 |
| 10 | What is a Static VAR Compensator (SVC)? | BT1 | CO2 | PO1 |
| | Long Answer Questions | | | |
| 11 | Explain the principle of DC link control in HVDC transmission systems. Discuss its importance in maintaining stable operation. | BT2 | CO2 | PO1 |

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| 12 | Describe the converter control characteristics of an HVDC system with suitable control characteristic curves. | BT4 | CO2 | PO2 |
| 13 | Explain firing angle control in HVDC converters and discuss its effect on converter output voltage. | BT4 | CO2 | PO2 |
| 14 | Discuss current control and extinction angle control in HVDC systems. Explain their roles in reliable converter operation. | BT4 | CO2 | PO2 |
| 15 | Explain the effect of source inductance on HVDC converter performance. Derive the relevant equations and discuss its impact on commutation. | BT4 | CO2 | PO2 |
| 16 | Describe the procedures involved in starting and stopping an HVDC link. Explain the precautions required during these operations. | BT4 | CO2 | PO2 |
| 17 | Explain the concept of power control in HVDC transmission systems. Discuss various methods used for controlling power flow. | BT4 | CO2 | PO2 |
| 18 | Discuss the reactive power requirements of HVDC systems under steady-state conditions. Explain the factors affecting reactive power demand. | BT4 | CO2 | PO2 |
| 19 | Explain the various sources of reactive power in HVDC systems. Describe the construction and operation of Static VAR Compensators (SVCs). | BT4 | CO2 | PO2 |
| 20 | Discuss reactive power control during transient conditions in HVDC systems. Explain the role of reactive power compensation devices in improving system stability. | BT4 | CO2 | PO2 |