SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583
(Autonomous)

QUESTION BANK (DESCRIPTIVE)

Subject with Code : HVDC Transmission Systems (18EE2125)
Course & Branch: M.Tech - PE **Year & Sem:** II & I-Sem
Specialization: Power Electronics **Regulation:** R18

UNIT –I

1. Give the comparison between AC and DC Transmission and explain the factors in detail? [L3][5M]
2. What are the applications of DC Transmission and also mention the modern trends in HVDC technology [L3][10M]
3. Explain the line commutated converter based systems? [L2][10M]
4. Explain the basic conversion principles with neat circuit diagrams? [L2][10M]
5. With the help of neat schematic diagram explain the operation of 3-Phase, 6 Pulse Graetz's Circuit? [L2][10M]
6. Draw the typical layout of HVDC transmission system and explain each part? [L2][10M]
7. Explain the types of HVDC links and its purpose with neat diagr? [L2][10M]
8. Write the special features of converter transformers? [L3][10M]
9. Explain the Basic conversion principles of a HVDC Transmission system? [L1][10M]
10. Mention the advantages of HVDC technical economical reliability aspects? [L2][10M]

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UNIT –II

1. Explain the rectifier and inverter operation of a power converter and also write the equivalent circuit of converter? [L2][10M]
2. Derive the expressions for average dc voltage, AC current and reactive power absorbed by the converter? [L2][10M]
3. Explain the Effect of Commutation Failure, Misfire and Current Extinction in LCC links? [L3][10M]
4. Explain the Sinusoidal Pulse Width Modulation? [L2][10M]
5. Explain the Selective Harmonic Elimination? [L1][10M]
6. Explain the Two and Three-level VSCs? [L2][10M]
7. Explain the special features of converter transformers?
8. Explain the rectifier and inverter operation of a power converter and also write the equivalent circuit of converter? [L1][10M]
9. Draw the schematic diagram of a typical HVDC converter station with 2 six pulse converter units and explain the function of each component? [L2][10M]
10. Explain the constructional features of a converter transformer and explain the working of 12pulse converter circuit? [L1][10M]

UNIT –III

1. Explain the Principles of Link Control in a LCC HVDC system? [L2][10M]

2. Give detailed explanation of about two firing angle controls? [L2][10M]

3. Explain Higher level Controllers Power control, Frequency Control? [L2][10M]

4. Explain the Stability Controllers, Reactive Power Control? [L2][10M]

5. Explain the Principles of Link Control in a VSC HVdc system? [L2][10M]

6. What is the meaning of ignition angle control and explain individual phase control and equidistant control method? [L2][10M]

7. What is meant by individual phase control and what are the draw backs of this control and explain how these drawbacks can be eliminated? [L1][10M]

8. Explain in detail about equidistance firing angle scheme. Also list the draw backs of this scheme? [L2][10M]

9. Explain the constant extinction angle control and constant current control? [L2][10M]

10. Explain the terms constant ignition angle control and constant extinction control? [L2][10M]

UNIT –IV

1. Explain about voltage interaction? [L2][10M]
2. What is meant by DC Power modulation? Explain it in detail. [L1][10M]
3. Briefly explain what are the different harmonic instability problems? [L2][10M]
4. Explain the DC power modulation scheme used in interconnected operations of AC and DC Systems. [L1][10M]
5. Explain the interaction between HVAC & DC systems? [L3][10M]
6. What are the major types of AC-DC systems interaction and also explain about the harmonic interactions in details? [L3][10M]
7. Explain the voltage stability in AC/DC system in detail? [L1][10M]
8. What are the different types of converter faults and explain at least three of the faults in details?. [L2][10M]
9. Explain transient over voltage due to DC and AC side line faults with neat sketches? [L1][10M]
10. Explain how transient over voltages are produced due to faults on DC side [L2] [10M]

UNIT –V

1. List out different types of multi-terminal DC links with suitable diagrams?	[L1][10M]
2. Explain parallel connected multi terminal DC link with suitable diagram?	[L1][10M]
3. Explain series parallel connected multi terminal DC link with suitable diagram?	[L1][10M]
4. Explain series connected multi terminal DC link with suitable diagram?	[L2][10M]
5. Discuss series-parallel multi-terminal HVDC system and its control?	[L3][10M]
6. Mention the importance of multi-terminal DC links?	[L2][10M]
7. What are the advantages of Multi-terminal DC links?	[L1][10M]
8. Give the comparison between series and parallel MTDC systems?	[L2][10M]
9. Differentiate between Multi-Terminal and Multi-Infeed Systems?	[L3][10M]
10. Explain about Modern Trends in HVdcTechnology?	[L2][10M]

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