



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

QUESTION BANK (DESCRIPTIVE)

Subject with Code : Static VAR Controller and Harmonic Filtering (20EE2107)

Course & Branch: M.TECH –Power Electronics

Year & Sem: I-Year & I-Sem

Regulation: R20

UNIT –I

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| 1 | Explain the necessity of reactive shunt compensation in transmission system. Explain the objectives of shunt compensation? | [12M] |
| 2 | What are the different types of Reactive Power Compensation Techniques in Transmission lines? | [12M] |
| 3 | What is the necessity of reactive power controllers? | [12M] |
| 4 | Explain the different types of facts controllers. Discuss each in brief. Also discuss the benefits of facts Controllers? | [12M] |
| 5 | Explain, how series compensation can be applied effectively to damp oscillations? | [12M] |
| 6 | Explain about power quality problems in detail? | [12M] |
| 7 | Explain, how shunt compensation can be applied effectively to damp oscillations? | [12M] |
| 8 | What are the Sources of Harmonics in Distribution Systems? | [12M] |

UNIT –II

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| 1 | Explain about thyristor Switched Series Compensators? | [12M] |
| 2 | Explain about thyristor Controlled Series Compensators? | [12M] |
| 3 | Explain the concept of series capacitive compensation? | [12M] |
| 4 | Explain the enhancement of transient stability by the SVC and STATCOM? | [12M] |
| 5 | Write short notes on Thyristor controlled series capacitor? | [12M] |
| 6 | Briefly discuss about the static VAR compensators? | [12M] |
| 7 | Explain about Sub-Synchronous Resonance and damping? | [12M] |
| 8 | Explain briefly about SSSC? | [12M] |

UNIT -III

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| 1 | Explain the operation of single phase full-wave bridge converter with neat circuit? | [12M] |
| 2 | Explain the transformer connection for 12- pulse operation? | [12M] |
| 3 | Explain the operation of three phase full-wave bridge converter with neat circuit? | [12M] |
| 4 | Explain the transformer connection for 24- pulse operation? | [12M] |
| 5 | Explain about Diode clamped multilevel inverter? | [12M] |
| 6 | Explain the transformer connection for 48- pulse operation? | [12M] |
| 7 | Explain about GTO inverters? | [12M] |
| 8 | a. Write a short note on three level voltage source converters? | [6M] |
| | b. Compare between VSC and CSC? | [6M] |

UNIT -IV

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| 1 | Explain Single Phase Shunt Current Injection Type Filter and its Control? | [12M] |
| 2 | Explain Three Phase Three-wire Shunt Active Filtering and their control using p-q theory and d-q modeling? | [12M] |
| 3 | Explain three phase four wire shunt active filters? | [12M] |
| 4 | Explain Hybrid Filtering using Shunt Active Filters? | [12M] |
| 5 | Explain Dynamic Voltage Restorer and its control? | [12M] |
| 6 | Discuss about Current Control Schemes Suitable for APF Single Phase Shunt Current Injection Type Filter? | [12M] |
| 7 | Explain Harmonic Current Calculator Single Phase Shunt Current Injection Type Filter? | [12M] |
| 8 | Explain DQ Frame for Shunt Active Power Filters? | [12M] |

UNIT –V

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| 1 | Write a brief note on Series Active Filtering in Harmonic Cancellation Mode? | [12M] |
| 2 | Explain about Series Active Filtering in Harmonic Isolation mode? | [12M] |
| 3 | Discuss about V-I and power oscillation characteristics of Series Active Filter? | [12M] |
| 4 | Explain the Series APF in Harmonic cancellation mode? | [12M] |
| 5 | Explain the series APF as a Reactance Compensator? | [12M] |
| 6 | Explain the Series APF in Harmonic isolation mode? | [12M] |
| 7 | Explain the various filters for power quality improvement? | [12M] |
| 8 | Explain the series active filter for power quality improvement? | [12M] |

