



## SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR

Siddharth Nagar, Narayanavanam Road – 517583

### QUESTION BANK (DESCRIPTIVE)

**Subject with Code :** PQ (19EE0224)

**Course & Branch:** B.Tech - EEE

**Year & Sem:** IV-B.Tech & I-Sem

**Regulation:** R19

### UNIT –I

#### Introduction

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|---------------------------------------------------------------------------------------|------------|-----|
| 1. What is power quality? Why we are concern about power quality?                     | [CO1] [L1] | 10M |
| 2. Explain about the power quality evaluation procedure.                              | [CO1] [L1] | 10M |
| 3. Classify the different types of power quality issues.                              | [CO] [L2]  | 10M |
| 4. a) What are the types of wave form distortion?                                     | [CO1] [L1] | 5M  |
| b) Write a short note on voltage imbalance                                            | [CO1] [L2] | 5M  |
| 5. What are the power quality standards?                                              | [CO2] [L1] | 10M |
| 6. What are the responsibilities of end users and suppliers of electric power supply? | [CO1] [L1] | 10M |
| 7. Draw and explain the CBEMA curve                                                   | [CO1] [L1] | 10M |
| 8. Draw and explain ITI curve                                                         | [CO1] [L2] | 10M |
| 9. Explain the power quality terminology                                              | [CO2] [L1] | 10M |
| 10. a) Define notching                                                                | [CO1] [L2] | 2M  |
| b) What is ment by dc offset                                                          | [CO1] [L1] | 2M  |
| c) Define coupling                                                                    | [CO1] [L2] | 2M  |
| d) What is ment by surge                                                              | [CO1] [L1] | 2M  |
| e) Define flicker                                                                     | [CO1] [L2] | 2M  |

**UNIT –II**  
**Power Quality disturbances**

1. Draw and explain the impulsive and oscillatory transients [CO2] [L1] 10M
2. Mention the categories and characteristics of electromagnetic phenomena in power systems? [CO2] [L3] 10M
3. What are the sources of transient over voltages? Explain clearly. [CO2] [L2] 10M
4. a) Explain the long duration voltage variations. [CO2] [L2] 5M  
b) Explain the short duration voltage variation. [CO2] [L1] 5M
5. What are the principles of over voltage protection? Explain with diagram. [CO2] [L1] 10M
6. Classify the principles of regulating the voltage [CO2] [L2] 10M
7. Explain in detail the role of capacitors for the voltage regulation. [CO2] [L1] 10M
8. Explain the effect of line drop compensation on the voltage profile. [CO2] [L1] 10M
9. What are the conventional devices available for the voltage regulation? [CO2] [L1] 10M
10. a) Define oscillatory transient? [CO2] [L1] 2M  
b) What is the main cause for impulsive transient? [CO2] [L1] 2M  
c) Define Sag? [CO2] [L1] 2M  
d) What is the frequency range and duration in medium frequency transient? [CO2] [L2] 2M  
e) When an interruption occurs. [CO2] [L2] 2M

**UNIT -III**  
**Fundamentals of harmonics and applied harmonics**

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|-----|-----------------------------------------------------------------------------------------|----------------|
| 1.  | What is harmonic distortion? Discuss about the voltage versus current distortion.       | [CO2] [L2] 10M |
| 2.  | a) Write the impact of voltage distortion and current distortion.                       | [CO1] [L3] 5M  |
|     | b) Explain the commonly used indices for measuring of harmonic content in the waveform. | [CO1] [L1] 5M  |
| 3.  | Explain the power system quantities under non sinusoidal condition.                     | [CO1] [L1] 10M |
| 4.  | What are the harmonics sources from commercial loads?                                   | [CO2] [L2] 10M |
| 5.  | What are the harmonics sources from industrial loads?                                   | [CO2] [L2] 10M |
| 6.  | Explain the brief description about the harmonic distortion evaluation.                 | [CO2] [L1] 10M |
| 7.  | Explain the principles of controlling harmonics.                                        | [CO2] [L1] 10M |
| 8.  | Explain the various devices for the controlling of harmonics distortion.                | [CO2] [L1] 10M |
| 9.  | What are effects of harmonics? Explain harmonic distortion evaluation procedure?        | [CO2] [L2] 10M |
| 10. | a) What is ment by harmonics?                                                           | [CO2] [L2] 2M  |
|     | b) What is percentage of fluorescent lighting in commercial loads?                      | [CO2] [L2] 2M  |
|     | c) Define THD                                                                           | [CO2] [L2] 2M  |
|     | d) What is the purpose of line reactor?                                                 | [CO2] [L2] 2M  |
|     | e) What is ment by TDD?                                                                 | [CO2] [L2] 2M  |

**UNIT -IV**  
**Power quality monitoring**

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|-----|-----------------------------------------------------------------------------|------------|-----|
| 1.  | a) Write a short note on power quality monitoring standards.                | [CO3] [L2] | 5M  |
|     | b) Write about any one power quality measurement equipment.                 | [CO3] [L2] | 5M  |
| 2.  | Explain the various power quality monitoring considerations.                | [CO3] [L1] | 10M |
| 3.  | Explain about various power quality measuring equipment.                    | [CO3] [L1] | 10M |
| 4.  | Explain the categories of instruments to consider for harmonic analysis.    | [CO3] [L1] | 10M |
| 5.  | Explain about smart power quality monitors.                                 | [CO3] [L1] | 10M |
| 6.  | Explain about the flicker meters.                                           | [CO3] [L2] | 10M |
| 7.  | Explain the applications for system maintenance, operation and reliability. | [CO3] [L1] | 10M |
| 8.  | Explain about the permanent power quality monitoring equipment.             | [CO3] [L1] | 10M |
| 9.  | Explain about the power quality bench marking.                              | [CO3] [L1] | 10M |
| 10. | a) What is ment by true RMS?                                                | [CO3] [L3] | 2M  |
|     | b) Define multimeter                                                        | [CO3] [L2] | 2M  |
|     | c) Why the flicker meter is need?                                           | [CO3] [L2] | 2M  |
|     | d) What is revenue meters?                                                  | [CO3] [L3] | 2M  |
|     | e) What is purpose of digital fault recorders?                              | [CO3] [L2] | 2M  |

**UNIT –V****Power quality enhancement using custom power devices**

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|-----|-------------------------------------------------------------------------------------------------------------|------------|-----|
| 1.  | What is the need for current limiter? Discuss the operation of a Solid state current limiter.               | [CO4] [L2] | 10M |
| 2.  | What are the advantages of solid state current limiters compared to conventional current limiters? Discuss. | [CO4] [L2] | 10M |
| 3.  | What are the advantages of static var compensators? Discuss the operation of Static Series Compensators?    | [CO4] [L2] | 10M |
| 4.  | Draw and explain the schematic diagram of a right shunt UPQC?                                               | [CO4] [L3] | 10M |
| 5.  | How UPQC protects the load from harmonic voltages? Discuss.                                                 | [CO4] [L2] | 10M |
| 6.  | Explain the solid transfer switch transfer with the transfer operation?                                     | [CO4] [L1] | 10M |
| 7.  | Explain the Solid State Breaker principle of operation?                                                     | [CO4] [L1] | 10M |
| 8.  | Draw and explain the schematic diagram Dynamic Voltage Restorer?                                            | [CO4] [L3] | 10M |
| 9.  | Explain the principle of DVR operation used for sag mitigation?                                             | [CO4] [L1] | 10M |
| 10. | a)Give the list of two groups custom power devices?                                                         | [CO4] [L1] | 2M  |
|     | b)Give the complete classification of custom power devices?                                                 | [CO4] [L1] | 2M  |
|     | c)What is Static Current Limiter?                                                                           | [CO4] [L2] | 2M  |
|     | d)What is Static Transfer Switch?                                                                           | [CO4] [L2] | 2M  |
|     | e)What is Solid State Breaker?                                                                              | [CO4] [L2] | 2M  |

Prepared by: **S.MUNISEKHAR**