**14EE2033 - Harmonics & Power Quality**

1. a) State IEEE definitions of any six power quality disturbances. (10)

b) Draw the power acceptability curve and explain its application to measure the power quality issues. (10)

(OR)

1. Write short notes on
2. Waveform distortion
3. Short interruptions flicker (10+10)

1. a) With aid of block diagram, explain the operating principle of three phase static AC/DC converter. (10)

b) Describe the working principles of pulse modulated device. (10)

(OR)

1. a) Explain the impact of sensitive loads in power quality measurements.

(10)

b) Describe any two mitigation techniques for power quality measures.

(10)

1. Explain the analysis of voltage sag using Detroit Edison sag score and Lost Energy Index. (10)

(OR)

1. Write brief notes on
2. Capacitor switching transient
3. Lightning load switching (10+10)
4. a) Describe various types of harmonics occurred in distribution system.

(10)

b) Explain the concept of harmonic power flow with illustration. (10)

(OR)

1. Describe the designing procedure of active and passive filters to analyze the power quality issues. (10+10)
2. a) Explain the principles of series and shunt compensators for power quality assessment. (10)
3. Briefly describe the control strategies of UPQC. (10)