Registration No: | | | | | | | | | | |

Total Number of Pages: 02 **M.TECH**
PEPE202

2nd Semester Back Examination 2016-17
POWER QUALITY
BRANCH: POWER ELECTRONIC, POWER ELECTRONIC & DRIVES, POWER ELECTRONIC AND ELECTRICAL DRIVES
Time: 3 Hours
Max Marks: 70
Q.CODE:Z1086

Answer Question No.1 which is compulsory and any FIVE from the rest.
The figures in the right hand margin indicate marks.

Q1 **Answer the following questions: *Short answer type*** **(2 x 10)**

a) What do you mean by power conditioning, Why it is necessary.
b) What is electrostatic discharge and how it effectson electronic equipment.
c) What do you mean by power quality interdependence? Explain.
d) What are three levels of possible solutions to voltage sag and momentary interruption problems?
e) What are the components of flicker meter?
f) Define active series compensation devices.
g) What is the need of low pass filter in transient protection?
h) Mention at least two causes of harmonics.
i) A 2000-kVAR, 13.8-kV, Y-connected capacitor bank is connected at the end of a 25-mile transmission line with an inductive reactance of 0.5 Ω per mile. Find the natural frequency of the current that would be drawn during turn on
j) Mention the need of SVC.

Q2 **a)** Explain causes of voltage and current harmonics **(5)**
b) Discuss in detail about the sag performance evaluation indices. **(5)**

Q3 **a)** Discuss various motor starting methods. How is it causing power quality problems. **(5)**
b) Explain how cable shielding minimizes electromagnetic interference. **(5)**

Q4 **a)** Explain the concept of harmonic phenomena under the presence of harmonic producing loads. **(6)**
b) Explain in brief what is equipment immunity. **(4)**

Q5 **a)** Explain the role of active power filters in power quality improvement. **(5)**
b) What are the various causes of harmonics in distribution power system. **(5)**

Q6 Explain th following causes of sags **(10)**

i) Voltage sag due to motor starting
ii) Voltage sag due to single line to ground fault
iii) Voltage sag due to transformer energizing

Q7 **a)** Explain the role of isolation transformer in reducing low frequency disturbances. **(5)**

b) Explain in detail about various methods to mitigate voltage swells **(5)**

Q8 **Write short notes on nay two** **(5x2)**

i) Series voltage controller
ii) Harmonic Distortion
iii) Transient disturbance analyzers