Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

M.Tech., Summer 2017-18 Examination

Semester: 2 **Date: 25-05-2018**

Subject Code: 03203154 **Time: 02:00PM to 04:30PM**

Subject Name: Electrical Power Quality **Total Marks: 60**

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 A) With respect to power quality terminology explain following (a) Distraction Factor (b) Form Factor (c) Nonlinear Load (d) Power Factor(Displacement) (e) Power Factor (Total) **(05)**

B) What do you mean by power quality standards? List IEEE standards related to power quality. **(05)**

C) With using a diagram, explain Voltage rise due to capacitance in electrical power systems. **(05)**

Q.2 **Answer the following questions**. (Attempt any three) (Each five mark) **(15)**

A) Determine the K rating of a transformer required to carry a load consisting of 300A of Fundamental, 100A of third harmonics, 60A of fifth harmonics, 30A of seventh harmonics.

B) Define power quality and explain power quality progression.

C) Define (a) Radiated emission (b) Conducted emission (c) Attenuation (d) Common mode rejection ratio (e) Noise

D) Explain Static VAR Compensators.

Q.3 A) Describe harmonic phase rotation and phase angle relationship. **(07)**

B) What is transient? Write a short note on transient system model. **(08)**

OR

B) A 3-phase, 60 Hz, V=480 Volts and motor having R=1 ohm and L= 1mH. Find, **(08)**

1) Active power, 2) Reactive power, 3) power factor, 4) Leading kVAR required correcting the power factor to 0.98?

Q.4 A) Write a short note on power quality concerns with necessary diagram. **(07)**

OR

A) Listing the different types causes of transients, explain Interruption of fault currents and switching of capacitor banks causes of transients. **(07)**

B) Explain EMI mitigations methods **(08)**