Registration no: | | | | | | | | | | |

Total Number of Pages: 02 **M.Tech**
EEPE104

1st Semester Back Examination: 2018-19
POWER QUALITY

BRANCH: ELECTRI & ELECTRO ENGG (POWER SYSTEM ENGG), ELECTRICAL AND ELECTRO ENGG, ELECTRICAL ENGG., ELECTRICAL POWER SYSTEM, POWER SYSTEM ENGG, POWER SYSTEMS

Time: 3 Hours
Max Marks: 70
Q.CODE:HB790

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:** **(2 x 10)**

a) What are the commonly used terms that describe the parameters of electrical power that describe or measure power quality?
b) What type of equipment is affected by power quality issues?
c) How do you measure power quality?
d) Under what condition sag leads to interruption?
e) What are the three levels of possible solutions to voltage sag and momentary interruption problems?
f) What is the importance of estimating sag performance?
g) What are the causes for voltage sags due to transformer energizing?
h) What are the causes of voltage magnification on network?
i) Mention the common methods used for utility for protecting distribution transformer.
j) What is the need of Computer analysis tools for transient studies?

Q2 **a)** Draw the CBEMA curve for transient overvoltages and explain. **(5)**
b) Explain the various causes and effects of voltage sags **(5)**

Q3 **a)** Define and explain following terms : **(5)**
(i) Voltage flicker (ii) Voltage unbalance.
b) Define Interruption. What are the causes and effects of interruption on utility and user? **(5)**

Q4 **a)** Describe the Power Quality standards for Voltage Sag. **(5)**
b) Explain the working of conditioning device 'Uninterruptible Power Supply (UPS)'. **(5)**

Q5 **a)** With a waveform sketch, explain the terms. **(5)**
(i) Voltage swells
(ii) Sag with harmonics.
b) List the various effects of equipments due to harmonics. Explain briefly. **(5)**

Q6 **a)** Explain in brief about different power quality mitigation techniques used for adjustable DC drives. **(5)**

b) Explain in details the mitigation of harmonics. **(5)**

Q7 What is voltage swell? How it differs from over voltage? Explain any two reasons for voltage swell? **(10)**

Q8 **Write short answer on any TWO:** **(5 x 2)**

a) Static VAR compensator

b) Proactive monitoring

c) Waveform distortion

d) Impedance scan analysis