Printed pages: 02 **Sub Code:** NEE042

Paper Id: 120816 **Roll No:** | | | | | | | | | | |

B TECH
(SEM-VIII) THEORY EXAMINATION 2017-18
POWER QUALITY

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION - A

1. Attempt *all* questions in brief. **2 x 10 = 20**

a. Define DC Offset

b. What is Long duration Voltage variation?

c. What is Neutral Voltage swings?

d. What do you mean by harmonics?

e. What is power factor?

f. Define momentary interception.

g. Difference between Voltage sag and voltage swell.

h. What is Voltage Swell?

i. Define Notches.

j. What is Rotatory UPS?

SECTION - B

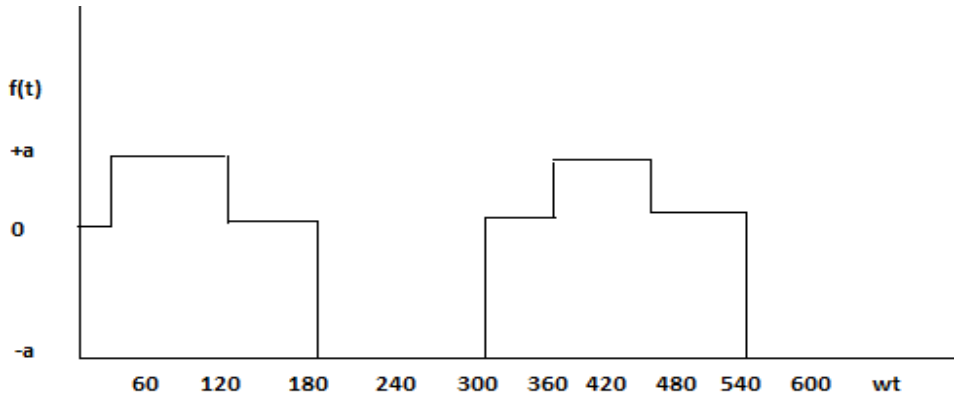
2. Attempt any *three* of the following: **10 x 3 = 30**

a. What are the major power quality issues? Explain in details.

b. What is Voltage Sag? Explain Motor Starting and Arc Furnace.

c. What are the sources of transient over voltage? Explain some with suitable example.

d. What are the causes of voltage and Current harmonic? Determine RMS and THD of the following waveform.



e. Explain the operation of Distribution STATic COMpensator (DSTATCOM) used for sag mitigation.

SECTION – C

3. Attempt any one part of the following: 10 x 1 = 10

(a) Explain Long duration Voltage variation with suitable example.

(b) Describe the following terms with suitable example:

(1) Inrush Current
(2) Power factor
(3) Transient
(4) Nonlinear loads
(5) Voltage Imbalance

4. Attempt any one part of the following: 10 x 1 = 10

(a) What are the principle of Voltage Sag performance? Give Solution at end user level.

(b) Explain Active Series Compensator with neat diagram.

5. Attempt any one part of the following: 10 x 1 = 10

(a) Explain power factor improvement using capacitor switching transient.

(b) What are the devices for over voltage protection? Explain at least two giving suitable diagram.

6. Attempt any one part of the following: 10 x 1 = 10

(a) What are the effect of harmonics on Transformers and AC Motors?

(b) Write a short notes on:

(1) Harmonic Indices
(2) Inter Harmonic

7. Attempt any one part of the following: 10 x 1 = 10

(a) Explain Unified Power Quality Conditioner (UPQC)

(b) Explain in detail about Flicker Meter with suitable diagram.