M. TECH.-III (ELECTRICAL -POWER SYSTEM) (CBCS – 2015 COURSE) : WINTER - 2017

SUBJECT: POWER QUALITY ISSUES

Day: **Tuesday** Time: **11.00 AM TO 02.00 PM**

Date: **16/01/2018** Max. Marks: 60

W-2017-2948

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Answer to both the sections should be written in **SEPARATE** answer book.

SECTION-I

Q.1 **a)** Explain the concept of power quality and its need. **(05)**

b) Apply IEEE std. 1159 and define the voltage and current harmonic limits. **(05)**

OR

Explain the concept of non-linear load and enlist different causes of creation of power quality issues. **(10)**

Q.2 State the concept of transient over voltages and describe any two sources of it. **(10)**

OR

Discuss different computer tools which are used for transient analysis. **(10)**

Q.3 **a)** State General Harmonic indices to represent the presence of harmonics in the system. **(05)**

b) Compare voltage, current, individual and total harmonics. **(05)**

OR

Which are the various techniques used for harmonic analysis? Explain any one in detail. **(10)**

SECTION-II

Q.4 Discuss the concept of arcing devices? Explain how these arcing devices causes distortion in current waveform? **(10)**

OR

Explain how 3 phase current source conversion causes generation of harmonics. Discuss with any two examples. **(10)**

Q.5 Derive the transmission line model considering the mutually coupled three phase lines. **(10)**

OR

Draw the block diagram of harmonic state estimation and explain the same in detail. **(10)**

Q.6 Describe the need of power quality monitoring and various approaches towards it. **(10)**

OR

Describe any two power quality measuring instruments in detail. **(10)**