PVP 12

Code: **EEPC1T5C**

I M.Tech-I Semester-Regular Examinations-April 2015

POWER QUALITY

(POWER SYSTEM CONTROL AND AUTOMATION)

Duration: 3 hours Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1 a) Explain the following terms: 5 M

(i) Bonding (ii) Ground grid (iii) Ringing waves
(iv) Inter harmonics (v) frequency variation

b) Mention the types of sag. What are the causes of sags? Differentiate between sag and swell. 2 M

c) Explain the CDEMA and ITI curve in determining power quality with neat sketch. 7 M

2 a) Explain the following terms with a waveform of neat sketch. 7 M

i) Frequency variations
ii) Sag with harmonics

b) Categorize the power quality problems based on short and long duration and explain any one from each. 7 M

3 a) Explain the magnitude jumps for three phase unbalanced sags. 7 M

b) What are the important concerns for capacitor bank switching? 7 M

4 a) Explain the Devices for overvoltage protection with necessary diagram. 7 M

b) What is the need for protection against over voltages? What are the basic principles of over voltages protection of load equipments? 7 M

5 a) Explain the IEC standards on harmonic distortion. 7 M

b) Explain the four general harmonic indices used universally in analyzing the harmonic distortion. 4 M

c) An Industrial load bus is connected to a 2MVA, 6% transformer, with a capacitor bank of 200kVAR, then calculate the resonant harmonic (h_r) of the system. 3 M

6 a) What are the Advantages and disadvantages of Distributed Generation. 7 M

b) What is the major power quality issues related to interconnection of distributed sources onto the power grid? 7 M

7 a) What is the effect of signal reference grid on ground impedance? 7 M

b) What is the difference between a ring ground and a halo ground? Will an earth ground bond to an equipment cabinet reduce noise? 7 M

8 a) Discuss in detail about the instruments used for analyzing non sinusoidal voltage and currents. 7 M

b) Explain the proactive monitoring. 7 M