Reg.No.:								

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 8029

M.E. / M.Tech. DEGREE END-SEMESTER EXAMINATIONS – DECEMBER 2019
First Semester
Power Systems Engineering
P19PSE05 – POWER QUALITY
(Regulation 2019)

Time : Three Hours | Maximum : 100 Marks

Answer ALL the questions

PART – A

(10 x 2 = 20 Marks)

1. What are the power quality problems experienced in AC systems?
2. What is the difference between impulsive transient and oscillatory transient?
3. Voltage sag and interruptions are very similar in nature. Justify the statement.
4. What are the major causes of voltage sag?
5. Mention any two power quality problems associated with lightning stroke currents entering the ground system.
6. One drawback in the use of capacitors is that they yield oscillatory transients when switched. Justify the statement.
7. Mention two differences between harmonics and transients.
8. How do you evaluate the power quality problem due toharmonics?
9. What are the power quality problems that a DSTATCOM can mitigate?
10. What are the factors that decide the rating of a DSTATCOM?

PART – B

(5 x 13 = 65 Marks)

11. a) i. Write a short note on power quality evaluation procedure. (5)
    ii. Explain the impacts of poor power quality on utility grid and consumers. (8)

(OR)

b) i. Explain the typical classification of power quality phenomena defined in IEEE 1159. (5)

ii. What are the justifications for power quality monitoring? (8)

12. a) i. Name the mitigation techniques of voltage sags and explain in detail. (7)

ii. Describe the operation of fast transfer switches. (6)

(OR)

b) i. Explain the concept of equipment sensitivity to voltage sags. (7)

ii. Explain the use of ferroresonant transformers to handle voltage sag conditions. (6)

13. a) Write short notes on the following:

i. Surge arrester (7)

ii. Lightning arrester (6)

(OR)

b) i. Explain the term "Ferroresonance" in detail. (7)

ii. Discuss in detail about the over-voltages due to lightning and the problems associated with it. (6)

14. a) Discuss the effect of harmonics on electrical power components.

(OR)

b) Write short notes on passive filter and active filter.

15. a) What are the benefits of using a DSTATCOM in a three-phase isolated diesel engine alternator set (DG set) for economic justification? Explain in detail.

(OR)

b) Explain briefly the application of expert system for power quality monitoring.

PART – C

(1 x 15 = 15 Marks)

16. a) Give a brief account on disturbance analyser for power quality monitoring.

(OR)

b) Based on IEEE standards, how can you do an energy audit for power quality assessment and mitigation?