Reg. No. | | | | | | | | | |

M.E. / M.TECH. DEGREE EXAMINATIONS, MAY/JUNE 2017

SECOND SEMESTER

POWER ELECTRONICS AND DRIVES

PD16204 – POWER QUALITY

(Regulation 2016)

Q. Code: 507078

Time: Three Hours **Maximum : 100 Marks**

Answer **ALL** questions

PART A - (10 X 2 = 20 Marks)

1. Mention any six major PQ issues.
2. What are the causes of waveform distortion?
3. What are non-linear loads? List any two used in practice.
4. Define Distortion Factor (DF).
5. What is the power of Zero and negative sequence circuits when the supply voltage is balanced and current is unbalanced? Justify your answer.
6. If the fundamental frequency is 50Hz, then find the 3rd and 5th harmonic frequency?
7. What is Point of Common Coupling (PCC)?
8. Define PQ theory.
9. Distinguish compensators & active filter.
10. What is the need of active series filter?

PART B - (5 X16 = 80 Marks)

11. (a) (i) Enumerate the different power Quality issues with suitable illustration. **(8)**

(ii) What are the causes of poor power factor? Illustrate. **(8)**

(OR)

(b) (i) What is the importance of power quality standards? Explain. **(8)**

(ii) Differentiate and illustrate waveform distortion and voltage fluctuation, voltage sag And voltage swell. **(8)**

12. (a) Explain in detail about the three phase balanced and unbalanced system. Derive its voltage and current relations of each system. **(16)**

(OR)

(b) (i) Write a detailed note on the concept of power factor in power quality. **(8)**

(ii) Explain the role of three phase four wire system in power quality. **(8)**

13. (a) Explain operation details open loop and closed loop load balancing methods and compare its performance. **(16)**

(OR)

(b) (i) Describe on-line extraction of fundamental sequence components from measured samples with necessary mathematical expressions. **(8)**

(ii) Explain in detail, the instantaneous real and reactive power with relevant expressions. **(8)**

14. (a) Derive the equations for load compensation using instantaneous symmetrical components for a three-phase, four-wire system supplying star connected load. **(16)**

(OR)

(b) Explain how DSATCOM is used to improve the voltage regulation with neat diagrams. **(16)**

15. (a) Explain the operation of

(i) DVR. **(8)**

(ii) Series Active Filter. **(8)**

(OR)

(b) Explain the structure and working of UPQC in detail. **(16)**