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**Question Paper Code: 55008**

Ph.D. COURSE WORK EXAMINATION, NOV 2018

Elective

Power Electronics and Drives

15PPE508 – ELECTRIC POWER QUALITY

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 1= 5 Marks)

1. The power quality standards are CO1- R  
(a) IEC                      (b) AINSI                      (c) SEMI                      (d) All of the above
2. Application of pulse modulated devices CO2 -R  
(a) water heater              (b) Electric arc furnace              (c) Electric heater              (d) All the above
3. Which is used to reach maximum values in poly phase system CO3- R  
(a) Phase sequence              (b) Voltage fluctuation              (c) Unbalance              (d) Interruption
4. The rectifier draws a square wave current with a peak of 0.1 per unit and has a delay angle is CO4 -R  
(a)  $60^0$                       (b)  $45^0$                       (c)  $30^0$                       (d)  $90^0$
5. The DVR is capable of generating independently controllable CO5- R  
(a) Real                      (b) Reactive                      (c) Both                      (d) None of these

PART – B (5 x 3= 15Marks)

6. Define CBEMA curve & ITIC curve. CO1-U
7. Name any four types sag mitigation devices. CO2-U

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|-----|--|--|-------|
| 8.  | Define the Harmonic Reduction.                           |  | CO3-U |
| 9.  | Write the power invariant transformation.                |  | CO4-U |
| 10. | Compare and Contrast between DVR and DSTATCOM structure. |  | CO5-U |

PART – C (5 x 16= 80Marks)

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|-----|---|----------|------|
| 11. | (a) What are the major power quality issues? Explain them.  | CO1- U   | (16) |
|     | Or  |          |      |
|     | (b) Explain power quality standards.  | CO1- U   | (16) |
| 12. | (a) Discuss in detail about Non-sinusoidal voltage source supplying linear load current.                          | CO2- U   | (16) |
|     | Or  |          |      |
|     | (b) Explain in detail about three sinusoidal balanced systems.  | CO2- U   | (16) |
| 13. | (a) Explain in detail about classical load balancing problem.   | CO3-U    | (16) |
|     | Or  |          |      |
|     | (b) Derive the instantaneous real and reactive power components.  | CO3-App  | (16) |
| 14. | (a) Show the results when compensator is connected at the end of the 1st cycle and explain the effects in detail. | CO4 -Ana | (16) |
|     | Or  |          |      |
|     | (b) Demonstrate DSTATCOM Structure.   | CO4 -Ana | (16) |
| 15. | (a) Compare and Contrast between DVR and DSTATCOM structure.  | CO5-Ana  | (16) |
|     | Or  |          |      |
|     | (b) Describe about rectifier supported DVR with Example.  | CO5-U    | (16) |