B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

Term-End Examination

ロロ3ユ9   December, 2017

BIEEE-013 : POWER QUALITY ISSUES AND REMEDIAL MEASURES

Time : 3 hours   *Maximum Marks : 70*

Note : *Attempt any **seven** questions. Each question carries equal marks. Use of scientific calculator is allowed.*

1. What are the various causes responsible for poor power quality ? Write various power quality standards.   *10*

2. Define the following basic terminologies related to power quality : $4×2\frac{1}{2}=10$

    (a) Voltage sag and swell

    (b) Flicker

    (c) Harmonic content

    (d) Noise

3. (a) Explain the effects of harmonics on power system equipments. *5*

(b) How does SMPS introduce harmonics into the power system ? Explain with the help of wave shapes. *5*

4. Explain the complete monitoring scheme and compensation techniques for mitigating voltage sag. *10*

5. Describe the operation of a Static Var Compensator (SVC) with the help of a suitable schematic diagram. *10*

6. An induction motor is connected to a 280 V single phase 60 Hz AC source. The real power output of the motor is 350 W at 0·6 p.f. (lagging). Calculate the value of the capacitor to be added, so that p.f. can be improved to unity. *10*

7. Discuss the construction and working of a dynamic voltage restorer. *10*

8. (a) What are the different grounding problems associated with wiring installations ? *6*

(b) Discuss the solutions for grounding probems in wiring installations. *4*

9. Write short notes on any *two* of the following : 2×5=10

(a) Shunt Injection Filter

(b) Automatic Power Factor Correction (APFC)

(c) STATCOM

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