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BIEEE-008

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

Term-End Examination

June, 2015

00416

BIEEE-008 : FLEXIBLE AC TRANSMISSION SYSTEM

Time : 3 hours *Maximum Marks : 70*

Note : *(i) Attempt any **seven** questions.*

(ii) Each questions carries equal marks.

(iii) Assume suitable data, if missing.

1. (a) Derive the expression for active as well as reactive power flow in a lossless transmission line.

(b) Draw and explain briefly the various configurations of FACTS devices. *2×5=10*

2. Show that the shunt inductive compensation increases the surge impedance of the line and reduces the power transfer capacity of the line, virtual line length and natural loading of the line. *10*

3. (a) Differentiate between the static shunt compensators : STATCOM and SVC.

(b) Explain the construction, working and characteristic of any one type of SVC. *2×5=10*

4. Explain TSC and TCR by covering the following points : *10*

   (a) Diagram

   (b) Operation

   (c) V-I characteristics

   (d) Loss characteristics

5. (a) Explain the basic concept of phase angle regulator with the help of a phasor diagram.

   (b) State the objectives of shunt and series compensation using static compensators. *2×5=10*

6. What is the operating principle of UPFC ? Explain the dynamic performance of UPFC for power flow control in a transmission system. *10*

7. (a) Discuss how the control of a basic IPFC is achieved.

   (b) What are the different parameters to control power flow in ac systems, given their relative importance ? *2×5=10*

8. How is TCBR used to improve the transient stability ? Explain the basic control of TCBR. Give the use of TCBR for oscillation damping. *10*

9. Discuss the concept of dynamic compensation at the middle of the transmission line. Also list their advantages. *10*

10. Write short notes on any ***two*** of the following :

2×5=10

(a) STATCOM

(b) TCVR

(c) Thyristor Controlled Voltage Limiter