

**23287**

**M.Tech. 2nd Semester Electrical Power System  
Examination, May-2017  
FACTS CONTROLLERS  
Paper-MTEPS-202**

*Time allowed : 3 hours ] [ Maximum marks : 100*

*Note : Attempt five questions in all selecting one question from each section. Question No. 1 is compulsory.*

1. (a) What are FACTS devices, discuss their role in modern world ? 10
- (b) Draw and explain turn-off characteristics of SCR. 5
- (c) Discuss power flow control by phase angle regulator. 5

**Section-A**

2. Explain power flow and dynamic stability in a.c. system and also explain importance of controllable parameters.
3. (a) Explain voltage rating based characteristics of high power devices. 10
- (b) Explain the parameter trade-off of FACTS devices. 10

**Section-B**

4. (a) Explain single phase full wave bridge voltage source converter. 10

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**23287**

- (b) Explain square wave voltage harmonics for a single phase bridge. 10
- 5. (a) Describe transformer connections for 12-pulse converter. 10
- (b) Explain pulse width modulation converter. 10

**Section-C**

- 6. (a) Explain power oscillation damping. 10
- (b) Explain mid-point voltage regulation for line segmentation. 10
- 7. Explain TCR and TSR with suitable circuit diagram. 20

**Section-D**

- 8. Explain the slope transfer function and dynamic performance of STATCOM. 20
- 9. Write a short note on : 20
  - (i) TCSC
  - (ii) TSSC.

**23287**