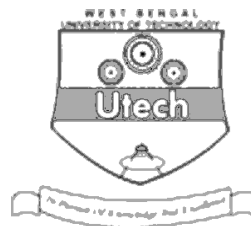


CS/M.TECH (EE)/SEM-2/MEE-205(a)/09
FLEXIBLE AC TRANSMISSION SYSTEM (SEMESTER - 2)



1.
Signature of Invigilator

2.
Signature of the Officer-in-Charge

Reg. No.

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Roll No. of the Candidate

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CS/M.TECH (EE)/SEM-2/MEE-205(a)/09
ENGINEERING & MANAGEMENT EXAMINATIONS, JULY – 2009
FLEXIBLE AC TRANSMISSION SYSTEM (SEMESTER - 2)

Time : 3 Hours]

[Full Marks : 70

INSTRUCTIONS TO THE CANDIDATES :

1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
2. You have to answer the questions in the space provided marked 'Answer Sheet'. Write on both sides of the paper.
3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to write the corresponding question numbers while answering.
6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. **Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification.**
9. Rough work, if necessary is to be done in this booklet only and cross it through.

No additional sheets are to be used and no loose paper will be provided

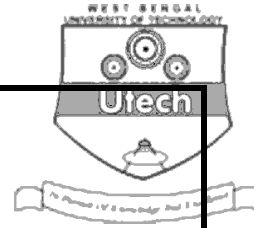
FOR OFFICE USE / EVALUATION ONLY

Marks Obtained

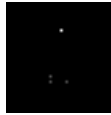
Question Number												Total Marks	Examiner's Signature
Marks Obtained													

.....
Head-Examiner/Co-Ordinator/Scrutineer

40010 (10/07)



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CS/M.TECH (EE)/SEM-2/MEE-205(a)/09
FLEXIBLE AC TRANSMISSION SYSTEM
SEMESTER - 2



Time : 3 Hours]

Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

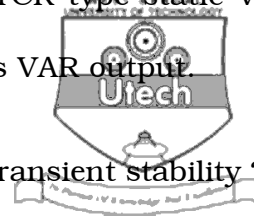
Answer any *five* questions.

5 × 14 = 70

1. The particulars of a transmission line with a TCR are $V = 220 \text{ V}$, $f = 60 \text{ Hz}$, $X = 1.2\Omega$ and $P_p = 56 \text{ kW}$. The maximum current of the TCR is $I_{L(mx)} = 100 \text{ A}$. Find (a) Phase-angle δ , (b) the line current I , (c) the reactive power Q_p of the shunt compensator, (d) the current through the TCR, (e) the inductance reactance X_L 14
2. What is voltage regulation ? How compensators improved the voltage regulation ? 14
3. Draw the loss versus VAR output characteristics of different static var Generator Schemes (TCR-FC, TSC, TCR + TSC, STATCOM, STATCOMFC, STATCOM-TSC). 14
4. The particulars of a transmission line are $V = 220 \text{ V}$, $f = 60 \text{ Hz}$, $X = 12 \Omega$ and $P_p = 56 \text{ kW}$, the particulars of the TCSC are $\delta = 80^\circ$, $C = 20 \mu\text{F}$ and $L = 0.4 \text{ mH}$. Find (a) the degree of compensation r , (b) the compensating capacitance reactance X_{comp} , (c) the line current I , (d) the reactive power. 14
5. Describe the functional control scheme for the FC-TCR type static VAR generation and also draw associated waveforms. 14



6. Describe the functional control scheme for the TSC-TCR type static VAR generation and also draw the characteristic of VAR demand versus VAR output. 14
7. What is transient stability and how do you improve of transient stability? 14
8. What is FACTS ? Describe the opportunities for FACTS. What is FACTS controller ? Discuss in brief the description of FACTS controllers. 14



END