## **Duration – 3 Hours**

Total Marks - 80

N.E	<ul> <li>3.:- (1) Question No.1 is compulsory.</li> <li>(2) Attempt any three questions out of remaining five questions.</li> <li>(3) Assume suitable data if necessary and justify the same.</li> </ul>	
Q 1.	Answer the following questions.	20
a)	Explain the Load compensation, state its objectives.	
<b>b</b> )	Explain objectives of series compensation.	
c)	Why harmonics are represented by harmonic number and not with harmonic frequencies.	
d)	Write the advantages and disadvantages of passive filter.	
Q 2 a)	Enlist common power quality issues. Explain any five of them.	10
Q 2 b)	Write a note on harmonic phase rotation and phase angle relationship.	10
Q 3 a)	Explain effects of harmonics of rotating machines, transformers and cables.	10
Q 3 b)	Explain different harmonics mitigation techniques.	1(
Q 4 a)	With the neat phasor diagram explain power factor compensation using capacitor.	10
Q 4 b)	With necessary diagrams explain the basic types of FACTS controller?	10
Q 5 a)	Explain various parameters which limit the loading capabilities of transmission line.	10
Q 5 b)	Explain switching converter type series compensator (SSSC).	10
Q 6 a)	Explain voltage and current characteristics of TCR and FCTCR.	10
O 6 b)	Explain the Thyristor controlled phase angle regulator (TCPAR).	10

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