J	Enrollme	ent No: Exam Seat No:	_
		C.U.SHAH UNIVERSITY	
		Summer Examination-2017	
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\$	Subject I	Name : Advanced Power System	
S	Subject (Code: 4TE07APS1 Branch: B.Tech (Electrical)	
	Semester	: 7 Date: 31/03/2017 Time: 02:30 To 05:30 Marks: 70	
]	(2) I (3) I	Ins: Use of Programmable calculator & any other electronic instrument is prohibited. Instructions written on main answer book are strictly to be obeyed. Oraw neat diagrams and figures (if necessary) at right places. Assume suitable data if needed.	
Q-1		Attempt the following questions:	(14)
~ –	a)	Give the full form of FACT.	()
	b)	Which switching device is used for FACT application?	
	c)	By using shunt power compensation the active power transmission can be	
	,	increased up to time the rated capacity.	
	d)	The shunt power compensation technique control of the system to	
	/	increase the power transmission capability.	
	e)	The power transistor is controlled device.	
	f)	The harmonics(increase/decrease) the temperature and	
	ŕ	(increase/decrease) the efficiency of the equipment.	
	g)	The automatic power factor correction bank uses the for reactive	
	Ç.	power compensation and for program and control signals.	
	h)	The thyristor has gate turn(on/off) options for switching function and	
		requires (communication/commutation)circuit for turn off the power.	
	i)	Smart grid regulates the Load (and/or) power sources and	
		(increase/decrease) the green house effect.	
	$\mathbf{j})$	The flow of power is (bidirectional/unidirectional) in smart grid	
		technology and provides the consumer to (earn/pay)money for its in house	
		generation.	
	k)	The challenges of the smart grid are (regulation/development) of grid	
		and provide the (smart/conventional) communication infrastructure.	
	1)	For protection of transmission circuit the response time required for	
		communication is (20ms/100ms) for dedicated point to point links.	
	m)	State the name of key components for smart metering.	
	n)	Zero detection and comparison operation is required for	
		(Frequency/Phase displacement/Power factor) measurement operation.	



Attempt any four questions from Q-2 to Q-8

Q-2	Attempt all questions	(14)
(a)	Prove that	7
	$V(t) = V_0 \sqrt{1 - 4\epsilon \frac{t}{T}}$	
(b)	Explain meter data management system.	7
Q-3	Attempt all questions	(14)
(a)	Draw the nature of wave shapes for the following type of voltage signals: (i) Normal(ii) Outage (iii) Surge (iv) Under voltage (v) Harmonics (vi) Voltage sag (vii) Voltage swell (viii) Overvoltage	7
(b)	Briefly explain TCR.	7
Q-4	Attempt all questions	(14)
(a)	Explain CBEMA curve and its importance in power quality.	7
(b)	Explain the various methods for solving power quality problems.	7
Q-5	Attempt all questions	(14)
(a)	State the Sources of harmonics. Also explain the harmful effects of harmonics.	7
(b)	Explain TCS.	7
Q-6	Attempt all questions	(14)
(a)	Explain the attributes of smart grid.	7
(b)	Draw and briefly explain functional block diagram of smart meter.	7
Q-7 (a)	Attempt all questions Describe various equipment and conditions for solution of poor power quality	(14) 7
(a)	problem.	,
(b)	Explain the method of Shunt Compensation for FACTS controller.	7
Q-8	Attempt all questions	(14)
(a)	Describe GTO .	7
(b)	Sketch the switching characteristics of the Power transistor, MOSFET. Compare their merits and demerits.	7

