18PEE32	HARMONICS AND FILTERS FOR POWER ELECTRONIC CIRCUITS	1 1 1	Т	Р	С
	HARMONICS AND FILTERS FOR POWER ELECTRONIC CIRCUITS	3	0	0	3
		<b>.</b> 5			
Course Objective	s:				
	art knowledge on the fundamentals of harmonics				
	lerstand the principle of operation of passive power filter				
	lerstand the principle of operation of shunt active power filter				
	lerstand the principle of operation of series active power filter				
	lerstand the principle of operation of hybrid active power filter				
	NDAMENTALS OF HARMONICS		9	+	0
harmonics – Factorium Harmonics:	of harmonic generation — Sources of harmonics: commercial and industrial tors influencing - development of harmonic standards — General harmonic since evaluations on the utility system, Harmonic evaluation for end-user facilities all tools for harmonic assessment: Fourier series, Fourier Transform, DFT, FFT, eform.	indic – Ha	es – armor	App nic st	lied udy
Unit II PA	SSIVE POWER FILTER		9	+	0
	int, series – circuit configuration ,principle of operation – Analysis and design		_	_	
	itation – mitigation of resonance problem of passive filters with the power supply				u
Unit III S	HUNT ACTIVE POWER FILTER		<u> </u>		_
	ruit configuration ,principle of operation and control, Analysis and design, mo		9	+	0
	· numerical problems	odeiii	ig si	mula	uon
and penomiance					
	ERIES ACTIVE POWER FILTER		9	+	0
Classification oir					
	uit configuration ,principle of operation and control, Analysis and design, mo	delli	ng sii	mula	tion
	uit configuration ,principle of operation and control, Analysis and design, mo - numerical problems	delli	ng sii	mula	tion
		odelli	ng sii	mula	tion
and performance					
and performance	- numerical problems		ng sii	mula +	tion 0
Unit V H' Classification, circ	- numerical problems  BRID ACTIVE POWER FILTER  uit configuration ,principle of operation and control, Analysis and design, more		9	+	0
unit V H'	- numerical problems  /BRID ACTIVE POWER FILTER		9	+	0
Unit V H' Classification, circ	- numerical problems  (BRID ACTIVE POWER FILTER  uit configuration ,principle of operation and control, Analysis and design, more numerical problems	dellir	<b>9</b> .g, sii	+ nula	<b>0</b> tion
Unit V H Classification, circ	- numerical problems  /BRID ACTIVE POWER FILTER  uit configuration ,principle of operation and control, Analysis and design, monumerical problems  Total (I	dellir	<b>9</b> .g, sii	+ nula	<b>0</b> tion
unit V H'	- numerical problems  /BRID ACTIVE POWER FILTER  uit configuration ,principle of operation and control, Analysis and design, monumerical problems  Total (I	dellir	<b>9</b> .g, sii	+ nula	<b>0</b> tion
Unit V H Classification, circand performance  Course Outcome	- numerical problems  /BRID ACTIVE POWER FILTER  uit configuration ,principle of operation and control, Analysis and design, monumerical problems  Total (I	dellir	<b>9</b> .g, sii	+ nula	<b>0</b> tion
Unit V H Classification, circand performance  Course Outcome  At the end of the o	- numerical problems  (BRID ACTIVE POWER FILTER)  Puit configuration ,principle of operation and control, Analysis and design, more numerical problems  Total (Institute of the student will be able to:	dellir	<b>9</b> .g, sii	+ nula	<b>0</b> tion
Unit V H Classification, circand performance  Course Outcome At the end of the come CO1 : Ur	- numerical problems  /BRID ACTIVE POWER FILTER  uit configuration ,principle of operation and control, Analysis and design, more numerical problems  Total (I s:  course the student will be able to:  derstand the fundamentals of harmonics	dellir	<b>9</b> .g, sii	+ nula	<b>0</b> tion
Unit V H Classification, circand performance  Course Outcome  At the end of the course CO1 : Ur CO2 : Ar	- numerical problems  /BRID ACTIVE POWER FILTER  uit configuration ,principle of operation and control, Analysis and design, monumerical problems  Total (Is:  derstand the fundamentals of harmonics alyze and design of passive power filter	dellir	<b>9</b> .g, sii	+ nula	<b>0</b> tion
Course Outcome  At the end of the CO2 : Ar CO3 : Ar	- numerical problems  (BRID ACTIVE POWER FILTER)  uit configuration ,principle of operation and control, Analysis and design, more numerical problems  Total (I s:  course the student will be able to:  derstand the fundamentals of harmonics  alyze and design of passive power filter  alyze and design of shunt active power filter	dellir	<b>9</b> .g, sii	+ nula	<b>0</b> tion
Course Outcome  At the end of the condition of the condit	- numerical problems  /BRID ACTIVE POWER FILTER  uit configuration ,principle of operation and control, Analysis and design, monomorphisms  Total (I s:  course the student will be able to:  derstand the fundamentals of harmonics  alyze and design of passive power filter  alyze and design of series active power filter  alyze and design of series active power filter	dellir	<b>9</b> .g, sii	+ nula	<b>0</b> tion
Classification, circand performance  Course Outcome  At the end of the course C	- numerical problems  (BRID ACTIVE POWER FILTER)  uit configuration ,principle of operation and control, Analysis and design, more numerical problems  Total (I s:  course the student will be able to:  derstand the fundamentals of harmonics  alyze and design of passive power filter  alyze and design of shunt active power filter	dellir	<b>9</b> .g, sii	+ nula	<b>0</b> tion
Classification, circand performance  Course Outcome  At the end of the course C	- numerical problems  /BRID ACTIVE POWER FILTER  uit configuration ,principle of operation and control, Analysis and design, monomorphisms  Total (I s:  course the student will be able to:  derstand the fundamentals of harmonics  alyze and design of passive power filter  alyze and design of series active power filter  alyze and design of series active power filter	dellir	<b>9</b> .g, sii	+ nula	<b>0</b> tion
At the end of the CO2 : Ar CO3 : Ar CO5 : Ar Text Books:	- numerical problems  /BRID ACTIVE POWER FILTER  uit configuration ,principle of operation and control, Analysis and design, monumerical problems  Total (I s:  - course the student will be able to:  - derstand the fundamentals of harmonics - alyze and design of passive power filter - alyze and design of series active power filter - alyze and design of hybrid active power filter - alyze and design of hybrid active power filter	dellir_+T)=	9 ng, sii = <b>45</b>	+ mula	0 tion
Unit V H Classification, circular and performance  Course Outcome  At the end of the course CO1 : Ur CO2 : Ar CO3 : Ar CO4 : Ar CO5 : Ar  Text Books: Power	- numerical problems  /BRID ACTIVE POWER FILTER  uit configuration ,principle of operation and control, Analysis and design, monomorphisms  Total (I s:  course the student will be able to:  derstand the fundamentals of harmonics  alyze and design of passive power filter  alyze and design of series active power filter  alyze and design of series active power filter	dellir_+T)=	9 ng, sii = <b>45</b>	+ mula	0 tion
Unit V H Classification, circular cand performance  Course Outcome At the end of the cool CO1 : Ur CO2 : Ar CO3 : Ar CO4 : Ar CO5 : Ar Text Books:  1. Power Haddac	For the student will be able to:  derstand the fundamentals of harmonics alyze and design of series active power filter alyze and design of hybrid active power filter	dellir _+T)= a ar	9 ng, sin = <b>45</b> nd Ka	+ mula Peri	0 tion
Unit V H Classification, circular and performance  Course Outcome At the end of the course CO1 : Ur CO2 : Ar CO3 : Ar CO4 : Ar CO5 : Ar  Text Books:  1. Power Haddace 2 Electrice	For the student will be able to:  derstand the fundamentals of harmonics alyze and design of shunt active power filter alyze and design of hybrid active power filter alyze and design of hybrid active power filter alyze and design of hybrid active power filter alyze and sons limited, First Edition 2015  al power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoscal power system quality "Roger C. Dugan,	dellir _+T)= a ar	9 ng, sin = <b>45</b> nd Ka	+ mula Peri	0 tion
Unit V H Classification, circular and performance  Course Outcome At the end of the course CO1 : Ur CO2 : Ar CO3 : Ar CO4 : Ar CO5 : Ar  Text Books:  1. Power Haddace 2 Electrice	For the student will be able to:  derstand the fundamentals of harmonics alyze and design of series active power filter alyze and design of hybrid active power filter	dellir _+T)= a ar	9 ng, sin = <b>45</b> nd Ka	+ mula Peri	0 tion
Unit V H Classification, circular and performance  Course Outcome At the end of the course Outcome CO1 : Ur CO2 : Ar CO3 : Ar CO4 : Ar CO5 : Ar  Text Books:  1. Power Haddac	representation of the student will be able to:  derstand the fundamentals of harmonics alyze and design of series active power filter alyze and design of hybrid activ	dellir _+T)= a ar	9 ng, sin = <b>45</b> nd Ka	+ mula Peri	0 tion
Unit V H Classification, circular performance  Course Outcome  At the end of the course Outcome  At the end of the course Outcome  CO1 : Ur CO2 : Ar CO3 : Ar CO4 : Ar CO5 : Ar  Text Books:  1. Power Haddacourse  2. Electric McGray  Reference Book	- numerical problems  /BRID ACTIVE POWER FILTER  uit configuration ,principle of operation and control, Analysis and design, monomorphisms  Total (Its:  - ourse the student will be able to:  derstand the fundamentals of harmonics alyze and design of passive power filter alyze and design of shunt active power filter alyze and design of hybrid active power filter  quality problems and mitigation techniques "Bhim Singh, Ambrish Chandr"  John Wiley and Sons limited, First Edition 2015  al power system quality "Roger C. Dugan, Mark F.McGranaghan, Surya Santoso  y — Hill publications, Second Edition 2009.	dellir _+T)= a ar	9 g, sin = <b>45</b> d Ka	+ mula Peri	0 tion
Course Outcome At the end of the constant of t	representation of the student will be able to:  derstand the fundamentals of harmonics alyze and design of series active power filter alyze and design of hybrid activ	dellir _+T)= a ar	9 g, sin = <b>45</b> d Ka	+ mula Peri	0 tion

PO CO	CO Statement	PO1	PO 2	PO 3	PO4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1
CO1	Understand the fundamentals of harmonics	1	1	3	2	3	1	1	1	1	1	1
CO2	Analyze and design of passive power filter	1	3	2	2	1	1	1		1	1	1
CO3	Analyze and design of shunt active power filter	1	3	2	2	1	1	1		1	1	1
CO4	Analyze and design of series active power filter	1	3	2	2	1	1	1		1	1	1
CO5	Analyze and design of hybrid active power filter	1	3	2	2	1	1	1		1	1	1