

SAPTHAGIRI COLLEGE OF ENGINEERING, BANGALORE-560057

(Affiliated to Visvesvaraya Technological University, Belgaum,

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Bengaluru - 560 057

Department of Electrical and Electronics Engineering

COURSE OUTCOMES-2017 SCHEME

	Sub	ject:	Transf	orm Ca	alculus	, Four	ier Seri	ies An	d Num	erical T	echniqu	es-18M	AT31		
Course	CO1:	Find t	the Fo	urier se	eries, h	alf ran	ige Fou	irier se	ries ar	nd Fouri	er coeff	icients o	of Perio	dic func	tions.
Outcomes:	CO2:	Find t	the Fo	urier a	nd inve	erse Fo	urier t	ransfo	rms of	aperiod	lic funct	ions.			
	CO3:	Find 2	Z-trans	forms	and in	verse Z	Z-trans	form,	and to	solve th	ne finite	differe	nce equ	ations u	sing Z-
		trans	forms.												
	CO4:	Apply	/ the co	oncept	of sta	tics for	curve	fitting	, corre	lation a	nd regre	ession			
	CO5:	Solve	the a	lgebra	ic/tran	scend	ental e	quatio	on, inte	erpolati	ng poly	nomials	, Intern	nediate	values
		and e	evaluation of integrals using appropriate numerical techniques												
	CO6	Evalu	evaluation of integrals using appropriate numerical techniques uate the integrals using Green's, Stokes and Gauss divergence theorem and able to apply												
		Euler	's equa	ation to	o find t	the ma	xima o	r mini	ma of t	he func	tional.				
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	-	-	-	-	-	-	2	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	2	-	-	-
CO3	2	1	-	-	-	-	-	-	-	-	-	1	-	-	-
CO4	3	1	-	-	-	-	-	-	-	-	-	2	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	2	-	-	-
CO6	2	2	-	-	-	-	-	-	-	-	-	2	-	-	-

			S	ubject	: ELE	CTRIC	CCIRC	CUIT A	ANAL	YSIS-15	EE32						
Course	CO1:	Analy	ze the e	electric	circuit	with dif	fferent	technic	que (kvl	kcl sour	ce transf	formatio	n star de	elta			
Outcomes:		transf	ormati	on node	e mesh	super r	mesh sı	iper no	de).								
	CO2:	Apply	netwo	rk theo	rems in	electri	c circui	ts									
	CO3:	Exami	ine the	resona	nce cor	ndition	of para	llel and	series	RLC circu	iits.						
	CO4:	Deter	mine th	nine the transient behavior of networks													
	CO5:	Evalua	nine the transient behavior of networks Ite the two port parameters and unbalanced three phase systems														
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3		
CO1	2	3	-	-	-	-	-	-	-	-	-	3	2	-	3		
CO2	2	3	-	-	-	-	-	-	-	-	-	3	2	-	3		
CO3	2	3	-	-	I	-	-	-	-	-	-	2	2	-	-		
CO4	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-		
CO5	2	2	-	-	-	-	-	-	-	-	-	-	2	-	3		

			Subj	ect: T	RANS	FORM	IERS A	AND C	BENER	RATOR	S 15EE	33				
Course	CO1:	Expla	in the	constr	uction,	, opera	tion a	nd per	formar	nce of si	ngle ph	ase and	three p	hase		
Outcomes:		trans	forme	rs												
	CO2:	Illusti	rate th	e use d	of auto	transf	ormer	, tap cl	nangin	g and te	rtiary w	/inding t	transfor	mer and	ł	
		Demo	onstrat	te the	operat	ion of t	ransfo	ormers	in para	allel.						
	CO3:	Analy	ze the	armat	ure re	action	and co	mmut	ation a	nd thei	r effects	s in a DC	genera	itor.		
		Detei	mine the voltage regulation of alternators using EMF, MMF, ZPF and ASA methods, onstrate parallel operation of alternators.													
		Demo	rmine the voltage regulation of alternators using EMF, MMF, ZPF and ASA methods, onstrate parallel operation of alternators.													
	CO4:	Const	truct tl	ne pow	/er ang	le cha	racteri	stics fo	or fixed	input a	nd varia	able exc	itation a	and vice	versa.	
		Instru	uct V c	urves a	and inv	erted V	/ curve	es, pov	ver flov	<i>w</i> diagra	ım. Expl	ain two	reactio	n theory	/,	
		reluc	tance	oower	and sli	p test	of sync	hrono	us mad	chine.						
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	2	-	-	-	-	-	-	-	-	-	2	3	2	-	
CO2	3	2	-	2	-	-	I	-	I	-	-	2	3	2	-	
CO3	2	3	-	2	-	-	-	-	-	-	-	-	3	2	-	
CO4	2	3	-	2	-	-	-	-	-	-	-	-	3	2	-	

			Su	bject:	ANA	LOG E	ELECT	ONIC	S CIRO	CUITS 1	15EE34				
Course	CO1:	Analy	/se the	transi	stor ch	aracte	ristics	and de	esign B	iasing ci	ircuits fo	or Ampl	ifiers, O	scillator	s &
Outcomes:		Swite	hing C	ircuits.											
	CO2:	Exam	ine th	e beha	viour d	of Tran	sistor (circuits	at LO	W & HIG	GH Freq	uency re	egions a	nd how	the
		perfo	rmanc	e para	meter	s of sin	igle sta	ge & c	ascade	ed ampli	ifiers ge	ts affec	ted.		
	CO3:	Class	ify diff	erent t	ypes o	of Oscil	lators	using T	ransist	tor & ar	nalyse 8	k design	the san	ne.	
	CO4:	Analy	ify different types of Oscillators using Transistor & analyse & design the same. (se different types of Power Amplifiers using Transistors and design the same.												
	CO5:	Desig	gn amp	lifiers	using J	FET/M	OSFET								
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	2	-	-	-	-	-	-	-	-	2	3	-	2
CO2	2	3	2	-	-	-	-	-	-	-	-	2	3	-	2
CO3	-	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	3	2	-	-	-	-	-	-	-	-	2	-	-	-
CO5	-	3	3	-	-	-	-	-	-	-	-	-	2	-	2

				Subje	ect: D	IGITA	L SYS	TEM I	DESIG	N -15E	E35				
Course	CO1:	Analy	ze the	comb	inatior	al circ	uits								
Outcomes:	CO2:	Desig	n the o	circuits	of add	der, su	btracto	or, cod	e-conv	erters,r	nultiple	xers,de-	multiple	exers ar	nd
		comp	arator	s.											
	CO3:	Desig	gn the sequential circuits												
	CO4:	Expla	in the	concer	ot of co	ounter	s, sequ	ence g	enerat	tors and	basics	of HDL p	program	ming	
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	-	-	-	-	-	-	-	-	-	3	3	-	2
CO2	2	3	3	-	-	-	-	-	-	-	-	2	2	-	2
CO3	2	2	3	-	-	-	-	-	-	-	-	2	2	-	2
CO4	2	2	-	-	-	-	-	-	-	-	-	2	2	-	2

		Subje	ect: EI	LECTF	RICAL	& EL	ECTR	ONICS	S MEA	SUREN	IENTS	-15EE3	6		
Course	CO1:	Desci	ribe th	e impo	rtance	of uni	ts and	dimen	sions,	measur	ement o	of resist	ance, in	ductanc	e and
Outcomes:		capad	citance	using	bridge	s and o	determ	nine ea	rth res	istance					
	CO2:	Discu	ss the	workir	ng of va	arious	meters	s used	for me	asurem	ent of P	ower &	Energy		
	CO3:	Expla	in the	calibra	tion &	errors	in ene	ergy m	eters 8	k also m	ethods	of exter	nding th	e range	of
		instru	uments & instrument transformers.												
	CO4:	Exam	uments & instrument transformers. nine the working of different electronic& digital instruments.												
	CO5:	Analy	vze var	ious di	splay o	levices	and re	ecordir	ng mec	hanism	S				
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	2	2	-	-
CO2	2	-	-	-	-	-	-	-	-	-	-	2	2	-	-
CO3	2	2	-	-	-	-	-	-	-	-	-	2	2	-	-
CO4	2	2	-	-	-	-	-	-	-	-	-	3	2	-	3
CO5	2	2	-	-	-	-	-	-	-	-	-	3	2	-	-

			Su	bject:	ELEC	TRICA	AL MA	CHIN	IES LA	AB 1 -15	SEEL37					
Course	CO1:	Evalu	ate th	e perfo	rmano	e of tr	ansfor	mers f	rom th	e test d	ata obta	ained				
Outcomes:	CO2:	Oper	ate tw	o singl	e phas	e trans	forme	rs of d	ifferen	t KVA ra	iting in I	parallel.				
	CO3:	Demo	onstrat	te sing	e phas	e tran	sforme	ers for	three p	hase of	peratior	n and ph	ase con	version		
	CO4:	Com	pute the voltage regulation of synchronous generator using the test data obtained in the													
		labor	pute the voltage regulation of synchronous generator using the test data obtained in the ratory													
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	2	3	-	2	-	-	-	-	3	2	-	2	3	-	2	
CO2	2	3	-	2	-	-	-	-	3	2	-	2	3	-	2	
CO3	2	3	-	2	-	-	-	-	3	2	2	2	3	-	2	
CO4	2	3	-	2	-	-	-	-	3	2	2	2	3	-	2	

				Su	bject:	ELEC	CTRON	VICS L	AB -1	5EEL38	3				
Course	CO1:	Desig	n and to	est diffe	erent di	iode cir	cuits.								
Outcomes:	CO2:	Exper	iment v	vith am	plifier	and osc	illator o	circuits	to anal	yze their	perform	nance.			
	CO3:	Explai	ain universal gates and ICs for code conversion and arithmetic operations.												
	CO4:	Desig	ain universal gates and ICs for code conversion and arithmetic operations. ign and verify different counters												
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	-	2	-	-	-	3	3	-	3	2	2	2
CO2	3	3	-	-	-	-	-	-	3	3	-	-	3	-	2
CO3	3	3	-	-	-	-	-	-	2	3	2	3	3	-	2
CO4	3	3	3	-	-	-	-	-	3	3	2	-	3	-	2

		Subject: ENGINEERING MATHEMATICS IV-15MAT41
Course	CO1:	Apply appropriate numerical methods to solve ordinary differential equations
Outcomes:	CO2:	Derive and Apply Bessel's function, Legendre's polynomials & Rodrigue's formula, and its properties.
	CO3:	Analyze and solve the probability distribution problems.
	CO4:	Analyze and interpret the hypothesis for the given sampling distribution and to solve stochastic process problems.

	CO5:	Able	to defi	ne hyp	othesi	s, anal	yze an	d inter	pret th	ne hypot	thesis fo	or the gi	ven sam	npling	
		distri	bution	and to	o solve	stocha	astic pr	ocess	proble	ms.					
Mapping	PO1	PO2	PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PS01 PS02 PS03												
CO1	3	2	-	-	-	-	-	-	-	-	-	2	3	3	3
CO2	3	1	-	-	-	-	-	-	-	-	-	2	3	3	3
CO3	3	1	-	-	-	-	-	-	-	-	-	2	3	3	3
CO4	3	2	-	-	-	-	-	-	-	-	-	2	3	3	3
CO5	3	2	-	-	-	-	-	-	-	-	-	2	3	3	3

		S	ubject	t: POV	WER (GENEF	RATIO	N AN	D ECC	NOMI	CS -15E	EE42				
Course	CO1:	Expla	in the	workir	ng of h	ydroele	ectric p	olants a	and ste	am pov	ver plan	ts state	the fun	ctions o	f	
Outcomes:		majo	r equip	ment	of pow	ver plai	nts									
	CO2:	Desci	ribe th	e work	ing of	nuclea	r powe	er plan	ts and	state fu	nctions	of majo	or equip	ment of	the	
		powe	er plant	t												
	CO3:	Class	ify various substations and explain the importance of grounding													
	CO4:	Ident	sify various substations and explain the importance of grounding htify economic aspects of power system operation and the importance of power factor													
		impro	oveme	nt												
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	-	-	-	-	-	2	-	-	-	-	3	3	-	-	
CO2	2	2	-	-	-	2	2	-	-	-	-	-	2	-	-	
CO3	2	3	-	-	-	2	2	-	-	-	-	3	2	-	-	
CO4	2	3	-	-	-	3	-	-	-	-	3	3	2	-	3	

			Subj	ect: T	RANS	MISSI	ON Al	ND DI	STRIB	UTION	-15EE	43				
Course	CO1:	Explai	in the c	oncept	s and ir	nportar	nce of H	IVAC, H	VDC, E	HVAC an	d UHVA	C transm	ission lir	ies and it	S	
Outcomes:		comp	onents													
	CO2:	Derive	e induc	tance a	nd capa	acitance	e of ove	erhead	transmi	ssion sys	stem.					
	CO3:	Deter	mine th	ne para	meters	of the	transmi	ssion li	ne for o	different	configur	ations a	nd asses	the		
		perfo	rmance	mance of line.												
	CO4:	Descr	ibe the	use of	underg	round	cables,	corona	and eva	aluate di	fferent t	ypes of <i>i</i>	AC distrik	oution sy	stem.	
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	2	-	-	-	2	-	-	-	-	-	2	3	-	2	
CO2	3	2	-	-	-	2	-	-	-	-	-	2	3	-	2	
CO3	2	2	2	-	-	2	-	-	-	-	-	-	2	-	2	
CO4	2	2	-	-	-	2	-	-	-	-	-	2	2	-	2	

				S	ubject	t: ELE	ECTRI	C MO	FOR-1	5EE44					
Course	CO1:	Explair	n the c	onstruc	tional f	eature	s of Mo	tors.							
Outcomes:	CO2:	Analys	se and a	assess t	he peri	forman	ce char	acterist	ics of D	OC motor	rs by con	ducting	suitable	tests and	ł
	CO3:	Apply	the cor	ncept o	f speed	Contro	ol of inc	luction	motor	bv a suit	able met	hod.			
	CO4:	Apply	the cor	ncept o	f Synch	ronous	motor			-,					
	CO5:	Analy	/se the	perfo	rmanc	e of Th	ree Ph	nase an	d Sing	le phase	e induct	ion Mot	ors.		
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3

CO1	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	3	-	2	-	-	-	-	-	-	-	-	2	-	-
CO3	3	3	-	2	-	-	-	-	-	-	-	-	3	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	2	3	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	2	-	-	-

					Subje	ct: FI	ELD T	HEOR	RY -15	EE45							
Course	CO1:	Explai	n the c	oncept	of grac	lient, di	vergen	ce and	curl of	a vector.	Assess t	ime vary	/ing field	s and			
Outcomes:		propa	gation	of wav	es in dif	fferent	media.										
	CO2:	Explai config	n Coulo guration	omb's L ns.	aw and	Gauss	Law fo	r the ev	aluatio	n of elec	tric field	s produc	ed by di	fferent c	harge		
	CO3:	Deter	mine th	ne ener	gy and	potenti	al due	to a sys	tem of	charges.							
	CO4:	Illustr	ate the	behav	ior of el	ectric f	ield acr	oss a b	oundar	y betwee	en a con	ductor a	nd dieleo	tric and			
		betwe	een two	en two different dielectrics.													
	CO5:	Evalua	ate the	en two different dielectrics. te the behavior of magnetic fields and magnetic materials.													
	CO6	Relate	e time v	varying	fields a	nd prop	oagatio	n of wa	ves in d	different	media.						
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3		
CO1	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-		
CO2	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-		
CO3	2	2	-	-	-	-	-	-	-	-	-	-	2	-	-		
CO4	2	2	-	-	-	-	-	-	-	-	-	-	2	-	-		
CO5	2	2	-	2	-	-	-	-	-	-	-	-	2	-	-		
CO6	3	3	-	2	-	-	-	-	-	-	-	-	3	-	-		

				Sub	ject: (OP-AN	IPS &	LINE	AR ICS	S- 15EE	46					
Course	CO1:	Explai	in the b	basics o	of Op-A	mp, cha	racteri	stic fea	tures, c	pen-loo	p / close	d-loop o	peration	s, differe	nt	
Outcomes:		config	guratior	ns toget	ther wi	th Linea	ar appli	cations	and op	eration	of DC Vo	ltage Re	gulators			
	CO2:	Analy	se Acti	ve Filte	rs, Sign	al Gene	erators	using C	p-Amp	s.						
	CO3:	Desig	n variou	us type:	s of Co	mparat	ors & c	onverte	ers usin	g op-am	ps					
	CO4:	Analy	lyse & Design various Signal Processing circuits and A/D and D/A converters.													
	CO5:	Explai	alyse & Design various Signal Processing circuits and A/D and D/A converters. Iain the operation of Phase Locked Loop (PLL) & Timer ICs (555Timer)													
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	2	-	-	-	-	-	-	-	-	-	2	3	-	2	
CO2	2	3	2	-	-	-	-	-	-	-	-	3	2	-	3	
CO3	2	3	2	-	-	-	-	-	-	-	-	3	2	-	2	
CO4	2	3	2	-	-	-	-	-	-	-	-	3	2	-	3	
CO5	3	2	-	-	-	-	-	-	-	-	-	2	3	-	2	

			5	Subjec	t: ELI	ECTRI	C MA	CHIN	E LAB	2-15E	EL47				
Course	CO1:	Demo	nstrate	the sp	eed coi	ntrol of	DC ma	chines							
Outcomes:	CO2:	Deter	mine th	ne perfo	ormanc	e chara	cteristi	cs of do	machi	nes by co	onductin	g suitabl	e tests		
	CO3:	CO3: Analyse the performance of single phase and three phase induction motor													
	CO4:	CO3: Analyse the performance of single phase and three phase induction motor CO4: Test induction motor to pre-determine the performance characteristics.													
	CO5:	Evalua	ate per	forman	ce of s	ynchroi	nous m	otor to	draw tl	he chara	cteristics	s curves.			
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	-	2	2	-	-	-	2	3	2	2	2	2	2

CO2	3	2	-	-	-	-	-	-	2	2	-	2	3	-	2
CO3	2	3	-	-	-	-	-	-	2	2	-	2	2	-	2
CO4	2	3	-	-	-	-	-	-	2	2	-	2	2	-	2
CO5	2	2	-	-	-	-	-	-	2	2	-	2	2	-	2

				Su	bject:	OP-A	MP &	LIC L	AB -1	5EEL48	3					
Course	CO1:	Deter	mine th	ne char	acterist	ics para	ameters	s of op-	amp pr	actically	like Gair	n,Freque	ncy resp	onse,etc		
Outcomes:	CO2:	Desig	n the o	p-amp,	adder,s	ubtract	or,diffe	erentiat	or, & ir:	ntegrato	r and tes	t the per	formanc	e.		
	CO3:	Analy	se Oscillator and filters using op-amp and test its performance n linear IC'S like 555 timer as Multivibrator power supply and test its performance													
	CO4:	Desig	n linear IC'S like 555 timer as Multivibrator power supply and test its performance													
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	2	-	-	-	-	-	-	3	2	2	3	3	-	3	
CO2	2	3	3	-	-	-	-	-	3	3		3	2	-	2	
CO3	2	3	3	2	-	-	-	-	3	2		3	2	-	3	
CO4	2	3	3	-	-	-	-	-	3	3		3	2	-	2	

		Sı	ubject	: MAN	VAGE	MENT	AND	ENTR	EPRE	NEURS	HIP-15	EE51				
Course	CO1:	Identi	fy the f	ield of	manag	ement,	task of	the ma	nager,	planning	; and the	need of	proper s	staff,		
Outcomes:		recrui	tment	and sel	ection	process										
	CO2:	Build	the soc	ial resp	onsibili	ity of bi	usiness	and lea	dershi	C						
	CO3:	Analy	ze the o	concept	ts of en	treprer	neurshi	o and tl	ne role	and imp	ortance	of the er	itreprene	eur in ec	onomic	
		devel	opmen	t												
	CO4:	Explai	in the r	ole and	import	tance o	f Small	Scale Ir	ndustrie	es, busin	ess plan	and its p	resentat	ion		
	CO5:	Evalua	ate concepts of project management, capitol building process, project feasibility study, project													
		appra	isal and	d projec	ct finan	cing. th	e state	/centra	al level	institutio	ons / age	ncies su	pporting	business	5	
		enter	prises													
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	-	-	-	-	-	-	-	-	2	3	-	2	-	-	-	
CO2	-	-	-	-	-	3	-	3	-	-	-	2	-	-	-	
CO3	-	-	-	-	-	2	-	-	-	-	-	3	-	-	-	
CO4	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	
CO5	-	-	-	-	-	-	-	-	3	2	3	2	-	-	3	

		Subject: MICROCONTROLLER -15EE52
Course	CO1:	Discuss the history of the 8051 and features of other 8051 family members and internal
Outcomes:		architecture, addressing modes of 8051
	CO2:	Analyse the use of 8051 assembler, the stack and the flag register, loop, jump and call
		instructions
	CO3:	Develop and analyse 8051C programs for time delay, I/O bit manipulation, logic and arithmetic
		operations, data conversion and data serialization

	CO4: CO5:	Make its inf progr Expla chips and r	e use o terfacin rams. in the and se elays,	f the h ng to R Interfa ensors opto is	ardwa S232 a acing o and in solator	re con and dis f 8051 terface s and r	nection cuss in with re 8031, notors	n of 80 detail eal-wo /8051	51 chip 8051 i rld dev with ex	o, its tim interrup vices suc kternal r	ners, ser ts and v ch as LC nemori	ial data writing i Ds and l es, 8255	commu nterrup keyboar 5 chip to	inication t handle ds, ADC add po	n and er , DAC rts
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	-	-	-	-	-	-	-	2	2	-	2
CO2	2	3	-	-	-	-	-	-	-	-	-	-	2	-	2
CO3	3	3	-	-	-	-	-	-	-	-	-	3	3	-	3
CO4	3	-	-	-	-	-	-	-	-	-	-	2	3	-	2
CO5	3	2	-	-	-	-	-	-	-	-	2	2	3	-	3

				Sub	ject:	POWE	ER ELF	ECTRO	ONICS	-15EE5	53					
Course	CO1:	Expla	in the	diode	charac	teristic	cs and	their e	ffects,	applicat	tions.					
Outcomes:	CO2:	Illusti	rate th	ne swit	ching	charact	teristic	s and g	gate co	ntrol re	quirem	ent of ti	ansisto	r		
	CO3:	Class	ify the	types	of thyr	istor o	peratio	on, gat	e chara	acteristi	cs and a	applicat	ions			
	CO4:	Desig	gn the thyristor controlled Rectifiers													
	CO5:	Analy	gn the thyristor controlled Rectifiers yse the operation of single phase and 3 phase converter and controllers													
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	2	-	-	-	-	-	-	-	-	-	-	3	2	-	2	
CO2	2	-	-	-	-	-	-	-	-	-	-	2	2	-	2	
CO3	2	2	-	-	-	-	-	-	-	-	-	-	2	-	3	
CO4	2	3	3	-	-	-	-	-	-	-	-	-	2	-	2	
CO5	2	3	-	-	-	-	-	-	-	-	-	-	2	-	3	

				Sub	ject: S	SIGNA	ALS AN	ND SY	TEMS	-15EE	54					
Course	CO1:	Classi	fy signa	als, rela	te betw	veen ele	ementa	ry signa	als and	identify ⁻	the prop	erties of	system			
Outcomes:	CO2:	Solve	convol	ution o	peratio	n on co	ntinuo	us and	discrete	e time sig	gnals and	d realize	LTI Syste	m by		
		differ	ential a	nd diffe	erence	Equatic	ons and	demor	strate	them as	block dia	agram re	presenta	ation.		
	CO3:	Explai	n the concept, applications and identify the properties of CT and DT Fourier Transform.													
	CO4:	Analy	in the concept, applications and identify the properties of CT and DT Fourier Transform. rze the concept, applications and identify the properties of Z transform.													
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	2	3	-	-	-	-	-	-	-	-	-	-	2	2	-	
CO2	2	3	-	-	-	-	-	-	-	-	-	-	2	3	-	
CO3	3	3	-	2	2	-	-	-	-	-	-	-	3	3	-	
CO4	2	3	-	-	2	-	-	-	-	-	-	-	2	2	-	

		Subject: INTRODUCTION TO NUCLEAR POWER -15EE551
Course	CO1:	Describe the fission process in nuclear materials, basic components of nuclear reactors, types of nuclear
Outcomes:		reactors and their working.
	CO2:	Classify different types of coolants, their features, and cooling of reactors
	CO3:	Explain loss of cooling accidents in different reactors.
	CO4:	Explain postulated severe accidents in reactors and cooling of reactor during removal of spent fuel.
	•	

	CO5:	Descr future	ibe the e.	metho	ds of co	ooling a	nd disp	osing t	he nucl	ear wast	e and pr	ospect o	f fusion	energy ir	n the
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	-	-	2	-	-	-	-	-	2	-	-
CO2	2	-	-	-	-	-	2	-	-	-	-	-	2	-	-
CO3	2	-	-	-	-	-	2	-	-	-	-	-	2	-	-
CO4	2	-	-	-	-	2	2	-	-	-	-	-	2	-	-
CO5	2	-	-	-	-	2	2	-	-	-	-	-	2	-	-

			S	ubject	Elec	trical l	Engine	ering N	Materia	uls - 15E	EE552				
Course	CO1:	Expla	in elec	trical a	and ele	ectroni	cs mat	erials,	their ir	nportar	ice, clas	sificatio	n and o	peratio	nal
Outcomes:		requi	remen	t											
	CO2:	Expla	in con	ductin	g mate	rials,di	electri	c mate	erials,ir	nsulatin	g mater	ials,mag	gnetic m	aterials	used
		in en	gineeri	ing, the	eir pro	perties	and c	lassific	ation.						
	CO3:	Expla	in the	pheno	menoi	n super	condu	ctivity,	, super	conduc	ting ma	iterials a	and thei	r applica	ation
		in en	gineering.												
	CO4:	Expla	n the plastic and its properties and applications.												
	CO5:	Expla	in mat	erials	used fo	or Opto	electi	ronic d	evices.						
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	2	3	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	2	3	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	2	3	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	2	3	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	2	3	-	-

				Sul	bject:	Estim	ating a	nd Cos	ting -	15EE55	3					
Course	CO1:	Expla	in the	propos	se Estir	mating	and co	osting	and lea	rn term	ns assoc	iated w	ith it - N	larket s	urvey,	
Outcomes:		Estim	hates, p	ourcha	se enq	uiries,	Tende	rs, con	nparati	ve state	ements,	payme	nt of Bill	ls, IE Act	and	
		IE Ru	les.													
	CO2:	Expla	in Dist	ributio	n of Ei	nergy i	n a bui	lding, t	types a	nd wiri	ng meth	nods, ca	bles for	wiring,		
		acces	sories	and Fi	ttings	used, F	uses-1	ypes a	nd neo	cessity.						
	CO3:	Expla	in type	es of se	ervice r	mains a	and pre	eparati	on of e	estimati	on for s	ervice n	nains an	nd what	are	
		powe	ver circuits and preparation of estimation for power wiring cover terms associated with OH transmission and Distributiuon, preparatiion of Estimation													
	CO4:	Disco	over terms associated with OH transmission and Distributiuon, preparatiion of Estimation													
		for Tr	cover terms associated with OH transmission and Distributiuon, preparation of Estimation Transmission and Distribution Lines.													
	CO5:	Expla	in the	functio	ons of v	various	s equip	ments	used i	n a S/S,	drawin	g single	line dia	grams a	nd	
		Estim	ation of	of Mat	erials r	equire	d for a	Subst	ation.							
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	2	-	-	-	-	-	-	-	-	3	2	-	-	2	
CO2	3	2	-	-	-	-	-	-	-	-	3	2	-	-	2	
CO3	3	2	-	-	-	-	-	-	-	-	3	2	-	-	2	
CO4	3	2	-	-	-	-	-	-	-	-	3	2	-	-	2	
CO5	3	2	-	-	-	-	-	-	-	-	3	2	-	-	2	

	Subject: Special Electrical Machines - 15EE554
C01:	Explain the performance and control of stepper motors, and their applications

Course Outcomes:	CO2:	Expla brush	in theo less D	ory of o .C. mo	operati tors.	ion and	d contr	ol of s	witche	d reluct	ance m	otor and	d perma	nent ma	agnet	
	CO3:	Expla	in theo	ory of o	operati	ion and	d contr	ol of p	erman	ent mag	gnet syr	chrono	us moto	ors and		
		Synch	nronou	is reluc	tance	motor										
	CO4:	Expla	lain operation of single phase special machines and servo motors. Jain operation of linear electrical machine and permanent magnet axial flux machines													
	CO5:	Expla	blain operation of linear electrical machine and permanent magnet axial flux machines													
Mapping	PO1	PO2	in operation of linear electrical machine and permanent magnet axial flux machinesPO3PO4PO5PO6PO7PO8PO9PO10PO11PO12PSO1PSO2PSO3													
CO1	3	3	-	-	-	-	-	-	-	-	-	1	2	-	-	
CO2	3	3	-	-	-	-	-	-	-	-	-	1	2	-	-	
CO3	3	3	-	-	-	-	-	-	-	-	-	1	2	-	-	
CO4	3	3	-	-	-	-	-	-	-	-	-	1	2	-	-	
CO5	3	3	-	-	-	-	-	-	-	-	-	1	2	-	-	

			Su	bject:	Electi	ronic C	lommu	nicatio	on syste	ems - 15	5EE561					
Course	CO1:	Expla	in com	munic	ation s	system	s and i	ts tern	ninolog	gies & ex	kplain n	oise, co	mputati	on of no	oise	
Outcomes:		level	in com	munic	ation s	system	s and a	also de	scribe	the the	ory of a	mplitud	e modu	lation		
		techr	niques													
	CO2:	Descr	ribe th	e theo	ry of a	ingle, p	oulse a	nd digi	tal mo	dulatior	n techni	ques				
	CO3:	Expla	in prin	ciples	of radi	o com	munica	ation, t	ransm	itters ar	nd recei	vers &	underst	and the	basic	
		of TV	syster	n and	proces	sing of	trans	missio	n and r	eceptio	n					
	CO4:	Expla	ain basic principles of radar systems and also multiplexing of broadband communication ems.													
		syste	ems.													
	CO5:	Expla	ems. ain basics of fiber optic technology and also understand information theory, coding and													
		data	comm	unicati	on									-		
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-	
CO2	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-	
CO3	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-	
CO4	3	3	-	-	-	-	-	-	-	-	-	-	2	-	-	
CO5	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-	

			S	ubject	: Prog	gramm	able Lo	ogic co	ontrolle	ers - 15E	EE562					
Course	CO1:	Discu	ss hist	ory of	PLC, its	s seque	ence of	fopera	ition, a	dvanta	ges and	disadva	ntages,	main pa	arts	
Outcomes:		and t	heir fu	nction	S											
	CO2:	Desci	ribe th	e hard	ware c	ompor	nents o	of PLC:	I/O mo	dules, (CPU, me	emory d	evices,	other su	pport	
		devic	es,ope	rating	mode	s and P	LC pro	gramn	ning.							
	CO3:	Desci	ribe fie	ld dev	ices Re	lays, C	ontact	ors, M	otor St	tarters,	Switche	s, Senso	ors, Out	put Con	trol	
		Devic	vices,Seal-In Circuits, and Latching Relays commonly used with I/O module. Invert relay schematics and narrative descriptions into PLC ladder logic programs and													
	CO4:	Conv	nvert relay schematics and narrative descriptions into PLC ladder logic programs and													
		analy	nvert relay schematics and narrative descriptions into PLC ladder logic programs and alyze PLC timer and counter ladder logic programs													
	CO5:	Desci	ribe th	e oper	ation c	of diffe	rent pr	ogram	contro	ol instru	ictions a	and the	executio	on of da	ta	
		trans	fer ins	tructio	ns, dat	a com	pare ir	struct	ions ar	nd the b	asic ope	eration o	of PLC c	osed-lo	ор	
		contr	ol syst	em.												
	CO6	Desci	ribe th	e oper	ation c	of mech	nanical	seque	ncers,	bit and	word sl	nift regi	sters, pr	ocesses	and	
		struc	ture of	trol sy	/stems	and co	ommur	nicatio	n betw	een the	proces	ses.				
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	2	-	-	-	-	-	-	-	-	-	-		3	-	-	

CO2	3	2	-	-	-	-	-	-	-	-	-		3	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	2	3	-	-
CO4	3	2	3	-	-	-	-	-	-	-	-	3	3	-	-
CO5	3	-	3	-	-	-	-	-	-	-	-	3	3	-	-
CO6	3	2	-	-	-	-	-	-	-	-	-	2	3	-	-

			Sul	oject:	RENE	WAB	LE EN	ERGY	SYST	TEMS-1	5EE563	6				
Course	CO1:	Expla	in the	perfor	mance	and co	ontrol	of step	per m	otors, a	nd their	applica	tions			
Outcomes:	CO2:	Expla	in theo	ory of o	operat	ion and	d contr	ol of s	witche	d reluct	ance m	otor and	d perma	nent ma	agnet	
		brush	nless D	.C. mo	tors.											
	CO3:	Expla	in theo	ory of o	operat	ion and	d contr	ol of p	erman	ent mag	gnet syr	nchrono	us moto	ors and		
		Syncł	nronou	ıs reluc	tance	motor										
	CO4:	Expla	ain operation of single phase special machines and servo motors. ain operation of linear electrical machine and permanent magnet axial flux machines.													
	CO5:	Expla	lain operation of linear electrical machine and permanent magnet axial flux machines													
	CO6		plain operation of linear electrical machine and permanent magnet axial flux machines													
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	2	-	-	-	-	2	3	-	-	-	-	2	2	-	3	
CO2	2	-	-	-	-	2	3	-	-	-	-	2	2	-	3	
CO3	2	2	-	-	-	2	3	-	-	-	-	2	2	-	2	
CO4	2	2	-	-	-	2	3	-	-	-	-	2	2	-	2	
CO5	2	-	-	-	-	2	3	-	-	-	-	2	2	-	2	
CO6	2	-	-	-	-	2	3	-	-	-	-	2	2	-	2	

				Sub	ject: 1	Busine	ss Con	nmunic	ation -	15EE5	64					
Course	CO1:	Apply	/ busin	ess co	mmun	ication	strate	gies ar	nd prin	ciples to	o prepai	re effect	tive com	nmunica	tion	
Outcomes:		for d	omesti	c and i	nterna	tional	busine	ess situ	ations							
	CO2:	Utiliz	e anal	tical a	nd pro	blem s	solving	skills a	approp	riate to	busines	ss comm	nunicati	on.		
	CO3:	Parti	cipate	in tean	n activ	ities th	at lead	to the	e deve	lopment	t of colla	aborativ	ve work	skills.		
	CO4:	Selec	t appr	opriate	e orgar	nizatior	nal forr	nats ai	nd cha	nnels us	ed in de	evelopir	ng and p	resentii	ng	
		busin	iess me	essage	s.										C	
	CO5:	Com	npose and revise accurate business documents using computer technology.													
	CO6	Com	npose and revise accurate business documents using computer technology. nmunicate via electronic mail, Internet, and other technologies and deliver an effective oral													
		busin	less pr	esenta	tion.						C					
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	-	-	-	-	-	-	-	-	3	2	2	-	-	-	
CO2	3	2	-	2	-	-	-	-	-	3	2	2	-	-	-	
CO3	-	-	-	-	-	-	-	2	3	-	-	2	-	-	-	
CO4	3	2	-	-	-	-	-	-	-	2	-	3	-	-	-	
CO5	3	-	-	-	3	-	-	-	-	-	-	3	-	-	-	
CO6	-	-	-	-	-	-	-	-	-	3	-	3	-	-	-	

				Subje	et: Ml	CROC	ONTE	ROLLE	R LA	B -15EE	EL57				
Course	CO1:	Build	assemb	ly lang	uage pr	ograms	s for da	ta trans	sfer, ari	thmetic,	Boolear	and log	ical instr	uctions a	and
Outcomes:		code	convers	sions.											
	CO2:	Apply	ALP su	broutin	es for g	generat	ion of c	lelays,	counter	rs, config	guration	of SFRs f	or serial		
		comm	nunicati	ion and	timers										
	CO3:	Demo	onstrate interfacing of LCD, stepper motor and dc motor for controlling the speed.												
	CO4:	Devel	elop different waveforms using DAC interface.												
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	-	3	-	-	-	3	3	2	-	3	3	2
CO2	3	3	2	-	3	-	-	-	3	3	2	-	3	3	2
CO3	3	3	2	-	3	-	-	-	2	3	2	-	3	2	2
CO4	3	3	2	-	3	-	-	-	3	3	2	-	3	3	2

				Subjec	t: PO	WER I	ELECI	roni	CS LA	B-15El	EL58				
Course	CO1:	Discu	iss the j	perform	nance c	of variou	us semi	conduc	tor dev	ices with	n the hel	p of thei	r static c	haracteri	istics.
Outcomes:	CO2:	Const	ruct th	e Trigge	er circui	t for SC	R by di	fferent	metho	ds.					
	CO3:	Demo	nstrate	e the sir	ngle ph	ase con	trolled	full way	ve recti	fier and	AC volt	tage cont	troller w	ith R and	RL
		loads.		istrate the single phase controlled full wave rectiner and AC – voltage controller with R and RL											
	CO4:	Illustr	ate the	speed	contro	of dc n	notor, ı	universa	al moto	r and ste	epper mo	otors.			
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	-	-	-	-	-	-	2	3	-	2	2	-	3
CO2	2	2	-	-	-	-	-	-	3	3	-	3	2	-	3
CO3	2	2	-	-	-	-	-	-	2	3	-	2	2	-	3
CO4	3	3	-	2	-	-	-	-	2	3	2	2	3	-	3

				Su	bject:	CON	TROL	SYST	EMS -	15EE61	l					
Course	CO1:	Expla	in the	necess	ity of f	feedba	ck and	types	of feed	dback co	ontrol sy	ystems a	and to l	Evaluate	e the	
Outcomes:		trans	fer fun	ction o	of a lin	ear tim	ne inva	riant s	ystem.	(Electri	cal , me	chanica	l system	n,servon	notors	
	~ ~ ~	and g	gear tra	ains)												
	CO2:	Apply	/ block	diagra	im mai	nipulat	ion an	d signa	al flow	graph n	nethods	to obta	in trans	fer fund	tion	
		of sys	stems.													
	CO3:	Desci	ribe th	be the Standard test signals, time response of first and second order of simple control s. steady state errors and error constants												
		syste	ms, ste	be the Standard test signals, time response of first and second order of simple control ns, steady state errors and error constants.												
	CO4:	Evalu	ate the	is, steady state errors and error constants. te the stability of linear time invariant systems by using Routh - Hurwitz criterion & to												
		analy	ze the	stabil	, ity usir	ng Roo	t locus	, Bode	, plots a	, and Nyg	uist plo	ts				
	CO5:	, Desig	n of Pl	D, PI &	, PID co	ntrolle	rs.	,	•	, ,	•					
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	3	-	-	2	-	-	-	-	-	-	2	3	2	-	
CO2	3	-	-	-	-	-	-	-	-	-	-	2	3	-	-	
CO3	2	3	-	-	-	-	-	-	-	-	-	-	2	-	-	
CO4	3	3	2	-	3	-	-	-	-	-	-	2	3	3	-	
CO5	2	2	3	-	-	-	-	-	-	-	-	2	2	-	-	

	Subject: POWER SYSTEM ANALYSIS 1- 15EE62
CO1:	Illustrate a single line diagram of the power system in per unit.

Course	CO2:	Ident	ify and	l analy	se diff	erent t	ypes o	f faults	in pov	wer syst	em.					
Outcomes:	CO3:	Exam	ine un	balanc	ed pha	asors ir	nto syn	nmetri	cal cor	nponen	ts for fa	ult anal	ysis of p	ower sy	vstem.	
	CO4:	Evalu	uate power system stability using graphical method by identifying the concept of power													
		syste	tem stability.													
Mapping	PO1	PO2	m stability. PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PSO1 PSO2 PSO3													
CO1	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-	
CO2	3	3	-	-	-	-	-	-	-	-	-	-	2	-	-	
CO3	2	3	-	2	-	-	-	-	-	-	-	1	2	-	-	
CO4	2	3	-	2	-	-	-	-	-	-	-	1	3	2	-	

			S	ubject	: DIG	ITAL S	SIGNA	L PRO	OCESS	SING -1	5EE63				
Course	CO1:	Class	ify the	DFT of	fvario	us sign	als usir	ng its p	ropert	ies and	by its d	ifferent	method	ls.	
Outcomes:	CO2:	Apply	/ fast a	and eff	icient	algorit	hms to	comp	ute DF	T and ID	OFT of a	given so	equence	2.	
	CO3:	Make	e use o	f Impu	lse inv	ariant	techni	que an	d Bilin	ear tran	sformat	tion to c	lesign a	nalog III	र
		filter	s and t	the dig	gital IIF	₹.									
	CO4:	Utilis	e window techniques and frequency sampling technique to design FIR filters.												
	CO5:	Analy	se window techniques and frequency sampling technique to design FIR filters. lyze the IIR , FIR & Linear phase FIR filters by direct form-1, direct form –II,Cascade and												
		Paral	lel rea	lizatior	ıs,				-						
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	-	-	-	-	-	-	-	-	-	-	2	-	-
CO2	3	2	2	-	-	-	-	-	-	-	-	-	3	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	3	-	2
CO4	3	2	-	-	-	-	-	-	-	-	-	-	3	-	2
CO5	2	3	2	-	-	-	-	-	-	-	-	-	2	-	2

			Su	bject:	ELEC	CTRIC	AL M	ACHIN	JE DE	SIGN -1	5EE64				
Course	CO1:	Judge	e and s	elect t	he eng	ineerin	ng mat	erials f	or the	constru	iction of	felectri	cal macl	nines	
Outcomes:	CO2:	Estim	ate th	e dime	ensions	ofdc	machir	ne arm	ature	with the	help of	output	equation	on and	
		relati	onship	betwo	een va	rious p	arame	ters.							
	CO3:	deter	mine t	the din	nensio	ns of fi	eld an	d comr	nutato	or					
	CO4:	Estim	ate th	e dime	ensions	oftra	nsform	ner wit	h the h	elp of o	utput e	quation	and rel	ationsh	ip
		betw	veen various parameters. rmine the dimensions of ac machine with the help of output equation and relationship												
	CO5:	Dete	veen various parameters. Irmine the dimensions of ac machine with the help of output equation and relationship Veen various parameters.												
		betw	ermine the dimensions of ac machine with the help of output equation and relationship veen various parameters.												
	CO6	Desig	rmine the dimensions of ac machine with the help of output equation and relationship een various parameters. In the field of synchronous machines define scr ,effect of scr and then estimate the air												
		gap le	ength		-										
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	-	-	-	-	-	-	-	-	-	2	2	-	3
CO2	2	2	3	-	-	-	-	-	-	-	-	-	2	-	3
CO3	2	2	3	-	-	-	-	-	-	-	-	-	2	-	3
CO4	2	2	3	-	-	-	-	-	-	-	-	-	2	-	3
CO5	2	2	3	2	-	-	-	-	-	-	-	-	2	-	3
CO6	2	2	3	2	-	-	-	-	-	-	-	2	2	-	3

		Sub	oject:	COM	PUTEF	R AIDE	ED ELI	ECTRI	CAL I	ORAWI	NG- 15	EE651			
Course	CO1:	Make	Use of	f Auto C	CAD cor	nmand	s to dra	w the o	compor	ents of s	substatic	on like CT	, PT, SA,	CB, Isola	tor
Outcomes:		etc													
	CO2:	Devel	op the	model o	of diffe	rent typ	bes of D	C and A	AC mac	hine win	dings us	ing Auto	CAD sof	tware.	
	CO3:	Mode	l the va	arious p	arts an	d their	differei	nt view:	s of trai	nsforme	r using A	uto CAD			
	CO4:	Build	the Mo	del of v	various	parts a	nd thei	r differe	ent viev	vs of DC	& AC ma	ichine us	ing Auto	CAD.	
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	3	-	I	-	I	-	-	-	3	3	-
CO2	2	3	2	-	3	-	I	-	I	-	-	-	2	3	-
CO3	2	3	2	-	3	-	I	-	I	-	-	-	2	3	-
CO4	3	3	2	-	3	-	-	-	-	-	-	-	3	3	-

			Subj	ect: A	DVA	NCED	POWI	ER EL	ECTR	ONICS-	15EE65	52			
Course	CO1:	Expla	in the	types	of swit	ching r	node r	egulat	ors and	d also di	iscuss th	ne techr	niques fo	or desig	n and
Outcomes:		analy	sis of [DC DC	conver	ter.									
	CO2:	Evalu	ate the	e perfo	ormano	ce para	meter	s of res	sonant	inverte	r and al	so expla	ain the t	echniqu	les for
		ZVS a	ind ZCS	5											
	CO3:	Class	ify the	y the types of multi-level inverter and also discuss the techniques for design and analysis											
		of mu	fy the types of multi-level inverter and also discuss the techniques for design and analysis Ilti-level inverter.												
	CO4:	Class	ify type	es of p	ower s	upplie	s base	d on to	pologi	es, opei	ration a	nd analy	/sis .		
	CO5:	Desci	ribe re	sidenti	al, Ind	ustrial	and el	ectrica	l utility	/ applica	ations o	f power	electro	nic devi	ces.
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	-	-	-	-	-	-	-	-	-	-	2	-	2
CO2	2	3	-	-	-	-	-	-	-	-	-	-	2	-	3
CO3	2	3	-	-	-	-	-	-	-	-	-	-	2	-	2
CO4	2	3	-	-	-	-	-	-	-	-	-	-	2	-	2
CO5	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2

		S	ubject	t: Ene	rgy Au	ıdit and	d Dema	and sid	le Man	agemen	t - 15EB	E653			
Course	CO1:	Unde	rstand	the ne	eed of	energy	/ audit	and er	nergy a	udit me	thodol	ogy.			
Outcomes:	CO2:	Expla	ain auc	lit para	ameter	s and v	workin	g prino	ciples o	of measu	uring ins	strumen	ts used	to meas	sure
		the p	arame	ters.											
	CO3:	Cond	uct en	ergy a	udit of	boilers	s, furna	aces, p	ower p	lant, ste	eam dis	tributio	n systen	n and	
		comp	oressed	l air sy	stems.										
	CO4:	Cond	uct energy audit HVAC systems, motors, pumps, blowers and cooling towers.												
	CO5:	Expla	uct energy audit HVAC systems, motors, pumps, blowers and cooling towers. in load management techniques, effects of harmonics, electricity tariff, improvement of												
		powe	ain load management techniques, effects of harmonics, electricity tariff, improvement of er factor and losses in transmission.												
	CO6	Cond	uct en	ergy a	udit of	lightin	g syste	ems an	d build	lings and	d Show	an unde	erstandi	ng of de	emand
		side ı	manag	ement	and ei	nergy o	conserv	vation.		-				-	
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	-	-	-	-	-	-	-	-	3	-	2	-	-
CO2	3	2	-	-	-	-	-	-	-	-	3	-	2	-	-
CO3	3	-	-	-	-	-	-	-	-	-	3	-	2	-	-
CO4	3	-	-	3	-	-	-	-	-	-	3	-	2	-	-
CO5	3	2	-	3	-	-	-	-	-	-	3	-	2	-	-

CO6	3	2	-	3	-	-	3	-	-	-	-	-	2	-	-

				Sul	oject:	Solar a	and Wi	ind En	ergy -	15EE65	4					
Course	CO1:	Discu	ss the	impor	tance o	of ener	gy in h	uman	life, re	lationsh	ip amoi	ng econ	omy an	d		
Outcomes:		envir	onmer	nt with	energ	y use a	nd the	increa	sing ro	ole of re	newabl	e energ	у.			
	CO2:	Expla	in the	conce	ot of e	nergy s	torage	, the p	rincipl	es of en	ergy sto	orage de	evices ai	nd solar		
		radia	tion or	horiz	ontal a	nd tilte	ed surf	ace, its	s chara	cteristi	cs, meas	uremer	nt and a	nalysis o	of	
		radia	tion da	ita.												
	CO3:	Desci	ribe the	e proce	ess of I	narnes	sing so	lar ene	ergy an	d its ap	plicatio	ns in he	ating an	d coolin	g.	
	CO4:	Discu	ss fabrication, operation of solar cell, electrical characteristics, sizing and design of solar stems and their applications.													
		PV sy	iss fabrication, operation of solar cen, electrical characteristics, sizing and design of solar estems and their applications.													
	CO5:	Expla	ystems and their applications. ain basic Principles of Wind Energy Conversion, collection of wind data, energy estimation													
		and s	ite sele	ection.	-											
	CO6	Discu	ss the	perfor	mance	of Wi	nd-ma	chines	energ	y storag	ge, appli	cations	of Wind	d Energy	and	
		envir	onmer	Ital asp	oects.				-							
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	-	2	-	-	-	2	3	-	-	-	-	-	3	-	-	
CO2	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-	
CO3	3	2	-	-	-	3	3	-	-	-	-	-	3	-	-	
CO4	3	2	-	-	-	3	3	-	-	-	-	-	3	-	-	
CO5	3	3	-	-	-	3	3	-	-	-	-	-	3	-	-	
CO6	3	2	-	-	-	-	3	-	-	-	-	-	3	-	-	

			Subjec	et: Art	ificial	Neural	l Netw	orks ar	nd Fuzz	zy logic	- 15EE	661				
Course	CO1:	Expla	in Org	anizati	on of t	he Bra	in, Bio	logical	and A	rtificial I	Neuron	Models				
Outcomes:	CO2:	Expla	in Bac	k prop	agatio	n netw	/ork ar	chitect	ure, P	erceptro	on Mod	el, Singl	e layer,	Artificia	I	
		Neur	al Netv	vork, N	/lodel	for Mu	Itilaye	r Perce	ptron,	Back pr	opagat	ion Lear	ning,			
	CO3:	Expla	in Bacl	k propa	agatio	n traini	ng and	l sumn	hary of	Back pr	opagat	ion Algo	orithm, E	Bidirecti	onal	
		Asso	ciative	iative Memory (BAM) Architecture n adaptive resonance theory architecture and its applications, Defuzzification methods.												
	CO4:	Expla	in ada	iative Memory (BAM) Architecture n adaptive resonance theory architecture and its applications, Defuzzification methods.												
	CO5:	Diffe	in adaptive resonance theory architecture and its applications, Defuzzification methods. rentiate between crisp logic, predicate logic and fuzzy logic.													
	CO6	Expla	in fuzz	y rule	based	system	1		-	-	_					
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO2	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO4	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO5	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO6	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	

		Subject: SENSORS AND TRANSDUCERS-15EE662
Course	CO1:	Explain need of transducers and sensors, their classification, advantages and disadvantages
Outcomes:		and their working.
	CO2:	Analyse the recent trends in sensor technologies and their selection.
	CO3:	Discuss the basics of signal conditioning, signal conditioning equipment, configuration of Data
		Acquisition System and data conversion

	CO4: CO5:	Desci Expla force	ribe da in the , torqu	ta trar measu ie, pov	nsmissi Iremer ver and	on and it of no d visco:	l telem on-elec sity	etry trical c	quantit	ies- Pre	ssure, to	empera	ture, flo	w, spee	d <i>,</i>
Mapping	PO1	PO2	PO3	3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PS01 PS02 PS03 - - - - - - - - 2											
CO1	3	-	-	<u> </u>											
CO2	2	3	-		-	-	-	-	-	-	-	-	3	-	2
CO3	2	3	-		-	-	-	-	-	-	-	-	3	-	2
CO4	2	3	-		-	-	-	-	-	-	-	-	2	-	2
CO5	2	-	-		-	-	-	-	-	-	-	-	3	-	2

S	Subject:	Batte	ries an	d Fuel	Cells	for Co	mmerc	ial, Mi	litary a	and Space	ce Appl	ications	- 15EE	663	
Course	CO1:	Discu	iss the	currer	it statu	is, the	perfor	mance	capab	ilities a	nd limita	ations o	f rechar	geable	
Outcomes:		batte	ries ar	nd fuel	cells fo	or vario	ous ap	plicatio	ons.						
	CO2:	To di	scuss t	he per	forma	nce rec	quirem	ents fo	or next	-genera	tion hig	h-powe	r rechai	rgeable	
		lithiu	m-bas	ed bati	teries a	and sea	aled ni	ckel-ca	Idmiun	n and le	ad-acid	batterie	es.		
	CO3:	Discu	iss fuel	l cells t	hat are	e best s	suited	for app	olicatio	ns whe	re elect	rical pov	wer req	uiremer	nts
		vary	betwe	en seve	eral kil	owatts	(kW) 1	to a fev	w meg	awatts (MW)				
	CO4:	Desci	ribe th	e high-	power	batte	ries cu	rrently	used l	oy EVs a	nd HEV	s and va	arious n	ext-	
		gene	ration	rechar	geable	batte	ries be	st suite	ed for a	all-elect	ric cars,	EVs, an	d HEVs.		
	CO5:	Discu	iss low	-powe	r batte	ry con	figurat	ions th	nat are	best su	ited for	compac	ct comm	nercial,	
		indus	trial, and medical applications.												
	CO6	Expla	in the	design	aspec	ts and	perfor	mance	chara	cteristic	s of mic	ro- and	nano-b	atteries	best
		suite	d for d	etectio	on, sen	sing, a	nd mo	nitorin	g devi	ces.					
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	3	-	-	-	-	-	-	2	-	3	-	-
CO2	3	-	-	3	-	-	-	-	-	-	2	-	3	-	-
CO3	3	-	-	3	-	-	-	-	-	-	-	-	3	-	-
CO4	3	-	-	-	-	-	-	-	-	-	-	-	3	3	-
CO5	3	-	-	3	-	-	-	-	-	-	-	-	3	-	-
CO6	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-

			S	ubject	: Indu	strial S	Servo (Control	System	ms - 151	EE664				
Course	CO1:	Expla	in the	evolut	ion and	d classi	ificatio	n of se	rvos, v	vith des	cription	s of ser	vo drive	actuato	ors,
Outcomes:		ampl	ifiers,f	eedba	ck tran	sducer	s, perf	orman	ce, and	d troubl	eshooti	ng tech	niques.		
	CO2:	Expla	in syst	em an	alogs a	nd veo	tors a	nd the	conce	ot of tra	nsfer fu	nctions	for the		
	CO3.	Evolo	in mot	lon ol homot	ical og		quatio c for o	115 Ioctric	60 M 0	motors	hoth D	Candb	uchlocc	DC con	10
	005.	moto	in mat rs.	nemat	ical eq	uation	5101 8	lectric	Servor	notors,	DOLITID		usiliess	DC Serv	0
	CO4:	Repre	esent s	sent servo drive components by their transfer function, to combine the servo drive											
		build	ing blocks into system block diagrams.												
	CO5:	Detei	rmine t	he fre	quency	y respo	onse te	chniqu	les for	proper	servo co	ompens	ation.		
	CO6	Expla	in perf	orm in	dices a	and pe	rforma	nce cr	iteria f	or serve	o system	ns and t	he mech	nanical	
		consi	deratio	ons of	servo s	system	s.								
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-
CO2	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-
CO3	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-

CO4	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-
CO6	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-

				Subje	ect: C	ONTR	OL SY	STEM	IS LAI	B-15EE	L67				
Course	CO1:	Expla	in the	perfor	mance	and co	ontrol	of step	per m	otors, a	nd their	applica	tions		
Outcomes:	CO2:	Expla	in theo	ory of o	operat	ion and	d contr	ol of s	witche	d reluct	ance m	otor and	d perma	nent ma	agnet
		brush	nless D	.C. mo	tors.										
	CO3:	Expla	in theo	ory of o	operati	ion and	d contr	ol of p	erman	ent mag	gnet syr	ichrono	us moto	ors and	
		Synch	nronou	is reluc	tance	motor									
	CO4:	Expla	in ope	ration	of sing	le pha	se spe	cial ma	chines	and se	rvo mot	ors.			
	CO5:	Expla	ain operation of linear electrical machine and permanent magnet axial flux machines												
	CO6														
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	3	-	-	-	3	2	-	2	3	3	-
CO2	3	3	3	-	-	-	-	-	3	2	-	2	3	-	-
CO3	3	2	-	-	-	-	-	-	3	2	-	2	3	-	-
CO4	3	2	-	-	3	-	-	-	3	2	-	2	3	3	2
CO5	3	3	3	-	3	-	-	-	3	2	2	2	3	3	-

			Subj	ect: D	IGITA	L SIG	NAL P	ROCE	ESSING	G LAB-	15EEL	68			
Course	CO1:	Inter	pret th	e sam	oling th	neoren	n in tim	ne dom	nain						
Outcomes:	CO2:	Evalu	iate an	d prov	ide the	e soluti	on of i	mpuls	e respo	nse ,ste	ep respo	onse, ste	eady res	ponse,	steady
		state	respo	nse an	d arbit	rary i/p	o of a g	iven d	ifferen	ce equa	tion				
	CO3:	Make	e use o	f convo	olution	ofag	iven se	quenc	e to ev	aluate t	the resp	onse of	a syste	m.	
	CO4:	Build	DFT &	IDFT o	f a give	en sequ	uence	using b	asic de	efinition	and / c	or Fast n	nethods		
	CO5:	Desig	ign and implementation of IIR & FIR filters												
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	-	-	3	-	-	-	2	2	-	2	-	-	-
CO2	2	3	2	2	2	-	-	-	2	2	-	-	-	2	-
CO3	2	3	-	-	3	-	-	-	2	2	-	2	-	3	-
CO4	2	3	2	-	3	-	-	-	2	2	-	2	-	3	-
CO5	2	3	2	-	3	-	-	-	2	2	3	-	-	3	-

			S	ubject	POV	VER S	YSTE	M AN	ALYS	IS-2 -15	EE71				
Course	CO1:	Form	ulate r	networ	k matr	ices ar	nd moc	lels for	· solvin	g load f	low pro	blems.			
Outcomes:	CO2:	Evalu	ate th	e stead	ly state	e powe	er flow	analys	is of p	ower sy	stems u	sing nui	merical	iterative	ġ
		techr	niques	and su	ggest a	a meth	od to d	contro	l voltag	ge profil	e.				
	CO3:	Solve	optim	al ope	ration	of gen	erators	s on a	bus ba	r, optim	al unit d	commit	nent, re	liability	
		consi	siderations and optimum generation scheduling.												
	CO4:	Discu	siderations and optimum generation scheduling. uss optimal scheduling for hydro-thermal system, power system security and reliability.												
	CO5:	Analy	vse sho	rt circ	uit faul	ts in p	ower s	ystem	netwo	rks usin	g bus in	npedan	ce matri	ix.	
	CO6	Detei	rmine	nume	rical so	lution	of swir	ng equ	ation f	or multi	i-machiı	ne stabi	lity.		
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	-	-	-	-	-	-	-	-	-	-	2	-	-
CO2	3	3	-	-	-	-	-	-	-	-	-	-	2	-	2

CO3	3	3	-	-	-	-	-	-	-	-	-	2	2	-	-
CO4	3	3	-	-	-	-	-	-	-	-	-	2	2	-	-
CO5	2	3	-	-	-	-	-	-	-	-	-	2	3	-	2
CO6	3	3	2	-	-	-	-	-	-	-	-	-	3	-	2

			S	ubject	: POW	ER S	YSTEN	A PRC	TECT	ION -15	5EE72				
Course	CO1:	List tl	ne com	poner	nts of p	rotect	ion sch	nemes,	relay t	termino	logies a	nd class	ificatior	n and	
Outcomes:		perfo	rmanc	e of pr	otectiv	ve rela	ys.		•		C				
	CO2:	Com	bare th	e char	acteris	tics, va	arious s	schem	es and	differer	nt forms	of over	current	protect	ion.
	CO3:	Analy	se the	worki	ng of d	listance	e relav	s and t	he list	out the	effects	of arc r	esistanc	e. powe	er
		swing	s. line	length	and s	ource i	mpeda	ance o	n perfc	ormance	of dist	ance rel	avs.	-, 1	
	CO4:	Class	ifv the	nilot n	rotect	ion sch	iemes.	discus	s the c	onstruc	tion or	erating	principl	les and	
	0011	perfo	rmanc	e of di	fferen	tial rela	avs and	1 prote	ction o	of gener	ators t	ransforr	ners and	d bus zo	ne
	CO5.	Sumr	narize	the nri	incinle	of curi	rent in	terrun	tion in	differer	nt types	of circu	it break	ers	iie.
	CO6	Fynla	in the	arize the principle of current interruption in different types of circuit breakers. In the construction and operating principle of different types of fuses, protection against											
	000	over	in the	n the construction and operating principle of different types of fuses, protection against											
Manning	PO1	PO2	PO12			PO6		POS	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
	2	102	105	104	105	200	107	100	107	1010	1011	1012	1501	1502	1505
01	3	-	-	-	-	Z	-	-	-	-	-	-	Z	-	-
CO2	2	2	-	-	-	2	-	-	-	-	-	2	2	-	-
CO3	3	3	-	-	-	2	-	-	-	-	-	-	2	-	-
CO4	3	-	-	-	-	2	-	-	-	-	-	2	2	-	-
CO5	2	-	-	-	-	2	-	-	-	-	-	-	2	-	-
CO6	2	-	-	-	-	2	-	-	-	-	-	2	2	-	-

			S	ubject	: HIG	H VOI	LTAGE	E ENG	INEEF	RING-1	5EE73				
Course	CO1:	Expla	in brea	akdow	n pher	omeno	on in se	olid die	electric	cs.					
Outcomes:	CO2:	Discu	iss the	genera	ation o	f high	voltage	es and	curren	its.					
	CO3:	Analy	/ze me	asuren	nent te	echniqu	ues for	high v	oltage	s and cu	irrents				
	CO4:	Analy	/ze ove	ervolta	ge phe	nomer	non an	d insul	ation o	coordina	ition in	electric	power s	systems	
	CO5:	Analy	/ze nor	n-destr	uctive	testing	g of ma	aterials	and e	lectric a	pparatu	us and h	igh-volt	age test	ing of
		elect	ctric apparatus												
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	2	3	-	2
CO2	-	2	-	-	-	-	-	-	-	-	-	2	-	-	3
CO3	2	3	-	-	-	-	-	-	-	-	-	-	2	-	3
CO4	2	3	-	-	-	-	-	-	-	-	-	-	2	-	3
CO5	2	3	-	-	-	-	-	-	-	-	-	3	2	-	3

		Subject: Advanced Control Systems - 15EE741
Course	CO1:	Discuss state variable approach for linear time invariant systems in both the continuous and
Outcomes:		discrete time systems.
	CO2:	Develop of state models for linear continuous – time and discrete – time systems.
	CO3:	Apply vector and matrix algebra to find the solution of state equations for linear continuous –
		time and discrete – time systems.
	CO4:	Define controllability and observability of a system and test for controllability and observability of a given system.

	CO5:	Desig	n pole	assign	ment	and sta	ate obs	erver	using s	tate fee	dback.					
	CO6	Deve	lop the	e descr	ibing f	unctio	n f <mark>or</mark> th	ne non	lineari	ty prese	nt to as	sess the	e stabilit	y of the		
		syste	m and Lyapunov function for the stability analysis of nonlinear systems.													
Mapping	PO1	PO2	PO3	O3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PSO1 PSO2 PSO3												
CO1	3	3	-	D3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PS01 PS02 PS03 - - - - - - - 3 - -												
CO2	3	3	3	-	-	-	-	-	-	-	-	-	3	-	-	
CO3	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-	
CO4	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-	
CO5	3	3	3	3	-	-	-	-	-	-	-	-	3	-	-	
CO6	3	3	3	3	-	-	-	-	-	-	-	-	3	-	-	

			Subjec	et: UT	ILIZA	TION	OF EI	LECTR	ICAL	POWE	R-15EE	742				
Course	CO1:	Iden	tify a h	eating	/ weld	ing sch	neme f	or a giv	/en apj	olicatior	n and ab	ole to ur	nderstar	nd		
Outcomes:		Fund	ament	al prin	ciples,	extrac	tion, re	efining	of me	tals and	electro	plating	applicat	ion		
	CO2:	Analy	vse lan	nps an	d fittin	igs in u	se and	desig	n for a	pplicati	on					
	CO3:	Expla	in the	differ	ent sch	nemes	of trac	tion sc	hemes	and its	main co	ompone	ents and	will be	able	
		to de	sign a	suitabl	e sche	me of	speed	contro	l for th	ne tracti	on syste	ems				
	CO4:	Expla	in the	n the various braking operation for different types of drives and discuss about the												
		Tram	in the various braking operation for different types of drives and discuss about the ways and Trolley.													
	CO5:	Analy	vze abo	out the	Perfo	rmance	e, conc	ept an	d arch	itecture	of diffe	erent Ele	ectric Ve	hicles.		
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	3	2	-	-	-	-	-	-	-	-	-	3	-	-	
CO2	3	3	2	3	-	-	-	-	-	-	-	-	3	-	-	
CO3	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-	
CO4	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-	
CO5	2	-	-	-	-	-	-	-	-	-	-	3	3	-	-	

				Subje	ect: Ca	arbon (Capture	e and S	torage	- 15EE	743						
Course	CO1:	Discu	ss the	impac	ts of cl	imate	change	and t	he mea	asures tl	hat can	be take	n to red	luce			
Outcomes:		emiss	sions.														
	CO2:	Discu	ss cark	oon ca	pture a	and car	bon st	orage.									
	CO3:	Expla	in the	fundar	nental	s of po	wer ge	enerati	on.								
	CO4:	Expla	in met	hods c	of carb	on cap	ture fr	om po	wer ge	neratio	n and in	dustrial	proces	ses.			
	CO5:	Expla	in diffe	different carbon storage methods: storage in coal seams, depleted gas reservoirs and formations.													
		saline	ain different carbon storage methods: storage in coal seams, depleted gas reservoirs and e formations.														
	CO6	Expla	in Carl	oon die	oxide c	ompre	ssion a	and pip	eline t	ranspor	t.						
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3		
CO1	-	3	-	-	-	3	3	-	-	-	-	-	-	-	-		
CO2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CO3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CO4	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-		
CO5	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-		
CO6	3	-	-	-	-	3	3	-	-	-	-	-	-	-	-		

	Subject: Power System Planning - 15EE744
CO1:	Explain the basic concept and structure of power system planning.

Course	CO2:	Analy	/se the	differ	ent str	ategy o	of gene	eration	planni	ing to in	nprove	national	grid.			
Outcomes:	CO3:	Analy	/se diff	erent	design	ing of o	optimu	m pov	ver sys	tem exp	ansion	with co	mputer	aided		
		planr	ning.													
	CO4:	Expla	ain the process to improve reliability of power system and reactive power compensation.													
Mapping	PO1	PO2	PO3	the process to improve reliability of power system and reactive power compensation.O3PO4PO5PO6PO7PO8PO9PO10PO11PO12PS01PSO2PSO3												
CO1	2	-	-	2	-	-	3	-	-	-	3	-	3	-	-	
CO2	3	2	3	3	-	2	-	-	-	-	3	-	2	2	3	
CO3	3	3	3	-	2	-	-	-	-	-	2	3	1	3	2	
CO4	3	3	-	2	2	-	-	-	-	-	-	1	3	-	2	

			S	ubject	: FAC	Ts and	l HVD	C Trar	nsmissi	on - 151	EE751						
Course	CO1:	Discu	ss trar	nsmissi	on inte	erconn	ection	s, flow	of Pov	ver in ar	ו AC Sys	stem, lin	nits of t	he loadi	ng		
Outcomes:		capal	oility,d	ynami	c stabi	lity cor	nsidera	tions c	of a tra	nsmissi	on inter	connect	tion and	l contro	llable		
		parar	neters	•													
	CO2:	Expla	in the	basic o	oncep	ts, def	inition	s of fle	xible a	c transn	nission	systems	and be	nefits fr	om		
		FACT	S techi	nology	•												
	CO3:	Desci	ribe sh	unt co	ntrolle	rs, Sta	tic Var	Comp	ensato	r and St	atic Cor	npensat	tor for ii	njecting			
		react	ive pov	wer in	the tra	nsmis	sion sy	stem i	n enha	ncing th	ne contr	ollabilit	y and po	ower tra	insfer		
		capal	oility.	ility. be series Controllers Thyristor-Controlled Series Capacitor (TCSC) and the Static concus Series Compensator (SSSC) for control of the transmission line current													
	CO4:	Desci	ribe se	ibe series Controllers Thyristor-Controlled Series Capacitor (TCSC) and the Static ronous Series Compensator (SSSC) for control of the transmission line current.													
		Syncł	ibe series Controllers Thyristor-Controlled Series Capacitor (TCSC) and the Static ronous Series Compensator (SSSC) for control of the transmission line current.														
	CO5:	Expla	in adv	antage	s of H	VDC pc	wer tr	ansmis	ssion, o	overviev	v and or	rganizat	ion of H	VDC sys	stem		
		and c	onvert	ter con	trol fo	r HVD(C syste	ms, co	mmuta	ation fai	lure, co	ntrol fu	nctions.				
	CO6	Desci	ribe th	e basic	comp	onents	s of a c	onvert	er, the	metho	ds for co	ompens	ating th	e reacti	ve		
		powe	er dem	anded	by the	conve	rter.										
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3		
CO1	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-		
CO2	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-		
CO3	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-		
CO4	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-		
CO5	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-		
CO6	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-		

	Subject	: TES	TING (& COI	MMISS	SIONI	NG OF	FPOW	ER SY	STEM	APPAR	ATUS	- 15EE7	'52	
Course	CO1:	Expla	in the	Installa	ation o	of trans	forme	rs, Pro	per me	ethods c	of install	ation to	give lo	ng troub	ole-
Outcomes:		free s	service	and d	ifferen	t tools	used f	or inst	allatio	n proces	ss.				
	CO2:	Discu	ss the	Install	ation c	of Syncl	hronou	us Mac	hines a	and thei	r routin	e tests.			
	CO3:	analy	ze the	Comm	nission	ing tes	t and i	nstalla	tion of	Inducti	on moto	or.			
	CO4:	expla	in the	Handli	ng, Te	sting a	nd inst	allatio	n of ur	ndergrou	und cab	les and	its fault	clearan	ce.
	CO5:	Analy	vse and	discu	ss the	protec	tion e	quipme	ent 'sw	vitchgea	r', its pr	oper m	aintena	nce for	
		prote	ection o	of elec	trical s	ystems	s and d	omest	ic testi	ng metl	nods an	d rules.			
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	-	-	-	-	-	2	2	2	-	-
CO2	3	-	-	2	-	-	-	-	-	-	2	2	2	-	-
CO3	2	2	-	-	-	-	-	-	-	-	2	2	2	-	-
CO4	2	-	-	2	-	-	-	-	-	-	2	2	2	-	-
CO5	2	2	-	-	-	-	-	-	-	-	2	2	2	-	-

			S	Subjec	t: Spa	cecraft	Powe	r Tech	nologie	es - 15E	E753					
Course	CO1:	Descr	ribe th	e elem	ents o	f a spa	ce pho	tovolta	aic pov	ver syst	em, the	status o	of solar	cell		
Outcomes:		techr	nologie	s prese	ently ir	n use.										
	CO2:	Discu	ss adv	ances i	in both	n cell ai	nd arra	iy tech	nology	, and sc	lar ther	mo pho	tovolta	ic energ	y	
		conve	ersion.					-				-		-	-	
	CO3:	Discu	sses, s	sses, space-qualified components, the array of chemical storage technologies including												
		both	batteries and fuel cells.													
	CO4:	Descr	ribe co	mpone	ents an	id tech	niques	for ac	hieving	g the va	rious Pc	wer Ma	anagem	ent and		
		Distri	bution	functi	ons an	id exar	nples d	of seve	ral PM	AD conf	figuratio	ons.	-			
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO2	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-	
CO3	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO4	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	

					Subjec	t: Ind	ustrial	Heatin	ıg - 151	EE754					
Course	CO1:	Expla	in con	structi	on, cla	ssificat	ion of	indust	rial fur	naces					
Outcomes:	CO2:	Expla	in the	metho	ods of	heat tr	ansfer	in ind	ustrial	furnace	s.				
	CO3:	Expla	in hea	ting ca	pacity	of bate	ch furn	aces a	nd cor	itinuous	furnac	es			
	CO4:	Expla	in me	thods	of savi	ng ene	rgy in i	ndustr	ial fur	nace sys	tems ar	nd fuel d	consum	otion	
		calcu	alculation.												
	CO5:	Expla	in ope	ration	and co	ontrol o	of indu	strial f	urnace	s.					
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	3	2	2	-	-	-	-	-	-	-	-	-	2	-	-
CO4	3	2	2	-	-	-	-	-	-	-	3	-	2	-	-
CO5	3	3	-	-	-	-	-	-	-	-	-	-	2	-	-

			Subj	ect: P	OWEF	R SYS	ГЕМ S	IMUL	ATIO	N LAB-	15EEL7	76			
Course	CO1:	Deve	lop a p	rograr	n in M	ATLAB	to asse	ess the	perfo	rmance	of med	ium and	l long tr	ansmiss	ion
Outcomes:		lines.													
	CO2:	Build	a prog	gram ir	MATL	AB to	obtain	the po	wer a	ngle cur	ves of s	alient ai	nd non-	salient p	ole
		alterr	nators.												
	CO3:	Deve	lop a p	rograr	n in M	ATLAB	to asse	ess tra	nsient	stability	throug	h swing	curve a	nd anal	yse
		short	circuit faults using Mi-Power software package. programs in MATLAB to formulate bus admittance and bus impedance matrices of												
	CO4:	Build	t circuit faults using Mi-Power software package. I programs in MATLAB to formulate bus admittance and bus impedance matrices of												
		inter	b programs in MATLAB to formulate bus admittance and bus impedance matrices of connected power systems.												
	CO5:	Solve	powe	r flow	proble	m for a	a simpl	e pow	er syst	em usin	g Mi-Po	wer sof	tware p	ackage.	
	CO6:	Solve	optim	al gen	eratior	n sched	luling p	oroble	ms for	therma	l power	plants (using M	i-Power	
		softw	, are pa	ickage.								•	-		
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	-	-	3	-	-	-	3	2	-	-	2	3	-
CO2	3	3	-	-	3	-	-	-	3	2	-	-	2	3	-
CO3	3	3	-	2	3	-	-	-	3	2	2	2	2	3	2

CO4	3	2	-	-	3	-	-	-	3	2	-	-	2	3	-
CO5	3	3	3	2	3	-	-	-	3	2	2	2	2	3	2
CO6	3	3	3	2	3	-	-	-	3	2	2	2	2	3	2

				Su	bject:	RELA	Y AN	D HV	LAB-1	5EEL7	7					
Course	CO1:	Demo	onstrat	e the o	charac	teristic	s of el	ectrom	agneti	ic relays						
Outcomes:	CO2:	Demo	onstrat	e the o	charac	teristic	s of m	icropro	ocesso	r based	relays					
	CO3:	Analy	ze the	spark	over c	haract	eristics	for bo	oth uni	form an	d non-u	iniform	configu	rations	using	
		High	AC and	I DC vo	oltages								Ū		C	
	CO4:	Meas	sure high AC and DC voltages and breakdown strength of transformer oil.													
	CO5:	Const	truct tl	ure high AC and DC voltages and breakdown strength of transformer oil. ruct the electric field and measure the capacitance of different electrode configuration												
		mode	els											U		
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	-	2	-	-	2	-	-	-	2	3	-	-	3	2	2	
CO2	-	2	-	-	-	-	-	-	2	2	2	2	3	-	2	
CO3	-	2	-	-	2	-	-	-	2	3	-	2	3	2	3	
CO4	-	2	-	-	2	-	-	-	2	2	2	-	3	2	3	
CO5	-	2	-	-	-	-	-	-	2	2	2	2	3	-	3	

				S	ubject	: PRC	JECT	PHAS	E-1-15	EEP78						
Course	CO1:	Ident	ify and	l formı	ulate tl	he engi	ineerir	ig prob	lems f	or the n	eed of s	society.				
Outcomes:	CO2:	Desig inter	n solu [.] pretati	tions fo on of c	or engi lata.	ineerin	g prob	lems u	ising m	odern t	ool/tec	hnology	to inve	stigate v	with	
	CO3:	Discu susta	ss the inable	impac develo	t of th opmen	e engin t with	neering comm	g solut it to pr	ions in ofessio	societa onal eth	l and en ics.	ivironm	ental co	ntexts f	or	
	CO4:	Deve	elop team work for conducting the project and Communicate effectively through reports & sentations.													
	CO5:	Adap	t engir	neering	g, mana	ageme	nt and	ethica	l princ	iples for	· Project	t manag	ement a	and fina	nce.	
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	3	-	-	-	3	-	-	-	-	-	2	3	3	3	
CO2	-	-	3	3	3	-	-	-	-	-	-	3	3	3	3	
CO3	-	-	-	-	-	3	3	3	-	-	-	3	3	3	3	
CO4	-	-	-	-	-	-	-	-	3	3	-	3	3	3	3	
CO5	-	-	2	-	-	-	-	3	-	-	3	3	3	3	3	

		Sut	ject:	POWE	ER SYS	STEM	OPER	ATIO	N ANI	D CONT	ROL-1	5EE81			
Course	CO1:	Descr	ibe va	rious le	evels o	f contr	ols in	power	systen	ns, the v	ulnerab	oility of t	the syst	em,	
Outcomes:		comp	onent	s, arch	itectur	e and	configu	uratior	of SC/	ADA.					
	CO2:	Solve	Unit C	Commi	tment	Proble	ms in a	a powe	er syste	em.					
	CO3:	Evalu	ate the	e gene	ration	schedu	uling of	f hydro	therm	al syste	m with	various	algorith	ms of it	
	CO4:	Deve	evelop mathematical models of ALFC by identifying the basic control loops in generator and												
		funct	inctions of AGC in an isolated and interconnected systems.												
	CO5:	Relat	e the v	oltage	and re	eactive	powe	r contr	ols in a	an inter	connect	ed pow	er syste	m.	
	CO6:	Expla	in relia	bility,	securi	ty, con	tingen	cy ana	lysis, st	tate esti	mation	and its	issues ir	n power	
		syste	ms.	-		-	-	-	-					-	
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CO2	3	2	2	-	-	-	-	-	-	-	-	2	2	-	2
CO3	3	3	2	-	-	-	-	-	-	-	-	2	2	-	2
CO4	3	3	2	-	-	-	-	-	-	-	-	2	2	-	-
CO5	2	2	-	-	-	-	-	-	-	-	-	2	2	-	2
CO6	2	2	-	2	-	-	-	-	-	-	-	2	2	-	2

		S	Subjec	t: INI	DUSTR	RIAL D	RIVE	S ND /	APPLI	CATIO	NS-15E	E82				
Course	CO1:	Expla	ain cho	ice of	electri	c drive	s,its pa	arts and	d adva	ntages						
Outcomes:	CO2:	Discu	iss dyn	amics	and m	odes o	f opera	ation o	felect	ric drive	s.					
	CO3:	Selec	t the p	oweri	rating o	of mot	or and	contro	ol of do	c motor	using re	ectifiers				
	CO4:	Analy	ze the	perfo	rmance	e of ind	ductior	n moto	r drive	s under	differe	nt condi	tions			
	CO5:	Analy	se the	contro	ol of in	ductio	n moto	or, synd	chrono	us moto	or and s	tepper i	motor d	rives		
	CO6:	Discu	scuss typical applications of electrical drives in the industry .													
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	-	-	-	-	-	-	-	-	-	-	-	3	-	2	
CO2	2	3	-	-	-	-	-	-	-	-	-	-	3	-	3	
CO3	2	3	-	-	-	-	-	-	-	-	-	2	2	-	2	
CO4	2	3	-	-	-	-	-	-	-	-	-	2	2	-	2	
CO5	2	2	-	-	-	-	-	-	-	-	-	2	3	-	2	
CO6	2	-	-	-	-	-	-	-	-	-	-	2	2	-	3	

					Sul	bject:	Smart	Grid -	15EE8	31						
Course	CO1:	Expla	in the	archite	ecture,	measu	uremei	nt tech	niques	and to	ols for t	he anal	ysis of a	of smart	grid.	
Outcomes:	CO2:	Discu	ss clas	sical o	ptimiza	ation te	echniq	ues an	d com	outatior	nal meth	nods for	smart g	grid desi	gn,	
		planr	ning an	d oper	ation.											
	CO3:	Expla	in pred	dictive	grid m	anage	ment a	and cor	ntrol te	chnolog	gy for ei	nhancin	g the sn	nart gric	l	
		perfo	rmanc	е												
	CO4:	Deve	velop cleaner, more environmentally responsible technologies for the electric system.													
	CO5:	Discu	cuss the computational techniques, communication, measurement, and monitoring													
		techr	nology	tools e	essenti	al to th	ne desi	gn of t	he sma	art grid.						
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	3	-	I	-	-	-	-	-	-	-	-	2	-	-	
CO2	3	3	-	I	-	-	-	-	-	-	3	-	2	-	-	
CO3	3	2	-	I	-	-	-	-	-	-	-	-	2	-	-	
CO4	2	-	-	-	-	-	3	-	-	-	-	-	2	-	-	
CO5	2	2	-	-	-	-	-	-	-	-	-	-	2	-	-	

		Subje	ect: O	peratio	on and	Mainte	enance	of Sol	ar Elec	etric Sys	stems - 1	15EE832	2			
Course	CO1:	Expla	in basi	cs of s	olar re	source	data,	its acq	uisitio	n, PV mo	odules t	o form a	arrays.			
Outcomes:	CO2:	Expla	in the	use of	inverte	ers, otl	ner sys	tem co	mpon	ents, ca	bling us	ed to co	onnect t	he		
		comp	onent	s and r	nounti	ng me	thods (of the	PV syst	tem.						
	CO3:	Asses	sess the site for PV system installation and design a grid connected system and compute its													
		size.	e.													
	CO4:	Expla	in inst	allatio	n, com	missio	ning, o	peratio	on and	mainte	nance o	of PV sys	tems.			
	CO5:	Expla	 Iain installation, commissioning, operation and maintenance of PV systems. Iain the types of financial incentives available, calculation of payback time.													
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	

CO1	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
CO3	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-
CO4	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
CO5	3	-	-	-	-	-	-	-	-	-	3	-	3	-	-

		Subj	ect: II	NTEG	RATIC	ON OF	DISTI	RIBUT	ED GI	ENERA	TION-1	5EE833	3		
Course	CO1:	Expla	in pow	ver ger	neratio	n by al	ternat	e ener	gy soui	rce like	wind po	wer and	d solar p	ower	
Outcomes:	CO2:	Discu	iss the	integra	ation c	of distri	buted	genera	ation a	nd its e	ffect on	the per	forman	ce of the	ē
		powe	er syste	em.											
	CO3:	Exam	nine the impact of integration of distributed generation on Voltage Magnitude Variations.												
	CO4:	Expla	in the impact of integration of distributed generation on Power Quality Disturbances.												
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	3	3	-	-	-	-	2	-	-	2
CO2	3	3	-	3	-	-	3	-	-	-	-	2	3	-	2
CO3	3	3	2	3	3	-	-	-	-	-	-	3	3	-	2
CO4	3	3	2	3	3	-	-	-	-	-	-	3	3	-	2

			1	Subjec	et: Po	wer Sy	stem ii	n Emer	gencie	s - 15El	E834					
Course	CO1:	Expla	in dist	urband	es tha	t may (occur i	n a pov	wer sys	stem an	d the in	npact of	them o	n its		
Outcomes:		opera	ation.													
	CO2:	Give	the de	finitior	ns, con	cepts a	and sta	ndard	termir	nology u	sed in t	he litera	ature on	emerge	ency	
		contr	ol and	discus	s the e	effect c	of syste	em stru	icture (on the f	orm of e	emergei	ncy cont	trol		
	CO3:	Discu	ss the	structu	ure, fu	nction	and al	ternati	ves for	⁻ main ti	ransmis	sion				
	CO4:	discu	ss stan	dards	of secu	urity ar	nd qua	lity of s	supply	in planr	ning and	l operat	ion,time	escales,	tasks	
		in sys	ystem operation and control, SCADA facilities - functions, structure, performance criteria, a and human - computer interface													
		data	a and human - computer interface													
	CO5:	discu	a and human - computer interface cuss different simulators used in training, facilities and characteristics for emergency													
		contr	ol, and	l benet	fits of e	emerge	ency co	ontrol a	and em	nergenc	y contro	ol in the	future.			
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	3	
CO2	3	2	-	-	-	-	-	-	-	-	-	-	-	-	3	
CO3	3	2	-	-	-	-	-	-	-	-	-	-	-	-	3	
CO4	3	2	-	-	-	-	-	-	-	-	-	-	-	-	3	
CO5	3	2	-	-	-	-	-	-	-	-	-	-	-	-	3	

		S	ubject	: INT	ERNS	HIP / F	PROFE	SSIO	NAL P	RACTI	CE -15E	EE84				
Course	CO1:	Adap	t the p	ractica	al expe	rience	within	indust	try in w	hich th	e intern	ship is o	done.			
Outcomes:	CO2:	Apply	/ know	ledge	and ski	ills lear	ned to	classr	oom w	ork.						
	CO3:	Deve	lop the	e exper	rience	in the	activit	ies and	l functi	ions of _l	orofessi	onals.				
	CO4:	Deve	evelop and refine the oral and written communication skills.													
	CO5:	Ident	entify areas for future knowledge and skill development.													
	CO6:	Adap	t the k	nowle	dge of	admin	istratio	on, mai	rketing	, financ	e and e	conomi	cs.			
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	-	-	2	2	3	-	-	3	2	3	3	2	3	3	3	
CO2	-	-	2	2	2	-	-	2	2	3	3	2	3	2	3	

CO3	-	-	2	2	3	-	-	3	3	3	3	2	3	2	3
CO4	-	-	2	3	2	-	-	2	3	3	3	2	3	2	3
CO5	-	-	3	3	2	-	-	2	2	3	3	2	3	3	3
CO6	-	-	3	3	2	-	-	3	3	3	3	2	3	3	3

					Su	bject:	PROJI	ECT -1	5EEP8	35						
Course	CO1:	Anal	yze en	gineeri	ing pro	blems	for the	e need	of soc	iety.						
Outcomes:	CO2:	Desig inter	n solu [.] pretati	tions fo on of c	or engi lata.	neerin	g prob	lems u	sing m	odern t	ool/tecl	nnology	to inve	stigate v	with	
	CO3:	Discu susta	iss the inable	impac develo	t of th opmen	e engiı t with	neerin _i commi	g soluti it to pr	ions in ofessio	societa onal eth	l and en ics.	vironm	ental co	ntexts f	or	
	CO4:	Deve	elop team work for conducting the project and Communicate effectively through reports & sentations.													
	CO5:	Adap	t engir	neering	g, mana	ageme	nt and	ethica	l princi	iples for	Project	: manag	ement a	and fina	nce.	
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	3	3	-	-	3	-	-	-	-	-	2	3	-	-	
CO2	-	-	3	3	3	-	-	-	-	-	-	3	3	-	-	
CO3	-	-	3	-	-	3	3	3	-	-	-	3	-	-	3	
CO4	-	-	3	-	-	-	-	-	3	3	-	3	-	3	-	
CO5	-	-	3	-	-	-	-	3	-	-	3	3	3	-	3	

	Subject: SEMINAR -15EES86															
Course	CO1:	Develop knowledge in the field of electrical and electronics engineering and other disciplines														
Outcomes:		through independent learning and collaborative study.														
	CO2:	Identify and discuss current, real-time issues														
	CO3:	Develop oral and written communication skills														
	CO4:	Build an appreciation of the self in relation to its larger diverse social and academic contexts														
	CO5:	Apply principles of ethics and respect in interaction with others.														
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	3	2	-	3	2	3	-	-	-	3	-	-	3	2	-	
CO2	-	-	-	3	-	-	3	-	-	-	-	2	-	2	-	
CO3	-	-	-	-	-	-	-	-	-	3	-	3	-	-	-	
CO4	-	-	-	-	-	3	3	-	-	-	-	3	-	-	-	
CO5	-	-	-	-	-	-	-	3	-	3	-	3	-	-	-	