RGPV	/ (Diplo	ma Wing)		SCHEN	IE FOR LEARNING	Branch C	ode	Course Code	CO Code	LO Code	
Bhop	• •	0,			OUTCOME	0 0	1 4	0 1	1	1	Format No. <b>4</b>
COURS	SE NAME	Electronics Meas	urement	1		II				1	1
CO Des	cription	Explain characte	eristics of m	easuring instru	uments						
LO Des	cription	Define static and	dynamic cha	aracteristics of n	neasuring instruments.						
					SCHEME OF STUDY						
S. No.	Lea	rning Content		eaching – Ning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs	LRs R	equire	ed	Remarks
LO-01	Learning Content Significance of Measurement and block diagram of Measurement System,Static characteristics- Accuracy, Precision, Sensitivity, Linearity, Repeatability, Reproducibility, Resolution, Threshold, Drift, Stability, Dead zone, hysteresis,Dynamic Characteristics- speed of response, measuring lag, fidelity, dynamic error,		ty, classro PPT, demo quiz, a	ctive oom lecture, nstration, assignments	Teacher will explain the contents and provide handouts to students. Teacher will conduct quiz/ assignments/ tutorial.	9	0	Text Boo Handour board, charts.V lectures others	ts, chal ideos	k	
					SCHEME OF ASSESSMENT	r					
S. No.		ethod of sessment		Descrip	tion of Assessment	N	aximum Marks	Resource	s Requ	iired	External / Internal
LO-01		mester Theory Exam	1. Describe Measure	ement System, static and dynan	<b>to</b> (and/or): <sup>•</sup> Measurement and block diagram nic characteristics of measuring	of	10	Question p sc	aper, F ale	Rating	External

				ADDITIONAL INSTR	UCTIONS FOR THE HOD	/ FAC	JLTY (	IF AN	IY)					
												со	LO	
R	-	iploma Wi	ng)		FOR LEARNING		ranch Coc			urse Cod		Code	Code	Format No.
		Bhopal		OL	JTCOME	0	0	1	4	0	1	1	2	
COURS	E NAME	Electronics Mea	surement											
CO Des	cription	Explain charact	eristics o	f measuring instrume	nts									
LO Dese	cription	To describe vario	ous types o	of errors and loading ef	fect									
		·			SCHEME OF STUDY									
S. No.	Le	earning Conten	t	Teaching – Learning Method	Description of T-L Pro	ocess	-	each Irs.		ract. It Hrs		LRs Re	equire	d Remarks
LO-02	Learning Content Types of Errors – Gross error, systematic errors, Random errors, loading effect			Interactive classroom lecture, PPT, demonstration, quiz,assignments, tutorial	Teacher will explain the contents and provide ha to students. Teacher will conduct quiz/assignmen tutorial to make student practice their knowledge	ts/ s		6		0	P cł cł N P	ext Bo PT, Ha nalk bo narts, umerio roblen /orkbo	andout bard, cal	S,
				S	CHEME OF ASSESSMEN	т								
S. No.	Method of Assessment			Description of	Assessment		aximu Marks		F	Resou	irces	Requ	ired	External Internal
LO-02	D-02 End Semester Theory Exam			<b>t will be asked to</b> (a scribe Types of Errors nat is loading effect.	5.		10		Que	stion	papei	r, Rati	ng scal	e External

			A	DITIONA	AL INSTRUCTIONS FO	R THE HOD,	/ FACUL	ry (if an	NY)					
R	-	)iploma V	Ving )	SCH		NING		h Code		ourse Co		CO Code	LO Code	Format No.
CUIRS	E NAME	Bhopal Electronics M	lessurement		OUTCOME		0	0 1	4	0	1	1	3	
	cription		acteristics of m	easuring i	nstruments									
	cription	-	alibration proces											
		1			SCHEME O	F STUDY								
S. No.	Learnii	ng Content	Teaching –L Metho	-	Description of T-L	Process	Teach Hrs.	Pra /Tut			LRs F	Requir	ed	Remarks
LO-03	Calibrati and dyn	ion -static amic	Lab demonstr hands on prac assignments,	ctice, lab	<ul> <li>Teacher with supportstaff will demonstrate procedure of lab ex</li> <li>Student will conduct assignment based of experiments.</li> </ul>	ate the periments. et lab	0	6		expe instr mea com simu	erimer rumer suring puter ulatior	with r	ainer with uments, elevant vare and	
					SCHEME OF A	SSESSMEN	Γ			1				
S. No.	o. Method of Assessment			iption of	Assessment	Maximur Marks	n	Re	sour	ces Re	equir	ed		External / Internal
LO-03		ical test in oratory	Student will 1. Perform sta		to lynamic Calibration.	10		R	ubrics	/Ratir	ng sca	le		Internal

				ADDITIONAL IN	ISTRUCTIONS FO	R THE HOD/ F/	ACULTY (	IF ANY)					
R	GPV (D	viploma V	Ving )	SCHEN	1E FOR LEAF	RNING	Branch Coc	le	Course (	Code	CO Code	LO Code	Format No. <b>Z</b>
	I	Bhopal			OUTCOME	0	0 0	1 4	0	1	2	4	Format No.
COURS	E NAME	Electronics N	leasureme	ent									
CO Des	cription	Explain mea	asuring in	nstruments and ra	nge extension								
LO Deso	cription	Differentiate	between n	noving iron and movi	ng coil type instrum	ents							
		1			SCHEME C	OF STUDY							
S. No.	Lea	rning Conter	nt	Teaching – Learning Method	Description o	of T-L Process	Teach Hrs.	Pra /Tut		LR	s Requ	uired	Remarks
LO-04	working o	tion, principle and Inter of PMMC and MI clas iron) instruments PPT quiz		nteractive classroom lecture, PPT, demonstration, quiz,assignments, utorial	will conduct as	rovide udents. Teacher signments/ make students	7	0		Hand boar Video	Books, louts, c d, char o lectur EL and c	chalk ts, re-	
					SCHEME OF A	SSESSMENT							
S. No.		thod of essment		Description of Ass	essment	Maximum N	Marks	Re	sourc	es Re	quired		External / Internal
LO-04		Semester ory Exam	<ol> <li>Desc worki</li> <li>Explain</li> </ol>	t will be asked to( cribe Construction, p ing of PMMC instrum ain Construction, prin (moving iron) instrur	rinciple and ents. ciple and working	10		Questi	on pa	per, R	Rating s	scale	External
					ISTRUCTIONS FO	R THE HOD/ F	ACULTY (	IF ANY)					

R	-	iploma V	Ving )	••••	E FOR LEARNING	Branch Co		Course Code	CO Code	LO Code	Format No. <b>4</b>
		Bhopal			OUTCOME	0 0	1 4	0 1	2	5	
COURS	E NAME	Electronics N	leasurement								
CO Des	cription	Explain mea	asuring instr	uments and ran	ge extension						
LO Des	cription	Extend the m	easuring range	of the meters.							
					SCHEME OF STUDY						
S. No.	Lea	rning Conter	nt I	Teaching – rning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hr	I Rs F	Require	ed	Remarks
LO-05	meters a extension Multiplie	voltmeter and	e class PPT dem	active proom lecture, , Video, onstration, quiz, gnments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	7	0	Text Bo Handou board, c Video le NPTEL	ts, chal harts, cture-	k	
					SCHEME OF ASSESSMEN	NT					
S. No.		thod of essment		Description of	Assessment	Maximum Marks	Re		External / Internal		
LO-05	O-05 End Semester Theory Exam 2. Ex			angeextensionme	voltmeter and current	10	Questio	on paper + R	ating so	cale.	External
					STRUCTIONS FOR THE HO						

R	GPV (D	iploma V	Ving	) :	SCHEME FOR LEARNING	Brar	nch Code	c	ourse C	ode	CO Code	LO Code	
		Bhopal		_	OUTCOME	0	0 1	4	0	1	2	6	Format No.
COURS	SE NAME	Electronics N	leasurer	nent			· ·					· · ·	
CO Des	cription	Explain mea	asuring	instrument	s and range extension								
LO Des	cription	Measure volt	age and	current (DC&	AC) using analogue/ and digital multimet	er							
					SCHEME OF STUDY	,							
S. No.	Learnir	ent of demonstration, urrent and PPT, hands on		earning	Description of T-L Process	Teach Hrs.	Prac /Tu Hrs	t		LRs Re	equire	ed	Remark
LO-06	voltage, c Resistanc Analog an	Measurement of demo voltage, current and PPT, Resistance using practi			<ul> <li>Teacher will explain the content in class/lab.</li> <li>Teacher with support from lab staff will demonstrate the procedure of lab experiments.</li> <li>Student will conduct lab assignment based on these experiments.</li> </ul>	0	7	H tı n c si	lando rainer neasu ompu imula <sup>.</sup>	anual, o uts, ex instru ring ins iter wit tion so beed in	perim ments strum h rele ftware	ental s/kit wit ents, vant e and	h
					SCHEME OF ASSESSME	ENT							
S. No.	. Method of Assessment			De	escription of Assessment	Maximu	m Mark	s l	Resou	urces F	Requi	red	External / Internal
LO-06	D-06 End Semester practical Stur		Measure	<b>ill be asked to</b> electrical parameters using Analog al Multi Meter (DMM).	1	.0		Rubri	cs, Rat	ting sc	ale	External	

R	GPV (D	iplom	a Wing )	SCHEME FOR		anch Code	Course Co	ode	CO Code	LO Code	
	ĺ	Bhopa	I	OUTCO	OME 0	0 1	4 0	1	3	7	Format No.
COURS	SE NAME	Electron	ics Measurement								
CO Des	cription	To meas	sure electrical parameters	using Bridges and Ana	lyzers						
LO Des	cription	Explain	working and application of	AC & DC bridges.							
				SCI	HEME OF STUDY						
S. No.		Learni	ng Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs	s Requ	ired	Remarks
LO-07	Double Bi	ridge es- Maxwe	atstone bridge, Kelvin's ell's Bridge, Hay's bridge, d Wien's Bridge.	Interactive classroom lecture, PPT, Video, demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	8	0	PPT chall char lectu	t Books , Hand k boarc ts, Vide ure- NP others.	outs, 1, eo PTEL	
				SCHEN	IE OF ASSESSMENT						
S. No.		od of sment		Description of Ass	essment	_	imum arks		ource: quired	-	/ External Internal
Lo-07	2. Compare AC			n DC/AC Bridges with		1	10		ion pap ng scal		External

R	-	-	na Wing	-	E FOR LEARNING	Branch		Cou 4	irse Code	CO Code	LO Code 8	Format No.
COURS	E NAME	Bhopa Electro	d I nics Measurer		OUTCOME				0 1	5	0	
CO Des	cription	To mea	asure electrical	parameters using Bridge	s and Analyzers:.							
LO Des	cription	Explain	working princ	iple of spectrum analyzer	:							
		1			SCHEME OF STUDY							
S. No.	Lea	rning C	ontent	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pra /Tut		LRs R	equire	d	Remarks
LO-08	Analyzers and Heter	: Frequei odyne W	ing of Signal ncy Selective Vave ım Analyzers.	Interactive classroom lecture, PPT, Video, demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	6	C	)	Text Boo Handout board, cl Video lee NPTEL a	s, chalk narts, cture-		
					SCHEME OF ASSESSMEN	т						
S. No.	Metho Assess			Description	of Assessment		Maxim Mark	-	Resource	es Requ	ired	External / Internal
Mid semester Exam Student				<b>ill be asked to</b> (and/o lain working of given :	•		10		-	on pape ng scale	r,	Internal

	Diploma Wing	) SCHEN	<b>ME FOR LEA</b>	RNING	Branch Cod	2	Course	Code	CO Code	LO Code	Format No.
	Bhopal		OUTCOME	(	0 0	1 4	0	1	3	9	FOIMAL NO
	Electronics Measure	ment									
O Description	To measure electrica	l parameters using Bridg	ges and Analyzers.								
O Description	To analyze signal way	veforms using spectrum	analyzers								
			SCHEME	OF STUDY							
. No. Le	arning Content	Teaching – Learning Method	Description o	of T-L Process	Teach Hrs.	Pract. /Tut Hrs.		LRs	Requi	red	Remarks
D-09 Analysis o	of various waveforms ectrum Analyzers.	Lab demonstration, PPT , hands on practice, lab assignments.	<ul> <li>Teacher will excontent in class</li> <li>Teacher with solution in the solution of the staff will do procedure of the experiments.</li> <li>Student will consistent base experiments.</li> </ul>	ss/lab. support from emonstrate the ab onduct lab	0	6	H ex in m in co re so	•	ts, ental t ents /k ng ents, er with simula e and h	rainer tit with ation nigh	
			SCHEME OF	ASSESSMENT							
. No. Meth	od of Assessment	Description of	Assessment	Maximum N	Marks	Res	ourc	es Rec	quired		External / Internal

			AD	DITIONAL INS	TRUCTIONS FOR THE HOD	/ FAC	CULTY	(IF AN	Y)					
R	•	) Diploma Wing Bhopal	)		E FOR LEARNING DUTCOME	0	Branch Co	de 1	Co 4	urse Co	de 1	CO Code 4	LO Code 10	Format No.
COURS	E NAME	Electronics Measure	ment						I		1	1		1
CO Des	cription	Classify different Osc	illoscopes	and their applic	ation.									
LO Dese	cription	Describefunction of t	basic build	ling blocks of CR	0									
					SCHEME OF STUDY									
S. No.	Lea	rning Content		aching – ing Method	Description of T-L Process		each Irs.	Pra /Tut	nct. Hrs.		LRs R	equire	ed	Remarks
LO-10			PPT, V	om lecture, 'ideo, stration, quiz,	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.		8	(	)	Han boa Vid	ndout ard, cl leo le	oks, PI s, chal narts, cture- and oth	k	
					SCHEME OF ASSESSMEN	Т								
S. No.	Metho	d of Assessment		Descriptio	n of Assessment	Μ	laximu	m Ma	rks	Reso	ource	es Req	uired	External / Internal
LO-10	End S	emester Theory Exam	1. Expla	: <b>will be asked</b> ain need of CR ribe Block diagr	0.		1	.0		-		on pape g scale		External

			A	DDITIONAL INS	STRUCTIONS FOR THE HOD/ F	ACULT	( (IF	ANY)					
R	GPV (D	oiploma Win	g )	SCHEM	E FOR LEARNING	Branch	Code	C	ourse C	Code	CO Code	LO Code	
		Bhopal			OUTCOME	0 0		1 4	0	1	4	11	Format No. <b>4</b>
COURS	E NAME	Electronics Measu	rement	· 	· · · · · · · · · · · · · · · · · · ·							· · · · · ·	
CO Des	cription	Classify different C	Scilloscope	es and their applic	cation.								
LO Deso	cription	Explain working pr	inciple of d	ligital storage osc	illoscope.								
					SCHEME OF STUDY								
S. No.	Lea	rning Content		eaching – ning Method	Description of T-L Process	Tea Hr:		Pract /Tut H		Lf	Rs Req	uired	Remarks
LO-11	(DSO): blo	brage Oscilloscope bock diagram, principl and its application	PPT, demor	ctive oom lecture, Video, nstration, quiz, iments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	6		0		Hand board	re- NP	. ,	
					SCHEME OF ASSESSMENT			1					
S. No.							mun	n Marks	F	Resou	rces R	equired	External / Internal
LO-11		d semester ssignment, Quiz	<b>1.</b> D O	scilloscope (DSO) be applications o	and working of Digital Storage		10	)	Q	Juestic	on pape scale.	er, Rating	g Internal
			Δι		STRUCTIONS FOR THE HOD/ F	ΞΔΟΙΗΤΥ	/ (IF	ΔΝΥ)					

R	GPV (D	iploma Wing	) SCHEN	IE FOR LEARNING	Branc	Code	C	ourse Co	ode	CO Code	LO Code	~
	I	Bhopal		OUTCOME	0	) 1	4	0	1	4	12	Format No. 4
COURS	SE NAME	Electronics Measure	ment									
CO Des	cription	Classify different Osc	illoscopes and their appl	ication.								
LO Des	cription	Measure various par	ameters like Amplitude,	frequency and time period using C	RO.							
		l		SCHEME OF STUDY								
S. No.	Image: Constraint of the second se						uired	Remar				
LO-12	2 Dual trace oscilloscope,		,	-	0		8	Ha tra wit ins wit sof	ndouts iner ins th mea trumer th relev	s, expe strum suring nts, co vant si	eriment ents/ki	r on
				SCHEME OF ASSESSMENT	•							
S. No.	Metho	od of Assessment	Descriptic	on of Assessment	Maximu	ım Mar	ks	Reso	ources	ired	External / Internal	
LO-12	Practica	al test in laboratory	<b>Student will be asl</b> 1. Measure various par frequency and time	rameters like Amplitude,		10		Rubi	rics, Ra	ating s	cale	Internal

RGPV (Diploma Wing ) Bhopal						Branch Code		Course Code		Code	LO Code	Format No.
			OUTCOME		0 0	1 4	4	0	0 1 5	13		
COURSE NAME Electronics Meas		Electronics Measu	rement									
<b>CO Description</b> To measure pl		To measure physic	al quantities using Transduc	ers .								
LO Des	cription	Differentiate betw	een active and passive, prim	ary and secondary transducers.								
				SCHEME OF STUDY								
S. No.	Lea	rning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.		act. Hrs.		LRs Required		Remarks	
LO-13	3 Requirements of Ideal Transducer Transducer and its classification: primary and secondary transducers		Interactive classroom lecture, PPT, Video, demonstration, quiz, assignments.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	6		)	Text Books, PPT, Handouts, chalk board, charts, Video lecture- NPTEL and others.				
				SCHEME OF ASSESSMEN	Т							
S. No.	Method	of Assessment	Description of Assessment		Maximum Marks		<b>Resources Required</b>			External / Internal		
LO-13		mester Exam , jnment , Quiz	Student will be asked to(a 1.Explain Requirements of 2. Compare primary and se	Ideal Transducer	10			Question paper, Rating scale.		External		

R	-	iploma Wing	-	E FOR LEARNING	Branch Co	ode	Course Co	Code		Format No. <b>4</b>	
COURSE NAME Electronics Measure		OUTCOME		0 0	1	4 0	0 1 5 14				
			quantities using Transduc	ers .							
LO Description Describe work		Describe working of	various transducers.								
				SCHEME OF STUDY							
S. No.	Lea	rning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Prac /Tut H		LRs Require		Remarks	
LO-14	Potentio Gauge ty derivatio unbound Capacitiv Variable area type type, LVE Tempera Electric, I	Transducer: metric type, Strain pe (Gauge factor n, Bonded and ed strain gauges), e Transducers - gap type, variable e and dielectric DT, ture and Piezo Proximity sensor h screen sensor.	Learning MethodProcessInteractive classroom lecture, PPT, Video, demonstration, quiz, assignments.Teacher will explain the contents and provide handouts to students.Teacher will conduct assignments.Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.		8	0	Hai boa Vid	Text Books, PPT, Handouts, chalk board, charts, Video lecture- NPTEL and others.			
	2.1.2. 1040		1	SCHEME OF ASSESSMEN	Γ		I				
S. No.	. Method of Assessment		Description of Assessment		Maximum Marks		ks Res	Resources Required		External /	

LO-14	End s	emester Exam	<ul><li>Student will be aske</li><li>1. Explain working and types of transducers</li></ul>	list out applications of different		10	Question paper, Rating scale.	g Internal
			ADDITIONAL IN	STRUCTIONS FOR THE HOD	/ FACULTY	(IF ANY)		
R	•	)iploma Wing	-	1E FOR LEARNING	Branch C		ourse Code CO LO Code Code	Format No. <b>4</b>
<u></u>		Bhopal		OUTCOME	0 0	1 4	0 1 5 15	. of mat not
	SE NAME	Electronics Measure						
CO Des	scription		quantities using Transduc					
LO Des	cription	Measure various pr	ysical quantities using tra	insducers.				
				SCHEME OF STUDY				
S. No. Learning		rning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-15	O-15 Measure the given parameter using resistive , capacitive and other types of transducer.		Lab demonstration, PPT , hands on practice, lab assignments.	<ul> <li>Teacher with support from lab staff will demonstrate the procedure of lab experiments.</li> <li>Student will conduct lab assignment based on these experiments.</li> </ul>	0	7	Lab manual, charts, Handouts, experimental trainer instruments/kit with measuring instruments, computer with relevant simulation software and high	

	SCHEME OF A	ASSESSMENT			
Method of Assessment	Description of Assessment	Maximum Marks	<b>Resources Required</b>	External / Internal	
Practical test in laboratory	<b>Student will be asked to</b> 1.Measure various physical quantities using transducers.	10	Rubrics, Rating scale	Internal	
	ADDITIONAL INSTRUCTIONS FC	OR THE HOD/ FACULTY (	IF ANY)		
	ADDITIONAL INSTRUCTIONS FC	OR THE HOD/ FACULTY (	IF ANY)		
		Method of AssessmentDescription of AssessmentPractical test in laboratoryStudent will be asked to 1.Measure various physical quantities using transducers.	Practical test in laboratoryStudent will be asked to 1.Measure various physical quantities using transducers.10	Method of Assessment       Description of Assessment       Maximum Marks       Resources Required         Practical test in laboratory       Student will be asked to 1.Measure various physical quantities       10       Rubrics. Rating scale	