OBE CURRICULUM FOR RGPV (DIPLOMA Sheet FORMAT-3 No. 1/5 **WING) BHOPAL** THE COURSE **Electronics & Tele-communication** 3 **Branch Semester Course Code Course Name Analog Circuits** Teach **Course Outcome 1** Marks Analyze resistive circuits using circuit Theorems Hrs Define circuits parameters and network topologies both 8 balanced & unbalanced. (Cognitive) **Learning Outcome 1** Definitions (Nodes, Branches, Tree, Co-Tree) Network Topologies (Balanced and unbalanced): L-section, T-section, Pisection, Twin-T, Ladder and Bridge sections. Contents Internal **Method of Assessment** Apply different circuit theorems to give resistive circuit 10 **Learning Outcome 2** solution. (Cognitive) Circuit Theorems (only resistive networks without dependent sources) -Superposition Theorem, Reciprocity Theorem, Thevenin's Theorem, Norton's Theorem, Millman's Theorem, Maximum Power transfer theorem Contents (all theorem explanations with suitable examples) External **Method of Assessment** Setup and verify different circuits theorem on kits / simulation software. (Psychomotor) **Learning Outcome 3 Verify Superposition Theorem** Verify Thevenin Theorem **Contents** Verify Maximum Power Transfer theorem External **Method of Assessment**

RGPV (DIPLOMA WING) BHOPAL					COURSE	FORMA	r- 3	Sheet No. 2/5		
Branch Elect			lectron	ics & Tele-commur	nication	Semester	Semester 3			
Course (Code			Course Name	Ana	alog Circuits				
Course	Outco	me 2	Exami	ine various transisto	or biasing circuits		Teac Hrs	IMarks		
Learning	g Outc	ome 4		n the significant aspecteristics. (Cognitive			8			
Contents			Need	_	characteristics. ine Concept (AC and erating/quiescent point	. •	ance o	f coupling		
Method	of Asse	ssment	Intern	al						
Learning	g Outc	ome 5	Compare different BJT and FET biasing circuits. (Cognitive) 8							
Co	Contents		biasin	g.	nitter feedback,Collect		Volta	ge divider		
Method	of Asse	ssment	Exterr	nal						
			Plot the characteristics for BJT and FET circuits and place Q-point on load line. (Psychomotor)							
Contents		Plot input, output and load line characteristics of BJT (CE mode) Plot input and output characteristics of JFET (CS mode)								
Method	of Asse	ssment	Intern	al						

RGPV	(DIPLO	OMA W	(ING)	OBE CURRICULUM FOR THE COURSE			FORMAT-3		Sheet No. 3/5		
Branch		I	Electron	ectronics & Tele-communication Semester					3		
Course	Code			Course Name	Ana	alog	Circuits				
Course	Outco	ome 3	Identif	y different types of	transistor amplifiers			Tead		Marks	
Learnin	g Outo	ome 7	Explair (Cogni	•	age amplifiers and stat	e it	s need	8			
Co	ontent	s	Single Differe Coupl mather	entiate Cascade and ed Amplifiers (onl	r (CE Amplifier) e transistor amplifiers. Cascode transistor amplifiers amplifiers y circuit diagrams and the coupling, Direct C	wor	king with		ner		
Method	of Asse	ssment	External								
Learnin	g Outo	ome 8	Classify and compare different types of amplifiers circuits. 8 (Cognitive)								
Co	ontent	s	Power	Amplifiers (only o	ers: Class A, class B, corcuit diagrams and work amplifier, Push-pull A	orki	ng withou				
Method	of Asse	essment	Extern	al							
Learning Outcome 9 Demonstrate and plot the gain Vs frequency response for different amplifiers. (Psychomotor) 8											
Contents			Plot the gain Vs frequency response of single stage transistor amplifier (CE mode) Plot the gain Vs frequency response of single stage class A transistor amplifier (CE mode) Plot the gain Vs frequency response of push pull amplifier.								
Method of Assessment Internal											

RGPV (DIPLON BHOPA		ING)		RICULUM FOR COURSE	FORMA	г-3	Sheet No. 4/5	
Branch		E	lectron	ics & Tele-commu	nication	Semester		3	
Course (Code			Course Name	Ana	log Circuits			
Course	Outcom	e 4	Exami	ne feedback amplif	iers and Oscillators		Teac Hrs	IMARKS	
Learning Outcome 10		e 10	Descri (Cogn	•	mportance of feedback a	implifier.	8		
				-	mportance & concept of diagram of a feedback a		Adva	ntage of	
Method of Assessment			Interna	al					
Learning	g Outcom	e 11	Explain the principal of oscillators and classify it. (Cognitive) 8						
Contents			Oscillators: Principle of Oscillator - positive feedback, Barkhausen circuit criteria for oscillation Types of sinusoidal Oscillators (BJT and FET based circuits)- Phase shift, Wein-Bridge, Hartley, Colpitts, Clapp, and Crystal Oscillator						
Method	of Assessn	nent	Extern	al					
				Assemble circuits of various oscillator and verify output waveform. (Psychomotor)					
(,	s from- RC Phase SI	rm for sinusoidal oscilla hift, Wein Bridge, Hartle	•			
Method of Assessment Exter				al					

OBE CURRICULUM FOR RGPV (DIPLOMA Sheet FORMAT-3 No. 5/5**WING) BHOPAL** THE COURSE **Electronics & Tele-communication Branch** Semester **Course Code Course Name Analog Circuits** Construct and Analyze various signal generators and Teach **Course Outcome 5** Marks Multivibrator Hrs. Classify different type of transistor based Multivibrator. 8 **Learning Outcome** (Cognitive) 13 **Multivibrators**: transistor based circuit diagram and Working of - Astable (free running) multivibrator, Monostable (Single shot) multivibrator, **Contents** Bistable (Trigger) multivibrator External **Method of Assessment** Construct various waveform generators using diodes & **Learning Outcome** transistors (Cognitive) 14 Waveform Generators: Sine wave, Square wave, rectangular and saw-tooth waveform generators using diodes and transistors, significance of duty cycle **Contents** for various waveforms. External **Method of Assessment** Operate different type of Multivibrator circuits and 8 **Learning Outcome** generate waveforms. (Psychomotor) 15 Verify the non-sinusoidal output waveforms (at least two from-square, rectangular, triangular, saw-tooth) of transistor based multi-vibrator **Contents** circuits. Internal **Method of Assessment**

Suggested List of Experiments*:

S.N.	Experiment							
1.	Verify Superposition Theorem	CO301.1						
2.	Verify Thevenin Theorem	CO301.1						
3.	Verify Maximum Power Transfer theorem	CO301.1						
4.	Plot input, output and load line characteristics of BJT (CE mode)	CO301.2						
5.	Plot input and output characteristics of JFET (CS mode)	CO301.2						
6.	Plot the gain Vs frequency response of single stage transistor amplifier (CE	CO301.3						
	mode)							
7.	Plot the gain Vs frequency response of single stage class A transistor	CO301.3						
	amplifier (CE mode)							
8.	Plot the gain Vs frequency response of push pull amplifier.	CO301.3						
9.	Plot the gain Vs frequency response of audio power amplifier.	CO301.3						
10.	Verify the output waveform for sinusoidal oscillators (at least two	CO301.4						
	oscillator circuits from- RC Phase Shift, Wein Bridge, Hartley, Colpitts,							
	Clapp, Crystal are expected)							
11.	Verify the non sinusoidal output waveforms (at least two from-square,	CO301.5						
	rectangular, triangular, sawtooth) of transistor based multivibrator circuits.							

Ten experiments in a semester as per the discretion of the subject teacher.

Major Equipment/Materials:

1.	Cathode Ray Oscilloscope(CRO)/Digital Storage
	Oscilloscope(DSO)
2.	Dual Power Supply
3.	Function generator
4.	Spectrum analyser
5.	Breadboard, discrete components, wires
6.	Multimeter/Ammeter/Voltmeter
7.	LCR Meter

Suggestions for Practicals:

Experiments are expected to be performed

- 1. Using breadboard/trainer kits.
- 2. on simulation software (vizPSpice, TINA, Multisim, KiCAD, LTSpice, LabView, Simulink, Proteus, CircuitMaker etc.)
- 3. on virtual lab platforms available online (like: vlab.co.in, falstad.com/circuit etc.)

Reference Books/Web Portals:

S.N.	Title	Author
1	A Text book of Applied Electronics	R.S. Sedha, S. Chand &Co.NewDelh
2	Principals of Electronics	Latest ,V.K.Mehta , S.Chand Publication
3	Basic Electronics	B. L. Thareja
4	Electronic Devices & Circuits	Robert Boylestad
5	Electronic Devices and Circuits	Millman&Halkias
6	Electronics Principles	Malvino TMH
7	Electronic Devices & CKTs	Mottershead
8.	nptel.ac.in	
9.	swayam.gov.in	

SCHEME FOR LEARNING OUTCOME

	ourse Code Code Code				Co	le	ranch Cod	В
Format N	1	1	1	0	3	3	0	F

COURSE NAME	Analog Circuit
CO Description	Analyze resistive circuits using circuit Theorems
LO Description	Define circuits parameters and network topologies both balanced & unbalanced.

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-01	Definitions (Nodes, Branches, Tree, Co-Tree) Network Topologies (Balanced and unbalanced): L-section, T-section, Pi-section, Twin-T, Ladder and Bridge sections.	Interactive classroom lecture, PPT, demonstration, quiz, assignments	Teacher will explain the contents and provide handouts to students. Teacher will conduct quiz/ assignments/ tutorial.	6	2	Text Books, PPT, Handouts, chalk board, charts. Videos lectures- NPTEL& others	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
LO-01	Mid Semester Theory Exam	Student will be asked to(and/or):1. Identify and list out various parts of circuits.2. Draw circuit according to given parameters.3. Draw and Identify type of topologies of given network	10	Question paper, Rating scale	Internal

SCHEME FOR LEARNING OUTCOME

A	LO Code	CO Code	de	ourse Co	Co	Branch Code		
Format No. 4	2	1	1	0	3	3	0	E

COURSE NAME	Analog Circuit
CO Description	Analyze resistive circuits using circuit Theorems
LO Description	Apply different circuit theorems to give resistive circuit solution.

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-02	Circuit Theorems (only resistive networks without dependent sources) - Superposition Theorem, Reciprocity Theorem, Thevenin's Theorem, Norton's Theorem, Millman's Theorem, Maximum Power transfer theorem (all theorem explanations with suitable examples)	Interactive classroom lecture, PPT, demonstration, quiz,assignments, tutorial	Teacher will explain the contents and provide handouts to students. Teacher will conduct quiz/assignments/ tutorial to make students practice their knowledge.	8	2	Text Books, PPT, Handouts, chalk board, charts, Numerical Problems Workbook	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
LO-02	End Semester Theory Exam	 Student will be asked to(and/or): State and explain the given theorem. Solve simple numerical for different theorems Compare different theorems. 	10	Question paper, Rating scale	External

					OUTCOME		E () 3	3	0	1	1	3	
COURS	E NAME	Analog Circ	cuit								ı			
CO Des	cription	Analyze resis	stive circuits using o	circuit Th	heorems									
LO Des	cription	Setup and ve	rify different circui	ts theore	em on kits / simulation sc	oftware.								
					SCHEME C	OF STUDY								
S. No.	Method		Description of T-I	L Process	rocess Teach Pract. Hrs. /Tut Hrs.		LRs R	equir	ed	Remarks				
LO-03	Verify Su Theorem Verify Th Theorem Verify Ma Power Tr theorem	evenin aximum ansfer	Lab demonstra hands on prac- lab assignmer Lab.	ctice,	 Teacher will explain the content in class/lab. Teacher with support from la staff will demonstrate the procedure of lab experiments Student will conduct lab assignment based on these experiments. 			6	6 Lab manual, charts, experimental trainer instruments/kit with measuring instruments computer with relevant simulation software and high speed internet.		iner with ments, elevant are and			
					SCHEME OF A	ASSESSMENT	•							
S. No.		thod of essment	Descrip	otion of	Assessment	Maximun Marks	n	Resources Required				External / Internal		
LO-03	Student will be asked			work theorem for ts/ kits or/&			Rubrics/Rating scale				External			
			ADD	DITIONA	AL INSTRUCTIONS FO	R THE HOD/	FACULT	Y (IF AN	IY)					

SCHEME FOR LEARNING

LO Code

Format No. 4

CO

Code

Course Code

Branch Code

RGPV (Diploma Wing) Bhopal

		OUTCOME	E	0	3	3	0	1	2	4	
COURSE NAME	Analog Circuit										
CO Description	Examine various transistor bia	Examine various transistor biasing circuits									
LO Description	Explain the significant aspects of transistor characteristics.										

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-04	Brief review of transistor characteristics. Need of biasing, Load Line Concept (AC and DC), significance of coupling and bypass capacitor, Operating/quiescent point concept.	Interactive classroom lecture, PPT, demonstration, quiz,assignments, tutorial	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	8	2	Text Books, PPT, Handouts, chalk board, charts, Video lecture- NPTEL and others.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
LO-04	Mid Semester Theory Exam	 Student will be asked to(and/or): Calculate and locate Q-point on load line for given circuit. Explain various concept of biasing and significance of various. 	10	Question paper, Rating scale	Internal

SCHEME FOR LEARNING OUTCOME

A	CO LO Code Code		ırse Code	Co	Branch Code		
Format No. 4	5	2	0	3	3	0	E

COURSE NAME	Analog Circuit
CO Description	Examine various transistor biasing circuits
LO Description	Compare different BJT and FET biasing circuits

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-05	BJT Biasing- Fixed, Emitter feedback, Collector feedback, Voltage divider biasing.FET Biasing – Fixed, Self and Voltage divider biasing		Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	8		Text Books, PPT, Handouts, chalk board, charts, Video lecture- NPTEL and others.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximu m Marks	Resources Required	External / Internal
LO-05	End Semester Theory Exam	 Student will be asked to(and/or): Explain the different type of BJT and FET biasing circuits. Compare different biasing circuits. List out advantages, disadvantages and application of different biasing circuit. Solve simple numerical on biasing circuit. 	10	Question paper + Rating scale.	External

SCHEME FOR LEARNING OUTCOME

A	LO Code	CO Code	Code	Course Code			Branch Code		
Format No. 4	6	2		0	3	3	0	Ε	

COURSE NAME	Analog Circuit						
CO Description	Examine various transistor biasing circuits						
LO Description Plot the characteristics for BJT and FET circuits and place Q-point on load line							

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-06	Plot input, output and load line characteristics of BJT (CE mode) Plot input and output characteristics of JFET (CS mode)	Lab demonstration, PPT, hands on practice, lab assignments.	 Teacher will explain the content in class/lab. Teacher with support from lab staff will demonstrate the procedure of lab experiments. Student will conduct lab assignment based on these experiments. 		6	Lab manual, charts, Handouts, experimental trainer instruments/kit with measuring instruments, computer with relevant simulation software and high speed internet.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
LO-06	Practical test in laboratory	Student will be asked to 1. Plot the characteristic and locate Q-points for given circuit manually or/& on simulation software.	10	Rubrics, Rating scale	Internal

SCHEME FOR LEARNING OUTCOME

A	LO Code	CO Code	de	ourse Coo	Co	Branch Code		
Format No. 4	7	3	1	0	3	3	0	Ε

COURSE NAME	Analog Circuit
CO Description	Identify different types of transistor amplifiers
LO Description	Explain single and multistage amplifiers and state its need

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-07	Transistor as an Amplifier (CE Amplifier) Single stage and two stage transistor amplifiers. Differentiate Cascade and Cascode transistor amplifiers. Coupled Amplifiers (only circuit diagrams and working without mathematical derivations):RC coupling, Direct Coupling, Transformer coupling. Darlington Pair	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		Text Books, PPT, Handouts, chalk board, charts, Video lecture- NPTEL and others.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal	
Lo-07	End Semester Theory Exam	 Student will be asked to(and/or): Explain working of transistor as an amplifier. Classify the amplifier circuits and their comparison. Draw circuit and explain working ofdifferent coupled amplifier. 	10	Question paper, Rating scale	External	

SCHEME FOR LEARNING OUTCOME

	LO Code	CO Code	Course Code			Branch Code		
Format No. 4	8	3	1	0	3	3	0	E

COURSE NAME	Analog Circuit
CO Description	Identify different types of transistor amplifiers
LO Description	Classify and compare different types of amplifiers circuits.

SCHEME OF STUDY

S. No.	Learning Content	Teaching - Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-08	Classification of Amplifiers: Class A, class B, class AB & class C amplifier. Power Amplifiers (only circuit diagrams and working without mathematical derivations): Audio Power Amplifier, Pushpull Amplifier	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		Text Books, PPT, Handouts, chalk board, charts, Video lecture- NPTEL and others.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
LO-08	End Semester Theory Exam	Student will be asked to (and/or):1. Classify different types of amplifier2. Draw and explain working of different class amplifier circuits.3. Draw and explain working of power amplifier circuits	10	Question paper, Rating scale	External

RGPV	/ (Diplo	oma Wing) Bho	opal SCHEN	SCHEME FOR LEARNING		Branch Code		Course Code		CO Code	LO Code	Format No.
COLIDC	E NAME	Amolog Circuit	-	OUTCOME			3 3	8 0		3	9	
		Analog Circuit										
CO Des	cription	Identify different types	of transistor amplifiers	S								
LO Desc	cription	Demonstrate and plot	the gain Vs frequency r	response for differer	nt amplifiers.							
				SCHEME O	F STUDY							
S. No.	Lea	rning Content	Teaching – Learning Method	Description of	T-L Process	Teach Hrs.	Pract /Tut Hrs.		LRs R	Remarks		
LO-09	response transisto mode) Plot the g response class A tr (CE mode Plot the g	Plot the gain Vs frequency response of single stage class A transistor amplifier (CE mode) Plot the gain Vs frequency response of push pull procedure of lab experiments. • Student will cond assignment base experiments.		nduct lab		8	Ha ex ins ma ins co re so	Lab manual, char Handouts, experimental tra instruments /kit measuring instruments, computer with relevant simulati software and hig speed internet.		rainer t with tion		
		'		SCHEME OF A	SSESSMENT			'				·
S. No.	Metho	od of Assessment	Description of	Assessment	Maximum N	/larks	Resources Required External Internal					

LO-09	1.			nt will be aske t the gain Vs fi ph for given ai trument/kit of tware.	requency	10	10			Rubi	rics, F	Rating		Internal	
		-	AD	DITIONAL INS	TRUCTIONS FOR TI	HE HOD/ I	ACL	JLTY	(IF AN	Y)					
RGPV	/ (Diplo	oma Wing) Bho	opal		E FOR LEARNI OUTCOME	NG	Br.	anch Co	de 3	Ccc 3	ourse Co	de 1	CO Code	LO Code	Format No. 4
COLIRS	E NAME	Analog Circuit			OTCOIVIL							"	7	10	
	cription	Examine feedback amp	olifiers a	and Oscillators											
	cription	Describe the concept &			amplifier.										
	<u> </u>				SCHEME OF S	TUDY									
S. No.	Lea	rning Content		eaching – ning Method	Description of Process	T-L	Tea Hr:		Pra /Tut		ı	LRs Re	equire	d	Remarks
LO-10 Feed Back Amplifier - Importance & concept of Feed Back - Advantage of negative feedback, block diagram of a feedback amplifier		ce & concept of Feed dvantage of negative block diagram of a	PPT, V	oom lecture, Video, stration, quiz,	Teacher will explain contents and provide handouts to student Teacher will conduct assignments/ quiz/tto make students protheir knowledge.	le s. ct utorial	8 Text Books, PP Handouts, chalk board, charts, Video lecture-NPTEL and other		ζ						
					SCHEME OF ASSE	SSMENT									
S. No.	S. No. Method of Assessment Descript			Descriptio	n of Assessment		Maximum Marks			Resources Required			uired	External / Internal	

LO-10	Mid S	emester Theory Exam	 Explain Description Description Draw 	ribe the advar back.	I to (and/or): Indicate the description of the desc	10		Question Rating			nternal
			AD	DITIONAL INS	TRUCTIONS FOR THE HOD/	FACULTY (IF	ANY)				
RGPV	/ (Diplo	oma Wing) Bl	nopal	• • • • • • • • • • • • • • • • • • • •	E FOR LEARNING OUTCOME	Branch Code E 0	Course 3 3 (CO Code	LO Code	Format No. 4
COURS	E NAME	Analog Circuit									
CO Des	cription	Examine feedback a	mplifiers a	nd Oscillators							
LO Des	cription	Explain the principal	of oscillat	ors and classify i	t.						
					SCHEME OF STUDY						
S. No.		rning Content		eaching – ning Method	SCHEME OF STUDY Description of T-L Process Teacher will explain the	Teach Hrs.	Pract. /Tut Hrs.	LR:	s Requ		Remarks

Description of Assessment

S. No.

Method of Assessment

External /

Internal

Resources Required

Maximum Marks

LO-11	End Semester Theory Exam	 Student will be asked to(and/or): Explain the principle of oscillator. State the Barkhausen criteria for oscillation Compare positive and negative feedback. List out the different sinusoidal oscillators Draw and explain circuit of various sinusoidal oscillators. 	10	Question paper, Rating scale.	External
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DCDV (Dinlama Mina) Dhanal	SCHEME FOR LEARNING	В	ranch Coc	le	Co	ourse Co	de	CO Code	LO Code	A
RGPV (Diploma Wing) Bhopal	OUTCOME	E	0	3	3	0	1	4	12	Format No. 4

COURSE NAME	Analog Circuit
CO Description	Examine feedback amplifiers and Oscillators
LO Description	Assemble circuits of various oscillator and verify output waveform

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-12	Verify the output waveform for sinusoidal oscillators (at least two oscillator circuits from- RC Phase Shift, Wein Bridge, Hartley, Colpitts, Clapp, Crystal are expected)	Lab demonstration, PPT, hands on practice, lab assignments.	 Teacher will explain the content in class/lab. Teacher with support from lab staff will demonstrate the procedure of lab experiments. Student will conduct lab assignment based on these experiments. 		8	Lab manual, charts, Handouts, experimental trainer instruments/kit with measuring instruments, computer with relevant simulation software and high speed internet.	

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
LO-12	Practical test in laboratory	Student will be asked to 1. Verify the output waveform for given sinusoidal oscillator on instruments/kits or/& simulation software	10	Rubrics, Rating scale	External

DCDV /Dimle	ma Wing \ Dhanal	SCHEIVIE FOR LEARINING		oi anch co	ie.	L.	uise co	ue	Code	Code	Λ
KGPV (DIPIC	oma Wing) Bhopal	OUTCOME	E	0	3	3	0	1	5	13	Format No. 4
COURSE NAME	Analog Circuit										
CO Description	Construct and Analyze various	signal generators and Multivibrator									
LO Description	Classify different type of transi	stor based Multivibrator.									

Branch Code

Course Code

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Code

Code

SCHEME FOR LEARNING

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-13	Multivibrators: transistor based circuit diagram and Working of - Astable (free running) multivibrator, Monostable (Single shot) multivibrator, Bistable (Trigger) multivibrator	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		Text Books, PPT, Handouts, chalk board, charts, Video lecture- NPTEL and others.	

SCHEME OF ASSESSMENT

6	No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External /
J.	. INO.	Method of Assessineit	Description of Assessment	IVIANIIIIUIII IVIAINS	Resources Required	Internal

LO-13	End Se	emester Theory	1. Draw (Mono 2. Explain	stable and Bis	n and waveform of Astable, table Multivibrator Astable, Monostable and		10		Question paper, Rating scale.				External
			AD	DITIONAL INS	TRUCTIONS FOR THE HOD/	FACUL	Y (IF A	NY)					
				SCHEM	E FOR LEARNING	Branc	n Code	C	ourse Co	ode	CO Code	LO Code	_
RGPV (Diploma Wing) Bho			opal	••••	OUTCOME	Ε	0 3	3	0	1	5	14	Format No. 4
COURS	E NAME	Analog Circuit											
CO Des	cription	Construct and Analy	ze various	signal generator	s and Multivibrator								
LO Des	cription	Construct various wa	veform ge	enerators using o	liodes & transistors								
					SCHEME OF STUDY								
S. No.	Lea	rning Content		eaching – ning Method	Description of T-L Process	Teach Hrs.		ract. It Hrs.		LRs R	equire	ed	Remarks
LO-14	wave, Square wave, rectangular and saw-tooth waveform generators using diodes and transistors, significance of duty cycle for various waveforms. 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	8		Text Books, PPT, Handouts, chalk board, charts, Video lecture- NPTEL and others.					
			-		SCHEME OF ASSESSMENT		·						
S. No.	Metho	d of Assessment		Descriptio	n of Assessment	Maxi	num IV	larks	Re	sourc	es Rec	uired	External / Internal

LO-14 End Semester Theory Exam End Semester Theory Exam End Semester Theory Exam End Semester Theory Exam Theory Exam End Semester Theory Exam Exam End Semester Theory Exam Exam Exam End Semester Theory Exam Exa	10	Question paper, Rating scale.	External
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SCHEME FOR LEARNING OUTCOME

Л	Code	Code	de	urse Co	Co	le	ranch Cod	В	
Format No. 4	15	5	1	0	3	3	0	E	

COURSE NAME	Analog Circuit
CO Description	Construct and Analyze various signal generators and Multivibrator
LO Description	Operate different type of Multivibrator circuits and generate waveforms.

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
LO-15	Verify the non-sinusoidal output waveforms (at least two from-square, rectangular, triangular, sawtooth) of transistor based multi-vibrator circuits.	Lab demonstration, PPT , hands on practice, lab assignments.	 Teacher will explain the content in class/lab. Teacher with support from lab staff will demonstrate the procedure of lab experiments. Student will conduct lab assignment based on these experiments. 		8	Lab manual, charts, Handouts, experimental trainer instruments/kit with measuring instruments, computer with relevant simulation software and high speed internet.	

SCHEME OF ASSESSMENT							
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal		
LO-15	Student will be asked to 1. Verify the non-sinusoidal output waveform for given transistor based multivibrator on instruments/kits or/& simulation software		10	Rubrics, Rating scale	Internal		