PERIYARUNIVERSITY

PERIYARPALKALAINAGAR
SALEM-636011

DEGREEOFBACHELOROFSCIENCE

OUTCOMEBASEDEDUCATION

Syllabusfor

B.SC.ELECTRONICSANDCOMMUNICATION

(SEMESTERPATTERN)
(For Candidates admitted in the Colleges affiliated toPeriyarUniversityfrom2021-2022onwards)

ProgrammeEducationalObjectives(PEOs):

Programme Educational Objectives (PEOs) are established through a consultation process.PEOsarebroadstatementsthatdescribethecareerandprofessionalaccomplishmentsthatth egraduatescan find opportunities inSales,Marketing,ServiceandR&DSectors.

TheB.Sc.Degreeprogrammegraduateswill…….

• **PEO 1** Practice the ethics of their profession consistent with a sense of social responsibilityand develop their engineering design, problem –solving skills and aptitude for innovations astheyworkindividuallyand inmulti-disciplinaryteams.

• **PEO2**Communicateeffectivelyandmanageresourcesskillfullyasmembersandleadersofthepr ofession.

• **PEO 3** Be receptive to new technologies and attain professional competence throughlifelong learning such as advanced degrees, professional registration, publications and otherprofessional activities.

ProgrammeSpecificOutcomes:

OncompletionoftheBScDegreeinElectronicsandCommunication,graduateswillbeableto
• **PSO1** Apply the fundamental concepts of electronics and communication to design avarietyofcomponentsandsystemsforapplicationsincluding .... communication, networking,embeddedsystems,PCB,Mobile,TVandetc.

• **PSO2** Select and apply cutting-edge hardware and software tools to solve complexElectronics andCommunicationproblems.

ProgrammeOutcomes:

OncompletionoftheB.Sc.degreetheElectronicsandCommunicationgraduateswillbeableto
• **PO1**Utilizethebasicknowledgeinmathematics,scienceinElectronicsandCom munication areas.

• **PO2**Identifyformulateandsolvecomplexproblemstoachievedemonstratedconclusionsusing mathematicalprinciples.

• **PO3** Design system components that meet the requirement of public safety and offersolutions.

• **PO4** Apply research-based knowledge to design and conduct experiments, analyze,synthesizeandinterpretthedatapertainingtoElectronicsandarriveatvalidconclusion s.

• **PO5**Construct,chooseand applythetechniques,resourcesandmoderntoolsrequiredforElectronics applications.

• **PO6**ExaminetheimpactofElectronicssolutionsinglobalandenvironmentalcontextsandutilizet he knowledgeforsustaineddevelopment.

• **PO7**Developconsciousnessofprofessional,ethicalandsocialresponsibilitiesasexpertsinthefiel dofElectronics.

REGULATIONS

1. ELIGIBILITY:

Candidatesseekingadmissiontothefirst yearoftheBachelorofScienceinElectronics&Communicationshould have passed the Higher Secondary Examination conducted by the Government ofTamil Nadu oran examination accepted as Equivalent there to by the Syndicate subject to such conditions as may beprescribed from to time are permitted to appear and qualify for the B.Sc., Electronics and CommunicationDegreeofthisuniversityafteracourseofstudyofThreeAcademicYears.

2. DURATIONOFTHECOURSE:

The course for the degree of Bachelor of Electronics and Communication shall consist of three academicyearsdivided into sixsemesters.Each semesterwill beofof90 workingdays.

3. COURSEOFSTUDY:

The course of study shall comprise instruction in the following subjects under OBE (Outcome BasedEducation)patternaccordingto thesyllabusandbooks prescribedfrom timetotime.

FOUNDATIONSUBJECTS:

PARTI:Tamil/Hindi/Malayalam/French/GermanP

ARTII:English

ALLIEDSUBJECTS: INTHEFIRSTYEARONEMAJOR

Departmentoutofthefourmentionedbelow;tobechosenforthestudyof twoalliedpapers.Inthesecondyearanothermajordepartmentinthelisttobechosenforthestudyofanothertwoalliedpapers.

SEMESTER	MAJORDE PARTMENT	ALLIEDSUBJECT
I/III	MATHS	ALGEBRA, CALCULUS &FOURIERSERIES
I/III	PHYSICS	ALLIEDPHYSICS -I
I/III	COMPUTERSCIENCE	PROGRAMMING INC
II/IV	MATHS	DIFFERENTIALEQUATIONSAND LAPLACETRANSFORMS
II/IV	PHYSICS	ALLIEDPHYSICS-II
II/IV	COMPUTERSCIENCE	PROGRAMMING INVISUALBASIC
II		ALLIEDLAB-IFORALLIEDI&IIMATHS/PHYSICS/C&VB LAB
IV		ALLIEDLAB-IIFORALLIEDIII& IVMATHS/PHYSICS/C&VBLAB

5. SCHEMEOFEXAMINATIONS

The scheme of examinations under OBE (Outcome Based Education) for different semesters shall be asfollows.

SEMESTERI								
PART	**SUBJECT**	**SUBJECTTITLE**	**TOTAL HOURS**		**CRE-DITS**	**TOTAL**		
			L	**T/P**		**CIA**	**EA**	**MARKS**
I	Language	Tamil-I@	6		3	25	75	100
II	Language	English – I COMMUNICATIVEENGLISH	6		3	25	75	100
III	Core-I	SemiconductorDevices	4		4	25	75	100
III	CorePract.-I	BasicElectronics Lab	1					
III	AlliedI		4		4	25	75	100
III	AlliedLab-I		2					
IV	SBEC-I	AppliedElectricCircuits	2		2	25	75	100
IV	ValueEducation	Yoga	1		2	25	75	100
IV	Add-on	ProffessionalEnglish-I	2		4	25	75	100

(T/P column for Semester I shows value **2** spanning rows)

SEMESTERII								
PART	**SUBJECT**	**SUBJECTTITLE**	**TOTAL HOURS**		**CRE-DITS**	**TOTAL**		
			L	**T/P**		**CIA**	**EA**	**MARKS**
I	Language	Tamil -II@	6		3	25	75	100
II	Language	English– II COMMUNICATIVEENGLISH	4		3	25	75	100
II	NaanMuthalvan SkillDevelopmentCourse	Language Proficiency forEmployability-EffectiveEnglish	2		2	25	75	100
III	Core- II	AppliedDigitalElectronics	4		4	25	75	100
III	CorePract.-I	BasicElectronics Lab	1	2	4	40	60	100
III	Allied-II		4		4	25	75	100

III	AlliedLab -I				2	2	40	60	100
IV	SBEC-II	PowerElectronics	2			2	25	75	100
IVIV	EVS	EnvironmentalStudies	1			2	25	75	100
	Add-on course	ProfessionalEnglish-II	2			4	25	75	100

SEMESTERIII

PART	SUBJECT	SUBJECTTITLE	TOTAL HOURS		CRE-DITS	TOTAL		
			L	T/P		CIA	EA	MARKS
I	Language	Tamil-III@	6		3	25	75	100
II	Language	English-III	6		3	25	75	100
III	CoreIII	ElectronicCircuits	4		4	25	75	100
III	CorePract.-II	ElectronicCircuitsPractical	1	2				
III	CorePract.-III	8085Microprocessor	1	2				
III	Allied III		4		4	25	75	100
III	AlliedLab-II		2					
IV	NMSDCI	Digital Skills for Employability-Microsoft Office Essentials	2		2	25	75	100

SEMESTERIV

PART	SUBJECT	SUBJECTTITLE	TOTAL	HOURS	CRE-DITS	TOTAL		
			L	T/P		CIA	EA	MARKS
I	Language	Tamil-	6		3	25	75	100
II	Language	IV@English-	6		3	25	75	100
III	CoreIV	IV	4		4	25	75	100
III	CorePract. II	8085 Microprocessor andInterfacing	1	2	4	40	60	100
III	CorePract. III	ElectronicCircuits Lab	1	2	4	40	60	100
III	AlliedIV	8085	4		4	25	75	100
III	Allied Lab - II	Microprocessor andInterfacingLab		2	2	40	60	100

PART	SUBJECT	SUBJECT TITLE	TOTAL HOURS L	T/P	CRE-DITS	CIA	EA	MARKS
IV	NaanMuthalvanSkillDevelopmentCourse	Employability Skills-Microsoft	2	-	2	25	75	100
IV	Add-oncourse	INTERNSHIP!*	Industry Oriented	Training 15days				

SEMESTERV

PART	SUBJECT	SUBJECTTITLEs	TOTAL HOURS		CRE-DITS	TOTAL		
			L	T/P		CIA	EA	MARKS
III	CoreV	Electronic CommunicationSystems	5		5	25	75	100
III	CoreVI	Ic's&TheirApplications	5		5	25	75	100
III	Elective I	FromGroupA	5		5	25	75	100
III	ElectiveII	FromGroup B	5		4	25	75	100
III	CorePract-IV	IC'S&Communication Lab	1	2				
III	CorePract-V	FromGroupD	1	2				
IV	SBEC III	ElectronicInstrumentation	2		2	25	75	100
IV	**NMSDC**	**Computational Intelligence for Employability-Drone Pilot Techniques**	**2**		**2**	**25**	**75**	**100**

SEMESTERVI

PART	SUBJECT	SUBJECTTITLE	TOTAL HOURS		CRE-DITS	TOTAL		
			L	T/P		CIA	CIA	CIA
III	CoreVII	PC Hard Ware Networking&Troubleshooting	5		5	25	75	100
III	CoreVIII	NetworkCommunication& Security	5		5	25	75	100
III	ElectiveIII	FromGroupC	5		5	25	75	100
III	Core Pract.IV	IC'S&Communication Lab	1	2	4	40	60	100

III	Core Pract.V	FromGroupD	1	2	4	40	60	100
III	CoreIX	Biomedical Instruments(or)ProjectVivaVoce*	5		5	25	75	100
III	NMSDC	Green Technology for Employability-EV Battery Management	2	-	2	25	75	100
IV	SBECVI	LifeDevelopmentSkills	2		2	25	75	100
V	ExtensionActivities	(NCC/NSS/YRC/SportsEtc.)			1			
		TotalCredits&Marks			**150**			**4100**
*		**NoInternalMarkForProjectWork**						
		ProjectReportEvaluation	**80**	**Marks**				
		VivaVoceEvaluation	**20**	**Marks**				

!* Internship: To be carried out 4th semester vacation period ,The internshipcourse will notmeetas aregular class.

@AnyotherLanguagelikeHindi/Malayalam/French/etc.

#$ThosewhohavenotstudiedTamiluptoXIIstdandtakenaNonTamillanguageunderpart-IshalltakeTamilcomprisingoftwocourses(levelwillbeat6thstandard)insteadofNMEC

#$ThosewhohavestudiedTamiluptoXIIstdandtakenaNonTamillanguageunderpart-IshalltakeAdvancedTamilcomprisingoftwocoursesinsteadofNMEC.

5.A. INTERNSHIPSOBJECTIVES

Theinternship couldbe anew joboranew experiencewithinanexistingjob astheworkperformedin the internship should lead to new learning, discovery or growth for the student and contribute toward thestudent'sacademicprogram.

The student intern will either find a company to sponsor him or her or perform a specific project at anexistingjob.Theinternshipprogramis anagreementbetween thestudent,facultyadvisorandthecompanysupervisor.

Performjobrequirementsinaprofessionalmanner.

Maintain regular and prompt attendance, as agreed upon with supervisor. The submission of report iswritten at the end of the internship by the student to the institute which form part in the awarding of thedegree certificate.

INTERNSHIPSOUTCOME

Aninternshipprovidesthestudenttheopportunitytobuildupon,apply, andassesstheconceptsthataredeveloped through the College's curriculum and to further the student's professional growth through ameaningful"real-world" job experience.Internships.

6. QUESTIONPAPERPATTERNFORALLUGCOURSES

MARKDISTRIBUTIONFORTHEORY(EXTERNAL)

TIME: 3HOURS   MAXIMUM MARKS : 75PASSINGMINIMUM :30MARKS

Part A

15x1=15(AnswerAllQ

uestions)

(ThreeQuestionsfromEachUnit)

Part B

5x2=10(Answer Any Two

Questions)(OneQuestionsfromE

achUnit)

Part C

5x10=50(AnswerAllQu

estions)

(OneQuestionfromEachUnitwithInternalChoice)

MarkDistributionforTheory(Internal)

Max.Marks: 25   PassingMinimum:10Marks

SubjectLevelCycleTestandModelExam	:	15	
SubjectLevelAssignment	:	5	
SubjectLevelAttendance	:	5	
		- - - - - - - - -	
Total	**:**	**25**	
		- - - - - - - - -	

MARK DISTRIBUTION FOR PRACTICALS

(EXTERNAL)TIME:3HOURS;MAXIMUMMARKS:60;PASSINGMINIMUM:24M

ARKSPRACTICALEXAM:50MARKS&RECORD:10MARKS

Submission of Record Note Books for Practical Exams: Candidates appearing for the Practical Examsmust submit Bonafide Record Note Book, otherwise the candidate will not be permitted to appear for thepracticalexam**.**

MarkDistributionforPractical(Internal)

Max.Marks:40   PassingMinimum:16Marks

YearThrough;LabPerformance	:	10	
ModelPractical's	:	20	
YearThrough;LabAttendance	:	10	
		- - - - - - - - -	
Total	**:**	**40**	

7.   PROJECTWORKORONECOREPAPER:

ACandidatecansubmit
SOFTWAREorHARDWAREorHARDWAREcumSOFTWAREbasedproject   and   has   to
demonstrate   the   Project   with   Project   Report   in   the   University   Project
VivaVoceExaminationconductedattheendofthesixthsemester.

MARKDISTRIBUTIONFORPROJECTREPORT:80MARKSM

ARKDISTRIBUTIONFORVIVAVOCE   :20MARKS

**InsteadofProjectWork;CorePaper–
IX"BIOMEDICALINSTRUMENTS"maybeofferedintheVIthSemester.**

8.   PASSINGMINIMUM:
 Acandidateshallbedeclaredtohavepassedtheexaminationonlyifthecandidatesecuresaminimumof40%intheUniversityexamination andwithanoveralltotalof40outof100.

9.   RESTRICTIONSTOAPPEARFORTHEEXAMINATIONS

Candidates who fail in any of the course of Part I , II , III , IV & Part V of UG Degree examinationsshallcompletethecourseconcernedwithin5yearsfromthedateofadmissiontothesaidprogrammeandshouldtheyfailtodoso,theyshalltaketheexaminationintherevisedsyllabusprescribedfortheimmediatenextbatchofcandidates.

If there is no change in the syllabus they shall appear for the examination in that course with thesyllabus in vogue until there is a change in the syllabus. In the event of removal of that courseconsequenttochangeofregulationand/orcurriculumafter5-
yearperiod,thecandidatesshallhavetotake up an equivalent course in the revised syllabus as suggested   by   the   Chairman   and   fulfill therequirementsaspertheregulationcurriculumfortheawardofthedegree.

10.   IMPROVEMENTOFMARKSINTHESUBJECTSALREADYPASSED

Candidates desirous of improving the marks awarded in a passed subject in their first attempt shallreapparoncewithinaperiodofsubsequenttwosemesters.Theimprovedmarksshallbeconsideredfor classificationbutnotforranking.Whenthereisnoimprovement,thereshallnotbeanychangeintheoriginalmarksalreadyawarded.

11.   CLASSIFICATIONOFSUCCESSFULCANDIDATES

AcandidatewhopassesalltheexaminationsinPartItoPartVsecuringfollowingCGPAandGradesshallbedec

laredasfollowsforPartIorPartIIorPartIII.

CGPA	GRADE	CLASSIFICATION OFFINALRESULT
9.5 -10.0	O+	FirstClass-Exemplary
9.0and abovebutbelow9.5	O	
8.5and abovebutbelow9.0	D++	FirstClasswithDistinction
8.0and abovebutbelow8.5	D+	
7.5and abovebutbelow8.0	D	
7.0and abovebutbelow7.5	A++	FirstClass
6.5and abovebutbelow7.0	A+	
6.0and abovebutbelow6.5	A	
5.5and abovebutbelow6.0	B+	SecondClass
5.0and abovebutbelow5.5	B	
4.5and abovebutbelow5.0	C+	ThirdClass
4.0and abovebutbelow4.5	C	

12. RANKING

Acandidatewho   qualifiesfortheUGdegree coursepassingalltheexaminationsinthefirstattempt,withintheminimumperiodprescribedforthecourseof studyfromthedateofadmissiontothecourseandsecuresIorIIclassshallbeeligibleforrankingandsuchranki ngshallbeconfinedto

10% of the total number of candidates qualified in that particular branch of study; subject to amaximumof 10Ranks.Theimproved marksshall notbetaken intoconsideration for ranking.

13. COMMENCEMENTOFTHISREGULATION:

Theseregulationsshalltakeeffectfromtheacademicyear2021- 2022,i.e.,forstudentswhoaretobeadmittedtothefirstyearofthecourseduringtheacademicyear2021- 2022andthereafter.

14. COURSEEQUIVALENCE:

TheThreeYear Coursein theBachelor ofScienceinElectronics&Communication isEquivalent to:

· B.Sc.Electronics

· B.Sc.IndustrialElectronics

· B.E.S.(BachelorofElectronicScience)

15. COURSEOBJECTIVES:

The syllabus of B.Sc., Electronics and Communication is enriched and necessary changes have beenmade inthe course pattern andpapers. Thiswillenable the studentstoacquire the**Basic&FundamentalKnowledge In Both TheoryAndPractical's.**

16. ACADEMICOPPORTUNITIES:

After successful completion of this course ; students can pursuehigherdegree courses likeM.Sc.,(Electronics)/M.Sc.,(ElectronicScience)/M.Sc.,(AppliedElectronics)/M.Sc.,(Electronics& Instrumentation)/M.Sc.,(CyberForensics&InformationSecurity)M.Sc.,(Criminology & Criminal Justice Science)/M.Sc.,(ComputerScience)/MCA/ M.Sc.,(Nano Science and Technology) / M.Sc., HRD Psycholgy / M.Sc., (Energy Science) / M.Sc.,Environomental Science) / M.Sc., Library & Information Science) / M.Sc., YOGA / MBA / MA., (Defense&StrategicStudies/MA.,Yoga/MA.,PublicAdministration/MA.,PoliticalScienceetc

17. JOBOPPORTUNITIES:

The Students are eligible for placement in Army, Navy, Airforce, Civil AviationSectors, Space & Radio Astronomy Sectors, T.V. Broad Casting Stations, All IndiaRadio, BSNL , TNEB , ITES (IT Enabled Software Services) , TelecommunicationSectors, Banking and Railway Services and as Computer Hardware & InstrumentService Professionals. A Wide variety of Self – Employment Opportunities are alsoavailable.

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERI

COREI-SEMICONDUCTORDEVICES

L	T	P	C
4	0	0	4

COURSEOBJECTIVES:

Thiscourseprovidestheimportantaspectofsemiconductorsanddeviceslikediodes,Transistor,JFETandMOSFET.

CourseOutcomes: Aftercompletionofthiscourse,studentableto	
CO1	Understandthebanddiagram,typeofsemiconductorsandchargecarrierlifetime.
CO2	Understandofcapacitorsandtypesofdiodesbreakdown
CO3	Demonstratethetransistorandtheirtypes
CO4	UnderstandthefundamentalsforconstructionofdifferenttypeofJFET.
CO5	TostudytheoperatingprinciplesofMOSFET.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(ProgrammespecificqualificationattributesK1,K2,K3,K4)	Hours ofInstruction
I	**Atom**	Structure of Atom - Atomic Number - ValenceElectrons - Bonding in Conductors - Insulators -Semiconductors-EnergyBandDiagramofConductors-Insulators-Semiconductors-IntrinsicSemiconductor-ExtrinsicSemiconductor - P Type Semiconductor - N typeSemiconductor -Carrier LifeTime.	10
II	**PN Junction Diode**	TheoryofPNJunctionDiode-EnergyBandStructure-DiodeCurrentEquation-DiodeResistance-DepletionCapacitance-DiffusionCapacitance-EffectofTemperature-PNJunctionDiodeasaRectifier- ZenerDiode-	10

		AvalancheBreakDown-ZenerBreakDown-ZenerDiode asa VoltageRegulator.	
III	**Transistor**	OperationofPNP&NPNTransistor-CB,CE, CC Configuration and Characteristics - Transistoras anAmplifier.	10
IV	**JFET**	Construction-Operation-Output&TransferCharacteristics of P Channel & N Channel JFET -Characteristic Parameters of the JFET - BiasingtheFET-ComparisonofJFET&BJT-Comparison of P Channel & N Channel JFET - ApplicationsofJFET-JFETasaVoltageVariableResistor.	10
V	**MOSFET**	Construction,Operation,Output&TransferCharacteristicsofPChannel&NChannelDepletionMOSFET-Construction,Operation,Output & Transfer Characteristics P Channel & NChannelEnhancementMOSFET-BiasingtheMOSFET - Comparison of P Channel MOSFETwith N Channel MOSFET - Comparison of JFETwithMOSFET-HandlingPrecautionsfortheMOSFET.	10

REFERENCEBOOKS:

1. ElectronicDevices&Circuits-Salivahanan-TMH-2ndEdition

2. ATextBookofAppliedElectronics-R.S.Sedha-S.Chand-Rs.395/-

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTR-I

SKILLED BASED ELECTIVE

COURSESBECI-

APPLIEDELECTRICCIRCUITS

(INDEPTHTHEORY&ANALYSIS NOTREQUIRED)

L	T	P	C
2	0	0	2

COURSEOBJECTIVES:

- Tounderstandandacquireknowledgeaboutvariouscircuittheorem.

- Tomakestudentsstronginelectriccircuitdesigning.

- Tolearnthedifferentlawsandimplementincircuitsandalsocompareitsgain.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	Examinethebasiccomponentsinseriesandparallelconnection.
CO2	Haveathoroughunderstandingofthedifferentcircuitlaws.
CO3	Understandvariouscircuittheorems.
CO4	AnalyseRMS&PowerparametersofACcircuits.
CO5	Acquiretheknowledgeof RLCanditsapplications.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstructi on

I	**Circuitcomponents**	Resistors,Capacitors&InductorsinSeriesandParallel -FactorsgoverningtheResistanceofaResistor,Capacitor & Inductor - Colour Coding of Resistors - EnergyStoredinaCapacitor-EnergyStoredinan Inductor–VariousOtherPassive&ActiveDevices-	05

		SimpleProblems.	
II	**Circuitlaws**	OhmsLaw-Kirchoff'sVoltageLaw-Kirchoff'sCurrent Law - Current Division- Voltage Division-Star Connection - Delta Connection - Series Circuits - ParallelCircuits-Series&ParallelCircuits-Open Circuit-ShortCircuit-SimpleProblems.	05
III	**Theorems**	SuperPositionTheorem–Thevenin'sTheorem–Norton'sTheorem–Millman'sTheoremMaximumPowerTransferTheorem–Simple Problems	05
IV	**Ac circuitbasics**	SinusoidalandNonSinusoidalWaveforms–PeakValue – Peak to Peak Value – Average Value – RMSValue – Period and Frequency Measurement - PowerFactor-RealPower–ReactivePower–Simple Problems.	05
V	**Reactance,impedance &resonance**	CapacitiveReactance–InductiveReactance–Impedance – RL and RC in Series and Parallel–RLCinSeriesandParallel–SeriesResonance-Parallel Resonance-SimpleProblems	05

BooksforReference

1. Circuits And Networks: Analysis And Synthesis -

Sudhakar&ShyamMohan-TMH-IVEdition

2. BasicElectronics–BernardGrob–McgrawHill.

3. CircuitTheory–Salivahanan –S.Chand–Rs.395/-

L	T	P	C
4	0	0	4

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERII

COREII-APPLIEDDIGITALELECTRONICS

COURSEOBJECTIVES:

- Toacquirethebasicknowledgeofdigitallogiclevelsandapplicationofknowledgetounderstanddigitalelectroniccircuits.

- Topreparestudentstoperformtheanalysisanddesignofvariousdigitalelectroniccircuits.

- To learnthe designprocessofregisters,countersandconversionofanalog todigitalconversionandvice-versa.

COURSEOUTCOMES:Aftercompletionofthiscourse,studentableto

CO1	Examinethestructureofvariousnumbersystemsanditsapplicationindigital design.
CO2	Haveathoroughunderstandingofthefundamentalconceptsandminimizationtechniquesusedindigitalelectronics.
CO3	Understandvariouscombinationallogiccircuitsanditsapplications
CO4	Analyseanddesignvarioussequentiallogiccircuitsanditsapplications.
CO5	Analyzethelogiclevelsandapplythemforthedesignofanalogtodigital conversionandviceversa.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstruction

I	**Number systems**	BinarySignals–BinaryNumberSystem–DecimalNumber System - Octal Number System – HexadecimalNumberSystem– ConversionfromOneNumberSystemtoAnotherNumberSystem-BCD–Graycode –Excess –3 Code–ASCIIcode.	10
II	**Boolean algebra**	BinaryAddition,Subtraction,Multiplication&Division - 1's and 2's Complement Subtraction - 9's &10's Complement Subtraction - Basic laws of BooleanAlgebra - Duality Theorem – De Morgan's Theorem -SumofProducts–ProductofSum-TwoVariable, ThreeVariable&FourVariableKarnaughMaps.	10
III	**Combination alElements**	LogicGates:AND,OR,NOT,EX-OR,EX-NOR, NAND&NOR-LogicGatesusingDiscreteComponents - NAND & NOR as Universal Gates - Half& Full Adder – Half & Full Subtractor - Encoder -Decoder-Multiplexer-Demultiplexer-Implementationusing74147,7442,74153&74155 IC's.	10
IV	**Sequential Elements**	Flip Flops: RS - Clocked RS - JK - Master Slave JK - D&TFlipFlops–ShiftRegisters:SIPO–SISO–PIPO – PISO – Shift Left – Shift Right- Ring counter – Twisted Ring Counter . Counters: Hexadecimal Up - Hexadecimal Down - Modulo Up - Modulo Down - UP/DOWNCounters-ImplementationUsing7476, 7495,7493 &7490 IC's.	10

V	A/DAND D/AConver sion	ParallelComparatorTypeofADC-CounterRampTypeofADC-SuccessiveApproximationTypeofADC - Dual Slope Type of ADC - ADC Accuracy andResolution - Binary weighted Resistor type of DAC -R-2RLadderTypeofDAC-DACAccuracyandResolution-ImplementationusingADC0809&DAC 0800 IC's.	10

Booksforstudy

1. *AnandKumar.*2008.**FundamentalsofDigitalCircuits.**[SecondEdition].PHI.
2. *Salivahanan.*2004.**DigitalCircuitsandDesign.**[FourthEdition].S.Chand.

Books forReference

1. *Donald,P.Leach, Albert Paul Malvino and GoutamSaha.* 2008. **Digital Principles andApplications.**[SixthEdition].Tata McGrawHill,NewDelhi.
2. *Virendra Kumar.*2009. **Digital Technology Principles and Practice.**[First Edition].NewAge InternationalPublications,NewDelhi.
3. *Jacob Millman and Christos Halkias.* 2011. **Integrated Electronics Analog and DigitalCircuitsandSystems.**[SecondEdition].TataMcGrawHillPublishingCompanyLimited,NewDelhi.
4. *Thomas, L.Floyd.* 2006. **Digital Fundamentals.** [Ninth Edition]. Pearson Education, NewDelhi.

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTE

RII

L	T	P	C
2	0	0	2

SKILLED BASED ELECTIVE

COURSESBECII-

POWERELECTRONICS

(INDEPTHTHEORY &ANALYSISNOT REQUIRED)

COURSEOBJECTIVES:

- Tounderstandandacquireknowledgeaboutvariouspowersemiconductordevices.

- Toprovidethestudentsadeepinsightintotheworkingofdifferentswitchingdeviceswithrespect totheircharacteristics.

- Tostudytheprincipleofoperation,designandsynthesisofdifferenttypesofpowersuppliesandtheirap plications.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	AbilitytoexpresscharacteristicsofSCR,TRIAC,DIACandUJT
CO2	AcquireknowledgeaboutfundamentalconceptsandmethodstoturnONand turnOFFthethyristor.
CO3	UnderstandthedesignprincipleoftriggeringcircuitofSCR
CO4	Explaintheswitchingprincipleandapplications
CO5	Remembertheworkingprincipleofvarioustypesofpowersupplies.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstructi on

I	ThyristorCharacteristics	SimpleTheory&Characteristics ofSCR-DIAC, TRIAC-UJT.UJTasanOscillator.	05

II	Methods ofTurn ON &Turn OFF	AC gate Triggering- R Triggering- RC Triggering-DC gate Triggering - Pulse gate Triggering – NaturalCommutation - Force Commutation – Self - Impulse -Resonant-Complementary-External-Loadside-Line Side.	05
III	Triggering SCR	TriggeringofseriesconnectedSCR's-TriggeringofParallel Connected SCR's – Current & Voltage Protection-SnubberCircuit.	05
IV	StaticSw itches	SinglePhaseACSwitches- Three PhaseACSwitches-ThreePhaseReversingSwitches-ACSwitchesforBusTransfer -DC Switches -Solid StateRelays.	05
V	PowerS upplies	SwitchedmodeDCPowerSupplies-ResonantDCPowerSupplies-BidirectionalPowerSupplies-SwitchedmodeACPowerSupplies-ResonantAC PowerSupplies-BidirectionalACPowerSupplies.	05

Booksforstudy

1. PowerElectronics-MuhammedH.Rashid-PHI-2ndEdition
2. PowerElectronics–Jaganathan–PHI–IIEdition.

Books forReference

1. *SinghMDandKhanchandaniKB,2007*,**Powerelectronics**[SecondEdition],TataMcgrawhill, Newdelhi.

2. *Mithal.G.K,2000*,**Industrialelectronicsandcontrol**[EighteenthEdition],TataMcgrawhill ,Newdelhi

3. *TherajaB.L,Theraja.A.K,2003*,**ElectricalTechnology** [FirstEdition],S.Chand,Newdelhi.

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERI &II

L	T	P	C
2	2	2	4

COREPRACTICALI-BASICELECTRONICSLAB

(ANYHARDWAREBASED SIMULATIONTOOL MAYALSO BEUSED)

(Any22Experiments)

COURSEOBJECTIVES:

Basic electronics laboratory is the gateway of the electronics & communicationengineering world. At the very beginning the students get familiarized with the variouselectronics instruments & components which basically equip them to construct complexcircuits in near future. In this lab students build up preliminary electronic circuits and verifytheresultswiththeoreticalconcepts.Labexperimentsaredesignedinsuchafashionthattheengineeringskillof the studentsstartsto enrich**.**

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	AbilitytoexpresscharacteristicsofDIODES,BJT,THYRISTORS
CO2	Tounderstandthebasictheoremsandto verifytheiroperation
CO3	Tounderstandthebasicdigitalcircuitsandtoverifytheiroperation
CO4	Learnthebasicsofgates&Constructbasiccombinationalcircuitsandverifytheirfunctionalities
CO5	LearnaboutShiftregisters&counters

Syllabus

1. ColourCodingofResistors

2. PNJunctionDiodeCharacteristics.

3. ZenerDiodeCharacteristics.

4. CEInputCharacteristics.

5. CEOutputCharacteristics.

6. SCR/TRIACCharacteristics.

7. DCRegulatedPowerSupplyUsingZenerDiode.

8. VerificationofOhm'sLaw.

9. VerificationofKirchoff'sCurrentLaw.

10. VerificationofKirchoff'sVoltagelaw.

11. VerificationofThevenin'sTheorem/Norton'sTheorem.

12. VerificationofMillman'sTheorem

13. VerificationofMaximumPowerTransferTheorem

14. InductanceCalculationUsingSeriesorParallelResonance.

15. TransientResponseofanRCCircuit.

16. TruthTableVerificationofBasicGates(AnyTwo)

17. LogicGatesUsingDiscreteComponents(AnyOne).

18. +5VRegulatedPowerSupply.

19. NANDorNORasaUniversalGate(AnyOneGate).

20. VerificationofDeMorgan'sTheorem.

21. TruthTableVerificationofHalfAdder&FullAdder

22. TruthTableVerificationofHalfSubtractor&FullSubtractor.

23. EncoderUsing74147IC

24. DecoderUsing7442IC

25. MultiplexerUsing74153IC

26. DemultiplexerUsing74155IC

27. MSJKFlipFlopUsing7476IC

28. ParallelInParallelOutShiftRegisterUsing7495IC

29. UpCounterUsing7490ICor7493IC.

30. ClockGenerationUsingNANDorNORGate.

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERIII

COREIII-ELECTRONICCIRCUITS

L	T	P	C
4	0	0	4

COURSEOBJECTIVES:

   To analyze and describe the applied electronics principles used to develop circuitsand systems &To understand the fundamentals of the alternating current. To apply the basictools and testequipment used toconstruct, troubleshoot,and design standard electroniccircuits.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	Understandthebasicsofelectricalenergyandpracticalimplementationofelectrical fundamentals.
CO2	solvedesignproblemsonrectifiers,filtersandpowersupplycircuits.
CO3	Understandvarioustypesofamplifier.
CO4	Examinethebasiccomponents offeedback&itstypes.
CO5	Acquiretheknowledgeaboutoscillators,MultivibratorsandWaveshapingcircuits.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstructi on
I	Power supply's	Half Wave Rectifier - Full Wave Rectifier - BridgeRectifier-Averagevalue-RMSvalue-Formfactor-Peak factor - Ripple factor - Efficiency - TUF - PIV -Filters:C,L,LC,CLC,CRC–VoltageRegulators :SeriesRegulators-ShuntRegulators-ICVoltage	10

		Regulators(78XX&79XX)..	

II	Transistor biasing	BiasStability-Thermalrunaway-MethodsoftransistorBiasing-Biascompensation-WaveShaping Circuits – RC & RL Circuits – Clipping &ClampingCircuits–VoltageDoubler–Tripler–Quadrupler.	10
III	Types ofamplifiers	Class A Amplifier - Class B Amplifier - Class ABAmplifier - Push Pull Amplifier - Complementarysymmetry Push Pull Amplifier - Class C Amplifier – MultistageAmplifiers:RCCoupledAmplifier-TransformerCoupledAmplifier-DirectCoupled Amplifier.	10
IV	Feedback	BasicsconceptsofFeedback-Effectsofnegativefeedback on gain, Bandwidth, Distortion, Noise, InputImpedance and Output Impedance - Types of NegativeFeedback-VoltageSeries-VoltageShunt-Current SeriesandCurrentShuntFeedback	10
V	Oscillators	Classification of Oscillators - Barkhausen Criterion - HartleyOscillator-ColpittOscillator-ClappOscillator -PhaseShiftOscillator-WeinBridge-CrystalOscillator-FrequencystabilityofOscillators-AstableMultivibrator-MonostableMultivibrator BistableMultivibrator-SchmittTrigger.	10

REFERENCEBOOKS:

1. ElectronicDevices&Circuits-S.Salivahanan-TMH-IIEdition

2. ATextBookofElectronicDevices&Circuits–R.S.Sedha–S.ChandRs.325/-

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B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTE

RIII

L	T	P	C
2	0	0	2

NONMAJOR ELECTIVE COURSE

IGROUP A - PAPER I -BASIC ELECTRONICS -

I(INDEPTHTHEORY &ANALYSIS NOTREQUIRED

COURSEOBJECTIVES:

Thiscourseprovidestheimportantaspectofsemiconductorsanddeviceslikediodes, Transistor, JFET and MOSFET & to understand and acquire knowledge about variouscircuittheorem,makestudentsstronginelectriccircuitdesigning.

COURSEOUTCOMES:Aftercompletionofthiscourse,studentableto

CO1	Understandthefundamentalsforconstruction&differenttypeofDiode,BJT.
CO2	UnderstandthefundamentalsforconstructionofdifferenttypeofJFET,MOS, etc
CO3	UnderstandvariouscircuitLaws.
CO4	Examinethebasiccomponentsinseriesandparallelconnection.
CO5	AnalyzeRMS&PowerparametersofACcircuits.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstructi on

I	Semiconductortheory	Intrinsic Semiconductor – Extrinsic Semiconductor - TheoryofPNJunctionDiode-ZenerDiode-AvalancheBreakdown-ZenerBreakDown-Operation of PNP & NPN Transistor - CB, CE, CCConfigurationandCharacteristics-Transistorasan Amplifier.	05

II	**Electronic components**	SimpleTheory&Useof:Resistors,Capacitors,Inductors, Diodes, Zener diodes, Transistors, FET,MOSFET,UJT,SCR,DIAC,TRIAC,LED,Seven SegmentDisplay,BasicGateIC's,Transformers,LDR, Switches, Microphone, Loudspeaker, Buzzers,Fuse.	05
III	**Circuitlaws**	Ohm's Law - Kirchoff's Current Law - Kirchoff'sVoltageLaw-VoltageDivision-CurrentDivision -SeriesCircuits-ParallelCircuits-Series&Parallel Circuits-OpenCircuit-ShortCircuit.	05
IV	**Resistors,ca pacitors &inductors**	Resistor Resistors, Capacitors & Inductors in Seriesand Parallel-Factors governing the Resistance of a ,Capacitor & Inductor -ColourCoding of Resistors - EnergyStoredinaCapacitor-EnergyStoredinan Inductor	05
V	**Waveforms**	Sinusoidal Waveform - Non-Sinusoidal Waveforms - Peak Value - Peak to Peak Value - Average Value - RMSValue–Period&FrequencyMeasurement.	05

REFERENCEBOOKS:

1. ElectronicDevices&Circuits-Salivahanan-TMH-2ndEdition

2. PrinciplesofElectronics-V.K.Mehta-S.Chand.

3. Circuits&Networks-Sudhakar-TMH-4thEdition.

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERIII

NONMAJORELECTIVECOURSE I

L	T	P	C
2	0	0	2

GROUPA-PAPERII-BIOMEDICAL ELECTRONICS–I

(INDEPTHTHEORY&ANALYSIS NOTREQUIRED)

COURSEOBJECTIVES:

- ToIllustrateoriginofbiopotentialsanditspropagations
- Tounderstandthedifferenttypesofelectrodesanditsplacementforvariousrecordings
- Tounderstandvariousphysiologicalrecordingsanditsmeasurements
- Tolearnthemedicalimagingequipmentandtechniquesforsurgeries.
- TosummarizetherapeuticequipmentandPatientmonitoringtechniquesforbiologicalope rations.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	Differentiatedifferentbiopotentialsanditspropagations.
CO2	Illustrateddifferentelectrodesanditsplacementforbiopotentialsrecordingsand measurements
CO3	Demonstratevariouselectrophysiologicalrecordingsandmeasurements
CO4	Explainmedicalimaging equipment'susinginsurgeries
CO5	DemonstratedifferenttherapeuticequipmentʼsandPatientmonitoringtechniques

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstructi on

I	Introduction	IntroductiontoHumanPhysiology–Micro Electrodes –SkinSurfaceElectrodes–NeedleElectrodes–Reference Electrodes.	05
II	Meters &recorders	Digital Thermometer – Sphygmo Manometer - ElectronicSthethoscope–ECG-EEG–EMG	05
III	CardioTocography	Cardio Tocography - Electro Oculography - ElectroRetinography-PolySomnographyBloodFlowMeter-Doppler – Audiometer	05
IV	Operationtheatreequipments	UpperEndoscope-LowerEndoscope-ENTEndoscope	05
V	Diathermy	Diathermy - Surgical Diathermy- Micro WaveDiathermy-MultiparaPatientMonitor.	05

REFERENCEBOOKS:

1. BiomedicalInstrumentation&Measurements–AnandaNatarajan–PHI-Rs.275/-

2. BiomedicalInstrumentationandMeasurements-LeslieCromwell-PHI-2ndEdition.

3. Bio-MedicalInstrumentation-Dr.M.Arumugam-AnuradhaAgencies-2ndEdition

4. HandbookofBiomedicalInstrumentation-R.S.Khandpur-TMH

5. MedicalInstrumentation,ApplicationAndDesign–JohnG.Webster–WEL-3rdEdition

6. ATextofBookofMedicalInstruments–Ananthi–NewAgeInternational–Rs.275/-

7. Internet :AdditionalReferenceForAllUnits.

B.SC.ELECTRONICSANDCOMMUNICATION

SEMESTERIII

NON MAJOR ELECTIVE COURSE

IGROUPA-PAPERIII -CELLULARPHONES

(INDEPTHTHEORY &ANALYSIS NOTREQUIRED)

L	T	P	C
2	0	0	2

COURSEOBJECTIVES:

TogetknowledgeaboutCellularRadio,ElementsofaCellularNetwork,CellularTelep

hony,Radio   Propagation   andits

applications&themobileservicingandSoftwareRepairing.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	UnderstandthefundamentalconceptsofCellular.
CO2	Understandthedifferentaccessingtechnology.
CO3	Understandthehardware&softwareofmobile
CO4	Understandtheservicingofmobile
CO5	Understandtheothermobileservicetools

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstruction
I	**Basics**	WorkingofaTelephone-LocalExchange-Initiatinga call - Calling a Number - Making a Connection - Answeringa Call-Conversation- Ending a Call - HookSwitch-Transmitter-Receiver-Ringer-Cellular Mobile Telephone System - Mobile PhoneServiceArea-MobileFraudCall.	05

II	**Accesstechn ologies**	GSM-CDMA-GPRS-EDGE-WCDMA-UMTS-HSDPA-SatellitePhones-GPS-MobileBrowsers-WAP.	05
III	**Hardware/ Software**	Typesof:WirelessOptions,Batteries,MemoryCards,Messaging,RingTones,KeypadTypes,DisplayTypes.HandsetFormFactor-SMSAbbreviations-Mobile OS.	05
IV	**Hardware/ softwarere pairing**	Hardware/SoftwareRepairing-VariousLocks-Installation of : UFS Driver, UFS Suite & FlashingFiles-IMEINumberDetection-MobileGSMUtilityCodes(AnyFive of NokiaSet)	05
V	**Other mobile service tools**	UltrasonicCleaner-ComputerConnectors-SIMCard Reader - Memory Card Reader - Mobile Virus -Virus Prevention - Removing Virus - Health HazardswithMobiles-SAR.	05

REFERENCEBOOKS:

1. ModernMobilePhoneIntroduction&Servicing-ManaharLotia-BPB-Rs.75/-(Unit-I)

2. ModernMobilePhoneRepairUsingComputerSoftware&Service Devices - ManaharLotia
-BPB-120/-(Units I,IV&V)

3. ModernMobilePhoneUnlocking&UtilityCodesForGSM&CDMAPhones-ManaharLotia-BPB-Rs.99/-(Unit-IV).

4. Mobile Telephony - Digit Magazine - Supplement - Jan 2006 - Jasubhai DigitalMediaPublications.(UnitII&III)

5. BlueToothTechnology–CSRPrabhu&APrathapReddi–PHI-Rs.250/-

6. Mobile&PersonalCommunicationSystems&Services-RajPandya-PHI–Rs.250/-

7. INTERNET:ADDITIONALREFERENCEFORALLUNITS.

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERIV

COREIV-8085MICROPROCESSOR&INTERFACING

L	T	P	C
4	0	0	4

COURSEOBJECTIVES:

Tounderstandthefeaturesandapplicationsof8085microprocessor&exploittheabilities forthedesignand peripheral interfacingwith real timedomains

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	Understandtheevolutionofprocessorand8085architectures.
CO2	LearntheinstructionandtocreatetheALP.
CO3	Investigatetheinstructionformatandmachinecyclefetch.
CO4	Computeanddesignfortimedelayandcounters.
CO5	Designanddevelopmentofinterfacingandapplications.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstruction
I	**8085 Microprocessor**	Signalson8085–Architectureof8085– DemultiplexingtheBus-GeneratingControlSignals –Fetching,DecodingandExecutionofanInstruction– MemoryMappingfora8KMemoryChip -Study of EPROM (2764) & Study of RWM(6264).	10

II	Instruction set	Data Transfer – Arithmetic – Logical – Branching - MachineControlInstructions-Stack&StackOperations-SimplePrograms.	10
III	Timing Diagram	Addressing Modes - Instruction Format - MemoryRead Machine Cycle (MOV C,A & MVI A,32) -MemoryWriteMachineCycle(MVIM,48)- TimingDiagram of IN & OUT Instruction - Interrupt Systemof8085.	10
IV	Peripherals	TimeDelayProgram–Signalson8255–I/OMode –BSRMode-InterfacingWith:Switches&MatrixKeyboard.	10
V	Interfacing	Interfacing With: LED'S - Single & Multiple SevenSegment Displays - LCD - ADC 0809 - DAC 0800 –StepperMotor -TrafficLightControl System.	10

REFERENCEBOOKS:

1. MicroprocessorArchitecture,ProgrammingandApplicationsWiththe8085/8080A–Ramesh.SGaonkar-NewAgeInternational–5thEdition.

2. IntroductiontoMicroprocessor-APMathur-TMH–3rdEdition

3. MicroprocessoranditsApplications –S.Malarvizhi–AnuradhaPublications

4. FundamentalsofMicroprocessorsandMicroControllers–B.Ram–DhanpatRai–IVthEdition

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERIII&IV

COREPRACTICALII -ELECTRONICCIRCUITSLAB

L	T	P	C
2	2	2	4

(ANYHARDWAREBASEDSIMULATIONTOOLMAYALSOBEUSED)

(Any22Experiments)

CourseObjectives

The objective of the course is to equip the students with in-depth basic conceptsand understanding of the principles of operation, construction, and characteristics of basicelectronic equipment, and their utilization in basic electronics building blocks (or modules)and their performances practically. The techniques of analysis and design of basic buildingblocksof moderntechnologyusingdevicewouldbe emphasized.

COURSEOUTCOMES:Aftercompletionofthiscourse,studentableto

CO1	Todevelophands-onskillsandknowledgeabouttheelectronicdevicessuchas oscilloscopes,functiongenerators,multimeter,etc.
CO2	Toimplementdifferenttypesof electroniccircuitsusingthetechniques,skills.
CO3	Toanalyzecomplexnetworksofresistors,inductors,capacitorssubjecttoboth direct(non-time-varying)andalternatingvoltagesandcurrents.

Syllabus

1. AmplitudeandFrequencyMeasurementUsingCRO

2. HalfWaveRectifierwithCapacitorFilter

3. FullWaveRectifierwithCapacitorFilter

4. BridgeRectifierwithCapacitorFilter

5. RegulatedDualPowerSupplyUsing78XX&79XX

6. Positive&NegativeClippingat0V

7. Positive&NegativeClampingat0V

8. VoltageDoubler/VoltageTripler/VoltageQuadrupler

9.   BasicDifferentiator&BasicIntegrator

10.   HartleyOscillatorUsingTransistor

11.   Colpitt'sOscillatororClappOscillatorUsingTransistor.

12.   PhaseShift/WeinBridgeOscillatorUsingTransistor.

13.   CrystalOscillatorUsingTransistors.

14.   UJTasanOscillator.

15.   AstableMultivibratorUsingTransistors

16.   MonostableMultivibratorUsingTransistors.

17.   BistableMultivibratorUsingTransistors

18.   SchmittTriggerUsingTransistors.

19.   SingleStageRCCoupledAmplifier.

20.   TwoStageRCCoupledAmplifier

21.   EmitterFollower.

22.   PushPullComplementarySymmetryEmitterFollower.

23.   PowerAmplifierUsingLM380IC.

24.   FiringAngleControlUsingSCR(HalfCycle/FullCycle).

25.   LampDimmer

26.   AutomaticStreetLightControl.

27.   TransistorChopper.

28.   BurglarAlarmorFireAlarm

29.   PowerTransistorInverter(40W/20W)

30.   CommutationTechniques(AnyTwo)

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERIII&IV

COREPRACTICALIII

L	T	P	C
2	2	2	4

(ANYEMBEDDEDBASEDSIMULATIONTOOLMAYALSOBEUSED)

(Any22Experiments)

8085MICROPROCESSOR &INTERFACINGLAB

CourseObjectives

Toexposestudentstotheoperationoftypicalmicroprocessor(8085)**simulation tool/** trainer kit.solve different problems by developing different programs&todevelop thequalityof assessing and analyzingthe obtaineddata.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	IdentifyrelevantinformationtosupplementtotheMicroprocessor.
CO2	Setupprogrammingstrategiesandselectpropermnemonicsandruntheirprogramonthetrainingboards/simulator.
CO3	**Practice**differenttypesofprogrammingkeepinginmindtechnicalissuesandevaluate possiblecausesofdiscrepancyinpracticalexperimentalobservationsincomparison.
CO4	Develop testing and experimentalprocedures on Microprocessor **analyze** theiroperationunder differentcases.
CO5	**Prepare**professionalqualitytextualandcomputationalresults,incorporatingaccepted dataanalysisandsynthesismethods,simulationsoftware,andword-processingtools.

Syllabus

1. AdditionofTwo;8BitNumbers&SubtractionofTwo;8BitNumbers

2. MultiplicationofTwo;8BitNumbers

3. DivisionofTwo;8BitNumbers

4. BCDAddition

5. BCDSubtraction

6. FILL

7. BLOCKMOVE

8. 1's&2'sComplementofa16BitNumber.

9. Smallest/Largestof;NNumbers.

10. Ascending/DescendingOrderof;NNumbers.

11. SumofN;8BitNumbers.

12. MultiByteAddition.

13. 3DigitDecimaltoTwodigitHexadecimalConversion.

14. TwodigitHexadecimalto3digitDecimalConversion.

15. ADCInterface.

16. DACInterface.

17. WaveformGenerationUsingDAC.

18. StepperMotorInterface.

19. InterfacewithSwitches& InterfacewithLED's

20. HexKeyboardInterface.

21. InterfacewithSingleSevenSegmentDisplay.

22. InterfacingwithMultipleSevenSegmentDisplays.

23. InterfacewithLCD's.

24. InterfacingwithSolidStateRelay.

25. MovingDisplay.

26. BlinkingDisplay.

27. DigitalClock.

28. TrafficLightControl.

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERV

COREV -ELECTRONICCOMMUNICATIONSYSTEMS

L	T	P	C
5			5

COURSEOBJECTIVES:

LearnabouttheoreticalboundsontheratesofElectronicCommunicationSystemandrepresent a digital signal using several modulation methods. Draw signal space diagramscomputespectraofmodulatedsignals andapplyredundancyforreliablecommunication.

COURSEOUTCOMES: At theendofcourse,student willbeableto:

CO1	Understandthebasicsof EM,spacediagram,spectrum,propagation.
CO2	LearnthegenerationanddetectionofModulationandbasebandsystem.
CO3	Understandthegeneration,detection,TransmitterofFM.
CO4	Learnthe AM &FMReceiver
CO5	EvaluatetheperformanceofPCM,DPCMandDMinadigitalcommunication system

<u>**Syllabus**</u>

Unit	UnitTitle	Intended learning Chapters(Programmespecificqualification attributes K1,K2,K3,K4)	Hours ofInstruction
I	**Propagation ofradiowaves**	IntroductiontoEM waves–Reflection andrefraction of radio waves at the surface of theearth – Ground wave propagation-Sky wavepropagation–Spacewavepropagation–StructureoftheAtmosphere–Criticalfrequency-Skipdistance–MaximumUsable frequency(MUF)– Virtualheight.	**10**
II	**Am generation&tr**	Needformodulation–Amplitudemodulation–FrequencySpectrumoftheAMWave-ModulationIndex–PowerrelationsintheAM	**10**

	ansmission		

		Wave – AM generation – AM Transmitter. - Forms of Amplitude Modulation – Evolutionof SSB – Balanced Modulator – Methods ofSSBGeneration–Vestigialsideband Transmission.	
III	**Fm generation&tr ansmission**	Frequency Modulation - Frequency Spectrumof the FM Wave – Modulation Index – EffectofNoise–Adjacent&Co-ChannelInterference– WideBand&NarrowBandFM-FMGeneration– DirectandIndirect methods-FMTransmitter–Pre-Emphasis.	**10**
IV	**Am &fmrece ption**	AMReceiver–TRFReceiver– SuperHeterodyneReceiver– ImageFrequencyRejection– FrequencyChanging&Tracking – ChoiceofIF–AMDetection–AGC– SSBDetection.FMReceiver–AmplitudeLimiter – De-Emphasis–FMDetection–Balanced SlopeDetector–PhaseDiscriminator– RatioDetector.	**10**
V	**Pulsemo dulation**	PAMModulation&Detection– PWMModulation & Detection - PPM Modulation &Detection - Sampling Theorem – Quantization& Quantization Error – PCM Modulation &Detection-Companding-ASK– FSK– BPSK– QPSK– DPSK	**10**

REFERENCEBOOKS:

1. ElectronicCommunicationSystems-Kennedy-TMH–IVEd

2. ElectronicCommunicationSystems-Roddy&Collen–PHI–IVEd

3. ElectronicCommunications–SanjeevGupta–KhannaPublications.

4. PrinciplesofCommunicationEngineering–AnokhSingh–S.Chanda

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERV

COREVI-IC'sANDTHEIRAPPLICATIONS

L	T	P	C
5			5

COURSEOBJECTIVES:

ThiscourseelaboratestheproductionmethodsofIC'sandvariousapplicationof themincludinglogic,OP-AMPs**.**

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	UnderstandthemethodofIC'sfabricationTechniques.
CO2	StudythevariouscircuitsofLogicoperationsusingICs.
CO3	GettheknowledgeofvariousOP-Ampcircuits
CO4	StudytheprincipleofFilter.
CO5	StudytheprincipleofTimer&Phaselockedloop circuits.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstruction
I	Icfabricationprocess	Introduction - Basic Planar Process - Fabrication of aTypical Circuit - Active and Passive Components - Fabrication of FET,MOSFET&CMOS.	10
II	Logic family's	CharacteristicsofIC's-DiodeLogic-TransistorLogic-RTL-DCTL-IIL-DTL-HTL-TTL-CMOS–ECL-ComparisonofLogicFamilies.	10

III	OP – AMP 'S	Introduction - The ideal OP-AMP - OP-Amp Stages - OP-AmpParameters- Inverting&NonInvertingAmplifier - Adder - Subtractor - Multiplier - Divider -Integrator - Differentiator - V to I Converter - I to VConverter.	10
IV	Filters	LowPassFilter–HighPassFilter–BandPassFilter– BandRejectFilter-SolvingofSimultaneousEquations –SolvingofDifferentialEquations.	10
V	555Timer& 565 PLL	555:FunctionalDiagram-AstableOperation-Monostable Operation - Linear Ramp Generator. PLL:Basic Principle – 565 PLL - Frequency Translation - FrequencyMultiplier-FrequencyDivider- AMDetection– FM Detection.	10

REFERENCEBOOKS:

1) LinearIC's–RoyChoudhury–NAI–4thEdition.(UNITI)

2) ElectronicCircuits–Salivahanan–TMH-IIEdition(UNITII)

3) OP-Amps-Gayakwad-PHI-4thEdition-(UNITIII,IV&V)

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERV

**ELECTIVEI -PAPERI-GroupA
8051MICROCONTROLLERANDINTERFACING**

L	T	P	C
5			5

COURSEOBJECTIVES:

To understand the basics of micro controller architecture and memory systems.learnthe assembly language programming instructions and writing programs &to exploit theabilities forthedesignandperipheral interfacing with real timedomains.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	Understandtheevolutionofmicrocontroller8051architectures,pinfunctionsand bustiming.
CO2	Learntheinstructionformat,andtocreatetheassemblylanguageprogramwithloopingtechniques.
CO3	Investigatetheinterfacingtechniquesforkeyboardandopticaldevices.
CO4	Computeanddesignforconverterandrealtimeapplications.
CO5	Designanddevelopmentofmemories.

<u>Syllabus</u>

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstruction
I	**8051 Microcontroller**	Features-Signals-Architecture-RAMStructure-SFR's-PowerSavingModes-Interruptlogic-Timer Logic-SerialLogic	10

II	Instruction set	Datatransfer-Arithmetic–Logical–Bitmanipulation–BranchingInstructions–Stack&StackOperations–Addressing Modes-Simple Programs.	10
III	Interfacing withIO	InterfacingWith:Switches&MatrixKeyboard-LED'S - Single & Multiple Seven Segment Displays –LCD.	10
IV	Interfacing withApplication	InterfacingWith:ADC0809IC–DAC0800IC-StepperMotor–DCMotor–TrafficLightControlSystem.	10
V	Memories	ROM – PROM – EPROM(2764) - EEPROM – NVRAM - Static RWM (6264)-Dynamic RWM(TC511000)-RWMRefreshing–PseudostaticRWM.	10

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REFERENCEBOOKS:

1. The8051MicrocontrollerEmbeddedSystems–Mazidi&Mazidi-Pearson-2ndEdition.

2. IntroductiontoMicroprocessor-AP Mathur - TMH–3rdEdition   (Unit-V)

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTE

RV

L	T	P	C
5			5

ELECTIVE I - PAPER II-Group
APIC16F877MICROCONTROLLERANDINTERFACING

COURSEOBJECTIVES:
1. Throughthiscourse,thestudentswillbeexposedtohardwaredetailsofPIC16F877MICROCONTROLLERwiththerelated signals and theirimplications.
2. TheywillalsolearnprogrammingandinterfacingofPIC16F877.
3. Theywillalsobeawareoftheinterfacingandits application.
4. Lastlythestudentswillhaveabasicideaonmemory.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	UnderstandthearchitectureofPIC16F877MICROCONTROLLER.
CO2	Imparttheknowledgeabouttheinstructionset.
CO3	InterfaceLCD,Keyboard,ADC,DAC,Sensors,Relays,DCmotorandStepper motorwithPIC16F877microcontroller.
CO4	UnderstandthebasicideaaboutMemoriesanditsapplications.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programmespecificqualificationattributes K1,K2,K3,K4)	Hours ofInstruction
I	**PIC16f877 Microcontroller**	Features – Signals - Architecture – MemoryOrganization–WatchDogTimer– ResetTypes – Oscillator Types – Power Down Modes – I/OPorts–CCPModule– SSPModule.(USART, SPI,I2C&ICSP)	10

II	**Instructionset**	Byte Oriented – Bit Oriented - Literal & ControlInstructions–Stack&StackOperations-AddressingModes–SimplePrograms-Timer logic–interruptlogic–Serial Logic–ADC.	10
III	**Interfacing withIO**	Interfacing With: Switches & Matrix Keyboard - LED'S-Single&MultipleSevenSegmentDisplays – LCD.	10
IV	**Interfacing withApplication**	Interfacing With: ADC 0809 IC – DAC 0800 IC - StepperMotor–DCMotor–TrafficLightControlSystem.	10
V	**Memories**	ROM–PROM–EPROM(2764)-EEPROM–NVRAM - Static RWM (6264)-Dynamic RWM(TC511000)- RWM Refreshing – PseudostaticRWM.	10

REFERENCEBOOKS:

1. PIC16F877DataBook–MICROCHIP.

2. FundamentalsofMicrocontrollersandApplicationsInEmbeddedSystems(WiththePIC18MicrocontrollerFamily)–RameshSGaonkar–PRI–RS.300/-

3. DesignWithPicMicrocontrollers–JohnB.peatman–Pearson

4. IntroductiontoMicroprocessors–APMathur–TMH–3rdEdition(UNIT-V).

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERV

ELECTIVE I - PAPER III -Group

APROGRAMMABLELOGICCONTROLLER

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COURSEOBJECTIVES:

To provide knowledge levels needed for PLC programming and operating, PLCfunctions, Data Handling processes &make the students how devices to which PLC inputand outputmodulesare connected.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	AbilitytogainknowledgeonProgrammableLogicController.
CO2	Createladderdiagramsfromprocesscontrolfunction
CO3	UnderstandtheknowledgeaboutvariestypeofPLCregisters
CO4	DevelopthePLCapplicationprogram
CO5	DesignthedifferenttypeofPLCfunctions,DataHandlingFunction.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(ProgrammespecificqualificationattributesK1, K2,K3,K4)	Hours ofInstruction
I	**PLCBasics**	AdvantagesandDisadvantages–OverallPLCSystem – Input & Output Modules – Printing PLCInformation– CPU–Memory–Processor–I/OModules– PowerSupplies–ProgrammingEquipment– ProgrammingFormats– ConstructionofPLCLadderDiagram– ProcessorsScanningConsiderations– PLCOperationalFaults– InputON/OFFSwitchingDevices–	10

| | | InputAnalogDevices– OutputON/OFFDevices–OutputAnalogDevices. | |
| | | | |

II	**PLC Programming**	InputInstructions–Outputs:Coils,Indicators&Others – Operational Procedures – Contact and CoilI/O Programming Examples (Any 3) – Digital LogicGates–BooleanAlgebraPLCProgramming–ConversionExamples(Any3)–LadderDiagramsandSequenceListings–LargeProcessDiagram Construction.	10
III	**PLC Functions**	GeneralCharacteristicsofRegisters–ModuleAddressing – Holding Registers – Input Registers:SingleandGroup–OutputRegisters:SingleandGroup – PLC Timer Functions – Examples of TimerFunctionIndustrialApplications(Any3)–PLCCounters–ExamplesofCounterFunctionIndustrial Applications(Any3).	10
IV	**Intermediate functions**	PLCAdditionandSubtraction–PLCRepetitiveClock – PLC Multiplication, Division, Square Root,Trignometric and Log Functions – Other ArithmeticFunctions–BasicComparisonFunctions–Basic ComparisonFunctionApplications(Any3).	10
V	**Data handlingfunctions**	SkipFunctionandApplications–MASTERCONTROLRELAYFunctionandApplications–Jump with Non Return– Jump with Return – MOVEFunction & Applications – Moving Large Blocks ofPLC Data – PLC Table and Register Moves – PLCFIFOFunction–FAL–ONS–CLRAndSWEEP Functions – Bit Patterns in a Register – Changing aRegister Bit Status– Shift Register Functions andApplications. PLCNetworking.	10

TEXTBOOK

Programmable LogicControllers–John W.Webb &Ronald A.Reis–PHI–V Edition – Rs.295/-

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ELECTIVEII -PAPERI-GroupB

MODERN TELEVISION

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SYSTEMSCOURSEOBJECTIVES:

Tointroducethebasicsofpicturetransmissionandreception,analysisandsynthesis of compositevideosignal,receiverandpicturetubesandtelevisioncameratubesalsostudyvarious colourtelevisionsystems.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	Understandthefundamentalconceptsof televisionstandards.
CO2	Acquiretheknowledgeinbasicprincipleofreceivercircuits.
CO3	Distinguishtheprincipleofverticalandhorizontalsyncseparation.
CO4	Understand different colour television systems used worldwide and its compatibility.
CO5	Evaluatethedetailedoperationofcameraandpicturetubeofmonochromeand colourtelevision.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstructi on

I	Television Standards	Aspect Ratio - Scanning – Number of Scanning Lines - InterlacedScanning- VerticalResolutionandHorizontalResolution– Horizontal&VerticalSyncDetails- CompositeVideoSignal-ChannelBandwidth –VestigialSideBandTransmission&Reception– Complete Channel Bandwidth – FM Channel	10

		Bandwidth–AllocationofFrequencyBandsForTV Transmission-PositiveandNegativeModulation–CCIR– BStandards.	
II	**Receiver Circuits**	RF Tuner –Tuner Types - Various Sections of a VHFTuner – UHF Tuner – Electronic Tuning – Video IFSection – IF Amplifier – VSB Correction - Video IFAmp using IC CA 3068 - Video Detector Operation &Requirements– VideoAmplifierOperation&Requirements– CouplingMethods–VideoAmpUsing IC TBA 890.	10
III	**SyncSe parator**	BlockDiagram–Vertical&HorizontalSyncSeparation- VerticalO/PStage&Requirements– VerticalO/PStageIC's–EHTgeneration-SCorrection– Line O/PStageUsingTransistors& ICCA 920 – AGC – Types of AGC - Sound Section –Sound Take Off Circuit – Inter Carrier Sound IF Amp –AMLimiting– FMDetection–AnyOneFMDetector -Sound Section ICCA3065.	10
IV	**ColourT elevision**	Compatibility–Naturallight–Colourperception– Threecolourtheory–Chromaticitydiagram–Luminance, Hue and Saturation – Luminance &Colourdifferencesignals-Frequencyinterleaving– BandwidthforColourSignalTransmission- ModulationofColourDifferenceSignals-ColourTV Standards.	10

V	TelevisionTransmission &Reception	MonochromeTVCameraTubes(AnyOne)– MonochromePictureTube- BlockdiagramofMonochromeTVTransmitterandReceiver–ColourTV Camera – Colour Picture Tubes (Any One) – PAL-D Coder – PAL Decoder – Merits & Demerits - LowVoltagePowerSupply–HighVoltagePowerSupply– SMPS-Merits&Demerits.	10

REFERENCEBOOKS:

1. MonochromeAndColourTelevision-Gulathi–Nai–IiEdition

2. ColourTelevisionPrinciplesAndPractice-Gulathi-Nai

3. ModernTelevisionPractice-Gulathi-Nai-IIIEdition

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COMMUNICATIONSEMESTE

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ELECTIVEII-PAPERII-GroupB

RADARANDNAVIGATIONALSYSTEMSC

OURSEOBJECTIVES:

        Tointroducethefundamentalconceptsof RADARandnavigationalaids.

Exposethestudentstodifferenttypesof RADARsystemsandNavigation,getfamiliarizewith recenttechnologiesinmethodsofnavigation.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	Gainknowledgeinthe fundamentalprincipleofRADAR.
CO2	Becomefamiliarwithfundamentalsofdifferenttypesof RADAR.
CO3	Gainin-depthknowledgeaboutthedifferenttypesofRADARtransmitterand receiverandtheiroperations.
CO4	UnderstandthesignaldetectioninRADARandvariousdetectiontechniques.
CO5	Understandthenavigationalaidsandmodernnavigationmethods.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstructi on
I	**Introduction to Radar**	Basic Radar –The simple form of the Radar Equation - RadarBlockDiagram-RadarFrequencies– ApplicationsofRadar–TheRadarEquation- TransmitterPower-PulseRepetitionFrequency– AntennaParameters-OtherRadarEquation Considerations.	10

II	MTI andPulse DopplerRad ar	DopplerandMTIRadar-MovingTargetDetector- MTIfromaMovingPlatform-PulseDopplerRadar–	10

		OtherDopplerRadarTopics-TrackingwithRadar– AutomaticTrackingwith SurveillanceRadars.	
III	**RADAR Transmitter andReceiver**	LinearBeamPowerTubes-SolidStateRFPowerSources - Magnetron - Crossed Field Amplifiers - OtherRFPowerSources- OtheraspectsofRadarTransmitter -TheRadarReceiver-SuperheterodyneReceiver- DuplexersandReceiverProtectors-RadarDisplays.- Propagation Radar Waves - Atmospheric Refraction – Standardpropagation-NonstandardPropagation-The RadarAntenna-ReflectorAntennas.	10
IV	**RADIODIR ECTION FINDING& RANGES :**	An Aural Null Direction Finder – The Goniometer - Automatic Direction Finders - The Commutated AerialDirectionFinder- TheLF/MFFourcourseRadioRange- VHFOmniDirectionalRange-VORReceivingEquipment- Loran-AEquipment-TheDeccaNavigationSystem- DeccaReceivers-The OmegaSystem.	10
V	**Methods ofNavigati on**	OperationofDME-TACANEquipment.- InstrumentLandingSystem- GroundControlledApproachSystem –MicrowaveLandingSystem-NavigationOverthe Earth-ComponentsofanInertialNavigationSystem.	10

REFERENCEBOOKS:

1. IntroductionToRadarSystems-Skolnik–Tmh–IiiEdition2003
2. RadarPrinciples-PeytonZPeebles-JohnWiley–2004
3. PrinciplesOfRadar-JcToomay-PhiIiEdition-2004

4. Microwave&RadarEngineering–Kulkarni–UmeshPublications

5. RadarSystem&RadarAidsToNavigation–Sen&Battachariya–KhannaPublications.

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ELECTIVEII- PAPERIII GroupB

SATELLITE,CABLEANDDTH SYSTEMS

COURSEOBJECTIVES:

- TointroducethebasicsconceptsofSatellitesandcablenetworks.

- TomakethestudentsassembleandtroubleshootDTHthereself.

- Createsentrepreneurshipopportunity.

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COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	Gainknowledgeabouthistoryandbasicsofsatellites
CO2	AcquireknowledgeaboutcableTVnetworktransmissiontechniques
CO3	AcquireknowledgeaboutdigitalsatelliteTVnetworktransmissiontechniques
CO4	IntroductionofDTHComponents
CO5	InstallingtheDTH&supporting peripherals

<u>Syllabus</u>

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstruction
I	**Satellite systems**	Geo-StationarySatellite– SatelliteCommunicationSystem–SatelliteElectronics– InternationalandRegionalDirectBroadcastingSatellites– Indian DomesticSatellites–DomesticBroadcastingSystems.	10

II	**Cable tvsystems**	CableSignalSources–CableSignalProcessing–CableSignalDistribution–BidirectionalNetworks–ScramblingofTVSignals–CableSignalConvertors.	10
III	**Digitalsatellitetv**	Digital Satellite Transmission – Digital SatelliteReceptionandDecoding–DTHTV–DigitalTV Receiver–MeritsofDigitalTVReceiver –DTT.	10
IV	**Dthworking**	DTHAntenna–DTHLNB–DTHReceiver–AdditionalAccessories–CompleteDTHProcess–Connecting more than One TV Receiver to a SingleDish , Connecting more than one tv to a Single SatelliteReceiver – Connecting more than one Dish/LNB to aSingleReceiver–ChangingSatelliteChannels–Need ofTelephoneJack.	10
V	**Dishinstallation**	Site Survey – Dish Roof and Wall mounts – AdjustingtheAzimuthandElevationSettings–DishAntennaConnectionProcedures–Precautions-TroubleShooting–AdjustmenttoCorrectPosition–LNBTesting–DDDirectPlus–SatellitesUsed–Comparison with Other DTH Systems – Reception ofDDDirectPlus–ReceiverInstallation–TV/Radio ChannelsonDDDirectPlus.	10

REFERENCEBOOKS:

1. ModernTVPractice–R.R.Gulati–NAI–IIIrdEdition
2. ModernDTHDigitalSatelliteReceiver–ManahorLotia–BPB–Rs.120/-

3. CompositeSatelliteandCableTV–R.R.Gulati–NAI.

4. SatelliteCommunication-DennisRoddy–TMH

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ELECTIVEII-PAPERIV-GroupB

MOBILECOMMUNICATON&SERVICING

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COURSEOBJECTIVES:

- TointroducethebasicsofCellularstructureandoperation.

- Itprovidesentrepreneurshipopportunity&Practicaloriented.

COURSEOUTCOMES:Aftercompletionofthiscourse,studentableto

CO1	UnderstandthefundamentalconceptsofCellular.
CO2	AcquiretheknowledgeinbasicprincipleofBTStransmission.
CO3	Understandthedifferentaccessingtechnology.
CO4	Understandthechiplevelsoftware servicingofmobile
CO5	Understandtheservicingofmobile

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstructi on
I	**Mobile datacommun ication**	Introduction-CellularRadio-ElementsofaCellularNetwork-Cellular Telephony – Radio Propagation - SpeechCoding-ErrorCodingandError Correction.	10
II	**MobilityM anagemen t**	Mobility Management - Hand OffManagement-HardHandOff-Soft HandOff-SwitchingandAuthentication-MTSOInterconnections-Circuit	10

		SwitchedandPacketSwitchedDataServices	

		onCellularNetworks.	
III	**Multipleacc esstechnolo gies**	Introduction - Frequency division multipleaccess-Timedivisionmultiple access - Code Division Multiple Access - SpreadSpectrumTechniques.	10
IV	**Mobilese rvicing**	Hardware/Software Repairing - VariousLocks-Installationof:UFSDriver, UFSSuite &Flashing Files - IMEI Number Detection-MobileUtilityCodes.	10
V	**Other mobileservic etools**	UltrasonicCleaner-ComputerConnectors-SIMCardReader-MemoryCard Reader- Mobile Virus - Virus Prevention - RemovingVirus-HealthHazardswithMobiles-SAR.	10

REFERENCEBOOKS

1. WirelessCommunicationsAndNetworking–MadeSimple–SatishJain–BPBPublications.Rs.135/-(Units:I,II&III)

2. Modern Mobile Phone Repair using Computer Software & Service Devices - ManaharLotia -BPB-120/-(UnitsIV&V)

3. ModernMobilePhoneUnlocking&UtilityCodesForGSM&CDMAPhones-ManaharLotia-BPB-Rs.99/-(UnitIV)

4. MobileCellularTelecommunication–IIEdition-WilliamCYLee–TMH

5. MobileCommunications–Schiller–Pearson–IIEdition.

6. WirelessCommunications–Stalling–PearsonIIEdition.

7. Mobile&PersonalCommunicationSystems&Services-RajPandya-PHI–Rs.250/-

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTE

RV

SKILLED BASED ELECTIVE

COURSESBEC III - ELECTRONIC

INSTRUMENTATION(INDEPTHTHEORY

&ANALYSIS NOTREQUIRED)

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COURSEOBJECTIVES:

- Tointroducethefundamentalelectronicinstrumentationthings.
- Toexposethestudentstoupgradetheirknowledgeinindustryside.
- Togetfamiliarizewithrecentinstrumentationtechnologies.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	Gainknowledgeinthefundamentalprincipleofelectromechanicalinstruments.
CO2	BecomefamiliarwithBridgesNetworkcircuits
CO3	Acquiretheknowledgeindifferenttypesofoscilloscopes.
CO4	Understandthesignalgenerationtechniques.
CO5	Understandtheworkingfunctionandapplicationoftransducer.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstruction

I	**Electromec hanicalindi cating instruments**	DC Ammeter - DC Voltmeter - Voltmeter Sensitivity - AC Voltmeter - Considerations in Analog Voltmeter - Series&ShuntTypeOhmmeter-CalibrationofDC Instruments–StudyofaTypicalDigitalMultimeter.	05

II	**Bridges**	Wheatstone Bridge - Balance Equation of General ACBridges–Capacitance&InductanceComparisonBridge-Maxwell–Hay-Schering-Wien-Kelvin& Kelvin'sDoubleBridge.	05
III	**Oscilloscope**	Block diagram - CRT - Vertical Deflection System - Delayline-HorizontalDeflectionSystem-CRTscreens&Graticules-OscilloscopeProbes-MeasurementofFrequency,Amplitude&Phase-Lissajou'sPatterns.Protocols.	05
IV	**Signalgeneration &signal analysis**	Sample & Hold Circuit - Instrumentation Amplifier - FunctionGenerator-PulseGenerator-QMeter-VectorImpedanceMeter-WaveAnalyzer-Harmonic DistortionAnalyzer.	05
V	**Transducers**	ResistiveTransducers–InductiveTransducers-Capacitive Transducers - Piezo Electric Transducer - ThermoElectricTransducers–Temperature Transducers–Microphones&LoudSpeakers.	05

REFERENCEBOOKS:

1. ElectronicInstrumentation-H.S.Kalsi-TMH.

2. ModernElectronicInstrumentation&MeasurementTechniques-Cooper-PHI.

3. ElectronicMeasurements&Instrumentation–Salivahanan–S.Chand   -Rs.270/-

B.SC. ELECTRONICS AND

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SKILLED BASED ELECTIVE

COURSESBECIV-COMPETETIVE

SKILLS

(SIMPLETHEORYONLY)

50MultipleChoiceQuestions.EACHQUESTION1.5MARKS.TE

NMultiple ChoiceQuestions FromEach Unit

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COURSEOBJECTIVES:

To provide students with solid foundation in CSE so that they are able touse this knowledge in getting jobs and maintaining their jobs. To develop students withprofessionalandethicalattitude,effectivecommunicationskillsandtheattitudeofworkingingroup/withpeopleforsuccessfulcareers.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	TheabilitytoanalyzeaproblemandtoidentifytheappropriateVerbal reasoning.
CO2	Theabilitytoapplynonverbalreasoning.
CO3	Anunderstandingofprofessional,ethicalandsocialresponsibilities.
CO4	Theabilitytocommunicateeffectivelywith arangeofaudiences.
CO5	Theabilitytosucceedincompetitiveexams

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programmespecificqualificationattributes K1,K2,K3,K4)	Hours ofInstruction

I	**Verbalr easoning**	Analogy–Classification–DirectionSenseTest –LogicalSequenceofWords– InsertingTheMissingCharacter–Situation ReactionTest.	05

II	**Non verbalreas oning**	Analytical Reasoning – Mirror Images – WaterImages-CompletionofIncompletePattern– CubesandDice.	05
III	**Arithmetical, ability**	Average–Problems onAge– Percentage– Profit&Loss–Ratio&Proportion–ChainRule– Time&Work.	05
IV	**Logarithms**	Pipes&Cistern–Time&Distance– ProblemsonTrains-Boats&Streams– SimpleInterest– CompoundInterest–Logarithms.	05
V	**Charts**	Area–Calendar–Clocks–Heights&Distances– BarGraphs–PieCharts.	05

ReferenceBooks

1. A Modern Approach To Verbal & Non Verbal Reasoning - Revised Edition – R.S.Aggarwal–S.Chand.(Units:I&II)–Rs.750/-

2. QuantitativeAptitude-RevisedEdition-R.S.Aggarwal–S.Chand.Units:III,IV&V) –Rs.440/-

3. AnAdvancedApproachToDataInterpretation-R.S.Aggarwal–S.Chand.

4. AdvancedObjectiveGeneralKnowledge-R.S.Aggarwal–S.Chand

5. ObjectiveGeneralEnglish-R.S.Aggarwal–S.Chand

B.SC. ELECTRONICS AND

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CORE VII - PC HARDWARE NETWORKING &TROUBLESHOOTING

COURSEOBJECTIVES:

Thiscourseguidesthecompleteviewofhardwareofthepersonalcomputerandpossibletroubleshooting.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	UnderstandthemotherboardtypesandconnectionwithvarioustypesofRAM
CO2	StudythevariousversionsofBIOSandtheirfunctions.
CO3	Get the knowledge of Keyboard and Mouse connections and their troubleshooting
CO4	UnderstandthebasicofHarddiskandtheirconnections,withCDandDVD storagedevices&theprintertypes
CO5	Studythenetworkingandtheirconnectionswithassemblingof PCinthecabinet.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstructi on
I	**Mother board**	Components - Support Circuits – Connectors - Installation - Troubleshooting – BIOS Beep Codes - Studyofa Latest Motherboard-FormFactor-PC Assembly-CabinetFormFactor .	10
II	**Memory systems**	MemoryModules-CacheMemory-ShadowMemory-CommonMemoryErrors-Battery-BIOSFunctions-BIOSSetup–BIOSUpgrade.	10

III	**Input deviceTroubleshooting**	**KEYBOARD :** Organisation - Troubleshooting - Ergonomics **MOUSE:**Connection-Resolution-Installation-Troubleshooting..	10
IV	**Outputdevic eTroublesho oting**	**HARDDISK**:FormFactor-StorageCapacity-DiskGeometry - Interfacing – Installation , Formatting &Troubleshooting. **PRINTER:**Types,Interface&Troubleshooting.	10
V	**Networking**	**NETWORKING**:SettingupaNetwork–Preparationfor Network Installation – Network Configuration – SharingComputer–SharingPrinter– TroubleshootingNetworking. **VIRUS:**Types-Working-Symptoms-Antivirus.	10

REFERENCEBOOKS:

1. ModernComputerHardwareCourse-ManoharLotia-BPB-Rs.360/-

2. IbmPcAndClones–Govindarajulu–Tmh

3. IbmPcAdvancedTroubleShootingAndRepairingGuide–Robert.c.brenner-Phi.

4. TroubleShooting,Maintenance&RepairingPc's–stephenJ.bigelow-Tmh–IiEd

5. UpgradingandRepairingPC's-ScottMueller–Pearson-18th-Edition.

6. DOS6&6.22AnIntroduction-ManoharLotia–BPB–Rs.99/-

7. DOS6&6.22Companion-SatishJain-BPB–RS.210/-

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COREVIII-NETWORKCOMMUNICATION&SECURITY

COURSEOBJECTIVES:

- Describevariouscommunicationsnetworksandtheirmaincomponent
- Identifytheadvantagesanddisadvantagesofanetwork.
- Identifythefunctionofafirewall,andhowitkeepsacomputersecureandsafefromviruses.Prep are aplanforanti-virusprotection.

COURSEOUTCOMES:At theendofcourse,studentwillbeableto:

CO1	IdentifythecomponentsassociatedwithTransmissionmethods.
CO2	Studentswilldetailsofsnetworkarchitecture,Topologytechnologyetc
CO3	Understandnetworksprotocolsandnetworkmanagement.
CO4	Theconceptofencapsulationanditsrelationshiptolayeringinthe networkmodel.
CO5	AnabilitytounderstandandanalyzetheissuesinprovidingQuality-Of-Service for network multimedia applications such as Internet, telephony&networksecurity

Syllabus

Unit	UnitTitle	Intended learning Chapters(Programmespecificqualification attributes K1,K2,K3,K4)	Hours ofInstruction
I	**Transmission methods**	Digital Signal Analog Transmission – BaudRate-AnalogSignalDigitalTransmission –Parallel&SerialCommunication–Asynchronous & SynchronousCommunication – Simplex – Half Duplex -Full	10

		Duplex – Multiplexing - De-multiplexing-TypesofMultiplexing.	
II	**Network**	MeshTopology–StarTopology–Tree	**10**

	topologies	Topology –Ring – Bus – Hybrid – Basicsof Switching – Router & Routing – InternetTopology–ArchitectureofanISP– LogicalTypesofTopology.	
III	**Network protocols**	OSI Model – Physical Layer – Data LinkLayer – Network Layer – Transport Layer –SessionLayer–PresentationLayer– ApplicationLayer–OverviewofNetwork Protocols.	**10**
IV	**Lantech nologies**	Introduction–LANHardware– ImplementingLAN–FastLANS- Nonstandard LANS – Extending LANS – VirtualLANS–TokenPassingNetworks– FDDI–MAN–WAN.	**10**
V	**Internet access& networksecurity**	Introduction–DialupAccess–Leasedlines – DSL - Cable Modems – DTE – DCEInterface – RS-232 & RS-449 Interface –SONET. NETWORKSECURITY:Introduction– TypesofComputerAttacks–Firewall– VirtualPrivateNetwork-Cryptography.	**10**

REFERENCEBOOKS:.

1. DataCommunication&Networks-Achyut.S.Godbole&AtulKahate–TMH– 2ED(Units:I,II,III&V)

2. AdvancedComputerNetworking(ConceptsandApplications)-SatishJain–BPB–Rs.195/- (Unit:IV&V)

3. DataCommunicationAndNetworking(UPDATEDEDITION)–SatishJain– BPBPublications.Rs.270/-

4. ComputerNetworks–UYLESSBLACK–PHI-IINDEDITION.

5. ComputerNetworks–ANDREW.S.TANENBAUM–PHI.

6. CommunicationProtocolEngineering-PallapaVenkataramandS.S.Manvi-PHI.

7. NetworkingConceptsAndNetware–Anand–HimalayaPublications

B.SC. ELECTRONICS AND
COMMUNICATIONSEMESTERVI
COREIX-BIOMEDICALINSTRUMENTS
(SimpleTheoryOnly)ORPROJECTWORK

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COURSEOBJECTIVES:

To introduce an fundamentals of HumanPhysiologyandexplore the human bodyparametermeasurementssetups

COURSEOUTCOMES:At theendofcourse,studentwillbeableto:

CO1	Understandthehumanphysiologyofbiomedicalsystem
CO2	Measurebiomedicalandphysiologicalinformation
CO3	DiscusstheapplicationofElectronicsindiagnosticsandtherapeuticarea.
CO4	MakethestudentsunderstandtheconceptsPulseOximeterandpacemaker techniques
CO5	Givebasicideasaboutmodernmedicalimagingapplication

Syllabus

Unit	UnitTitle	Intended learning Chapters(Programme specific qualificationattributes K1,K2,K3,K4)	Hours ofInstruction
I	**Introduction toHumanPhysi ologys**	IntroductiontoHumanPhysiology–MicroElectrodes–SkinSurfaceElectrodes–NeedleElectrodes–ReferenceElectrodes-DigitalThermometer–SphygmoManometer-ElectronicSthethoscope	10

II	**Recorders andmeters**	ECG - EEG - EMG - – Cardio Tocography - Electro Oculography - Electro Retinography - PolySomnography- Spirometer-BloodFlow	**10**

		Meter-Doppler-Audiometer	
III	**Ts**	TS.UpperEndoscope-LowerEndoscope-ENTEndoscope--Diathermy - Surgical Diathermy- MicroWaveDiathermy-MultiparaPatientMonitor.	**10**
IV	**Intensive carets**	PulseOximeter-BlockDiagram&Sensor – Ventilator – Cardiac Monitor - ECGHolder-Defibrillator-Pace maker : Implantable and External Pacemakers - Infant Warmer - Infant Incubator - BabyPhototherapy–Nebulizer.	**10**
V	**Electricalsafety ofmedicalinstruments**	Radiation Safety - Physiological EffectsDue to 50 Hertz Current Passage - MicroShock-MacroShock-ElectricalAccidentsinHospitals-DevicestoProtectAgainstElectricalHazards–SMPSinMedical Equipments. .	**10**

REFERENCEBOOKS:

1. BiomedicalInstrumentation&Measurements–AnandaNatarajan–PHIRS.275/-
2. BiomedicalInstrumentationAndMeasurements-LeslieCromwell-PHI-2ndEdition.
3. Bio-MedicalInstrumention-Dr.M.Arumugam-   AnuradhaAgencies-2ndEdition
4. HandbookOfBiomedicalInstrumentation-   R.S.Khandpur–TMH.
5. MedicalInstrumention,ApplicationAndDesign–JohnG.Webster-WEL-3rdEdition
6. ATextOfBookOfMedicalInstruments–Ananthi–NewAgeInternationaRs.275/-
7. Internet:AdditionalReferenceforallUnits.

B.SC. ELECTRONICS AND COMMUNICATIONSEMESTE RVI ELECTIVEIII- PAPERIGROUPCPCBDESIGNANDFA BRICATION

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COURSEOBJECTIVES::

UnderstandtheneedforPCBandstepsinvolvedinPCBDesignandFabricationproces s.PCB(PrintedCircuitBoard)designingisanintegralpartofeachelectronics products and this program is designed to make students capable to design theirownprojectsPCB uptoindustrialgrade.

COURSEOUTCOMES: At theendofcourse,studentwillbeableto:

CO1	Appreciatethenecessityandevolutionof PCB,typesandclassesof PCB.
CO2	Understandthestepsinvolvedinschematic,layout,fabricationand assemblyprocess ofPCBdesign.
CO3	FamiliarizeSchematicandlayoutdesignflowusing CAMTools.
CO4	ThisisabasiccoursefordesigningofPCBusingsoftware.Design (schematicandlayout)andfabricatePCBforsimplecircuits.
CO5	Understandtheenvironmentalconcerns

Syllabus

Unit	UnitTitle	Intended learning Chapters(Programme specific qualificationattributes K1,K2,K3,K4)	Hours ofInstructi on

I	**Quick start &components**	PCB Introduction – Surface Mount andThrough hole – Prototyping – InstallingEAGLELightEditiononWindows-LightEditionLimitations–Creating NewProject–DrawingtheSchematic–	**10**

		Electrical Rule Check – Laying out theBoard– U.S.VersusEuropeanCircuitSymbols– Resistors–Capacitors–Transistors& Diodes–IC'S–Connectors – Other Components – Buying Components–PaperPCB.	
II	**Editingsche matics &Pcb layout**	The Anatomy of the Schematic Editor – The Command Toolbar – Nets – Buses – Worked Examples. **PCBLAYOUT:** Experimenting–Layers– TheCommandToolbar-TheGrid– SoundMeterLayout(ThroughHole) –SoundMeterLayout(SurfaceMount)– Manual Layout.	**10**
III	**Pcb fabrication &pcbsoldering**	GerberFiles–LoadingaCAMJob–Running a CAM Job – Measure Twice,Cut Once – Submitting a job to a PCBService – Instructions – Photoetching –Milling PCBs – TonerTransfer. **PCBSOLDERING**:GeneralTools- ToolsforSurfaceMountDevices– Soldering Through Hole PCB's – SMDHandSoldering–SMTwithHotAir Gun–Using aReflowOven.	**10**
IV	**Commands &scripts**	Commands-Scripts– UserLanguagePrograms– CreatingLibrary– CopyingaDevicefromAnotherLibrary– ThePart Editor – Devices , Symbols , andPackages–EditingaPart–Creating NewPart.	**10**

| V | **Environmental concerns** | PollutionControlinPCBIndustry– PollutiongAgents–RecyclingofWater –RecoveryTechniques–AirPollution– | **10** |

		Recyclingof PCB's – Environmental Standards–SafetyPrecautions– ToxicChemicals.	

REFERENCEBOOKS:

1. MakeYourOwnPCB'sWithEAGLE–SimonMonk–McgrawHill(2014)

2. EAGLEMANUAL–VersionV–SeventhEdition.

3. PCBDesignFabrication,AssemblyandTesting–Dr.R.S.Khandpur–TMH.

4. PCBDesign&Fabrication–Walter.C.Bosshart–TMH

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTE

RVI

L	T	P	C
5	0	0	5

ELECTIVE III - PAPER II - GROUP

CPROGRAMMINGUSINGVERILOGHDL(SIMPLECONCEPTSONLY)

COURSEOBJECTIVES: Studentswilltrytolearn:

Understand the concepts of Verilog Language, Inspect how effectively ICs are embedded inpackage and assembled in PCBs for different application. Design and diagnosis of processorsand I/O controllersusedinVHDL.

COURSEOUTCOMES: At theendofcourse,studentwillbeableto:

CO1	DescribethebasiclanguagefeaturesofVerilogHDLandtheroleofHDLindigital logicdesign.
CO2	Describethebasic concepts VerilogHDL
CO3	DescribeVerilogmodelforsequentialcircuitsand testpattern generation.
CO4	Designdataflowmodeling.
CO5	Synthesizedifferent typesofbehavioralmodeling.

Syllabus

Unit	UnitTitle	IntendedlearningChapters (Programme specific qualificationattributes K1,K2,K3,K4)	Hours ofInstruction
I	**Basic verilogto pics**	Overview–DesignFlow– HierarchicalModelingConcepts– DesignMethodologies–Modules–Instances– ComponentsofSimulation.	10

II	**Basicconcepts**	LexicalConventions–WhiteSpace–Comments–Operators–NumberSpecification–Strings–Identifierand Keywords–DataTypes–Nets–Registers–	**10**

		VectorsArrays–Memories–Parameters– Strings–System Tasks and CompilerDirectives.	
III	**Modules andports**	Modules – Ports – Port Declaration – PortConnectionRules– ConnectingPortstoExternalSignals– GateLevelModeling– GateTypes.	**10**
IV	**Data flowmod eling**	ContinuousAssignment–Delays– Expression–OperatorsandOperands– OperatorTypes–BehaviorModeling- StructureProcedures–Procedural Assignments–TimingControls.	**10**
V	**Behavioral modeling**	Conditionalstatements– MultiwayBranching–Loops– SequentialandParallel Blocks – Generate Blocks – LogicSynthesiswithVerilogHDL- ImpactofLogicSynthesis– VerilogHDLSynthesis– SynthesisDesignFlow.	**10**

TextBook:

1. VerilogHDL–AGuidetoDigitalDesignandSynthesis–SamirPalnitkar–Pearson-IIEDITION.

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERVI

ELECTIVE III - PAPER III - GROUP

CELECTRONICDEFENSESYSTEMS

(SIMPLETHEORYONLY)

L	T	P	C
5	0	0	5

COURSEOBJECTIVES: Studentswilltrytolearn:

Understand the concept of electronic warfare. and acquainted with the basiccharacteristics and requirements of electronic warfare receivers,the basic principles

ofelectroniccountermeasures,itstypesandclassesofECMandtheparametersofradars,and radar systemspertainingtoECM,

COURSEOUTCOMES: At theendofcourse,studentwillbeableto:

CO1	Gain knowledge in the fundamental principle of Electronic defensesystem,weapon systems
CO2	Analysethefunctioningandinterrelationsofsubsytemsinanelectronic warfaresystem
CO3	Developetechnicalarchitectureofelectronicinterceptsystemsinpreliminary systemdesignlevel
CO4	Developebasicsimulationandanalysistoolsfortheassesmentofagiven ECM.

Syllabus

Unit	UnitTitle	Intended learning Chapters(Programme specific qualificationattributes K1,K2,K3,K4)	Hours ofInstruction

I	**Electronicdefense**	Introduction – Systems in Use in theArmedForces– TheMainWeaponSystems– Objectives & OrganizationofElectronicDefense– OperationalObjectives - Information Operation &Warfare– NeedfortheStudyof WeaponSystems.	**10**

II	**Weaponsystems**	Artillery Systems – Missile Systems (Any3)–PassiveAntiradiationMissiles– StealthAircraft– CommunicationSystems–Information Operations.	**10**
III	**Electronic interceptsystems**	Introduction–RadarWarningReceivers– ElectronicSupportMeasures– OmnidirectionalAntennas –AntennasforDirectionFinding– DigitalReceivers– ElectronicIntelligentSystems– AdvancedPassive Location Techniques – InfraredInterceptSystems– Communications ESM&CommunicationIntelligence.	**10**
IV	**Electroniccount ermeasuresyste ms**	Introduction– OffBoardPassive&ActiveECMSystems – OnBoardPassive&ActiveECMSystems –ECM Techniques (Any 3) – InfraredCountermeasures– CommunicationsCountermeasures– Information Warfare.	**10**
V	**Electronic counter-countermeasuresys tems**	Introduction–TrackingRadarCounter-Countermeasures–InfaredCounter-Countermeasures – Communications Counter – Countermeasures–NewElectronic DefenseArchitectures.	**10**

TextBook:

1. IntroductionToElectronicDefenseSystems–FilippoNeri–NewAgeInternational– SecondEdition-Rs.395/-

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTE

RVI

ELECTIVEIII- PAPERIV-GROUPC

NANOELECTRONICS

(SIMPLE THEORYONLY)

L	T	P	C
5	0	0	5

COURSEOBJECTIVES: Students willtryto learn:

To introduce the nanoelectronics, nanodevices, spintronicsandmolecular electronics.Understandthediverselectronicdevicefabricationdescribetheprinciple and the operation of nanoelectronic devices. In-depth technical knowledge in one ormoreareasofspecialization.

COURSEOUTCOMES

CO1	AbilitytoperformsimpleanalysisofNanoelectronicdevicesandcalculatethe densityofstatesinNanoelectronicdevices.
CO2	Abilitytoperformin-depthanalysisofselfassemblyinNanoelectronicdevices
CO3	NanoElectronicsandNanoMicrofabricationcourseisdesignedtoencompass all these aspects, viz., nano and micro regime design, simulation and fabricationand all typesofIC's, microfludics.
CO4	Itisexpectedthat,afterundergoingthiscourse,thestudentswillacquireboththeoretical knowledgeandpracticalskillsindiverseupcomingareasofcurrent technology.

Syllabus

Unit	UnitTitle	Intended learning Chapters(Programmespecificqual ification attributes K1,K2,K3,K4)	Hours ofInstructi on

I	**Introduction &ethicalissues**	WhatisNanotechnology-Advantages-Scope - Limits of Nanotechnology - SolutionscauseProblems-Changecauses	**10**

		Problems - Clean, Decentralized Productioncauses Problems - Even Wealth & LeisurecauseProblems- ChangingEmploymentcausesProblems- FrequentlyAsked Questions.	
II	**Selfassembly**	Bottom - Up Self Assembly - Top BottomAssembly- OtherProductionProcesses-MEMSProcess- DepositionProcesses- Lithography-EtchingProcesses.	**10**
III	**Instrumentation techniques**	AFM - SEM - TEM - Auger ElectronSpectroscopy- LASERInducedBreakdown Spectroscopy.	**10**
IV	**Nanoelectronics &carbonnano tubes**	TripleGateMOSFET&EJ-FETProperties - CarbonNanotubes-FabricationMethods - CNTBasedBiosensorsandAdvantages- PropertiesofCNT-Fuelcells &Nanotech.	**10**
V	**Nano -bio**	NanotechnologyinMedicine- WorkingOutsideTISSUES- WorkingWithinTissues.Applications:KillingCancerCells - Providing Oxygen - Artificial Mitochondria.	**10**

REFERENCEBOOKS:

1. NanoTechnology-AFutureTechnologyWithVisions-AppinLABS-BPB–Rs.270/-

2. Nano:TheEssentials"UnderstandingNanoScience&NanoTechnology"-TPradeep–TMH

B.SC.ELECTRONICSANDCOMMUNICATION

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COURSESBECVI-LIFE

DEVELOPMENTSKILLS

L	T	P	C
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COURSEOBJECTIVES:

Thiscourseisdesignedtoenhancetheemployabilityandmaximizethepotentialof the students by introducing them to the principles that underly personal and professionalsuccess, and help them acquire the skills needed to apply these principles in their lives andcareers.Prerequisite

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	DefineandIdentifydifferentlifeskillsrequiredinpersonalandprofessionallife
CO2	Developanawarenessoftheselfandapplywell-definedtechniquestocopewith emotionsandstress.
CO3	DevelopanPreparingforaJobInterview
CO4	Understandthebasicsofteamworkandleadership
CO5	thebasicmechanicsofeffectivecommunication.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstructio n
I	**Selfanalysis**	SelfAnalysisandSelfConcept– UnderstandingSelf:Attitude, Aptitude and Self Esteem – Assertiveness –ConfidenceBuilding– Motivation:Concept,TheoriesandImportance.	05

II	**Selfdeve lopment**	Introduction – Goal Setting : Concept, Setting SmartGoals– Emotion:Concept,Types,EmotioinalIntelligence– Creativity:ConceptandFactors EnhancingCreativity–StressManagement–Health	05

		Management : Importance, Dietary Guidelines andExercises– TimeManagement:Importanceandprocess.	
III	**Looking forajob**	IdentifyingDifferentSourcesAnnouncingJobVacancies– Skimming,ScanningandReadingAdvertisementsinDetail – WritingEffectiveCVs–Covering Letters that Accompany CVs - Techniques ofWritingJobApplicationLetters/CoveringLetters– PreparingforaJobInterview.	05
IV	**Non – verbal skills**	GraphicCommunication–NonVerbalCommunication – Aspects of body Language – Formal WrittenCommunication–Memos(Memoranda)–E-mails– Netiquette–BusinessCorrespondents.	05
V	**Telephone skills**	UnderstandingTelephoneCommunication– Typesofcalls–HandlingCalls–LeavingaMessage– MakingRequests–AskingforandGivingInformation– GivingInstructions – Agreeing and Disagreeing – Making or Changing Appointments – Reminding – MakingComplaintsandHandlingComplaints– TelephoneEtiquette.	05

REFERENCEBOOKS:

1. DevelopmentOfLifeSkillsAndProfessionalPractice–ShaliniVerma–
   VikasPublishingHousePvtLtd.,Rs.200/-(Units:I&II)

2. DevelopmentOfLifeSkills–II–ShaliniVerma–
   VikasPublishingHousePvtLtd.,Rs.225/-(Units:III& IV)

3. A Course In Communication Skills - P. KiranmaiDutt– Cambridge University
   PressIndiaPvt.Ltd.,FoundationBooks,CambridgeHouse,4381/4,AnsariRoad,Daryaganj
   ,NewDelhi-110002.(Unit:V)

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERV&VI

COREPRACTICALIV

IC'S&COMMUNICATIONLAB

L	T	P	C
2	2	2	4

(ANYHARDWAREBASED SIMULATIONTOOL MAYALSO BEUSED)

(Any22Experiments)

COURSEOBJECTIVES:

The main aim of this lab is to teach the linear and non-linear applications of operationalamplifiers (741). Students are made familiar with theory and applications of 555 timers.Students are made to Design combinational logic circuits using digital ICs &To acquirethebasic knowledgeofspecialfunctionICs

COURSEOUTCOMES:

CO1	Designandanalysethevariousdigitalcircuits.
CO2	Designandanalysethevariouslinear&nonlinearapplicationofop-amp.
CO3	Designandanalyseoscillatorsandmultivibratorcircuitsusingop-amp& Timers.
CO4	Designandanalysethevariouscommunicationapplicationofop-amp.
CO5	Practicethebasicmechanicsofconvertions.

Syllabus

1. NANDGATEImplementationUsingTTL.

2. NOT/NAND/NORGATEImplementationUsingIIL/CMOS.

3. OR/NORGATEImplementationUsingECL.

4. Inverting/Non-InvertingAmplifierUsingOp-Amp

5. Inverting/Non-InvertingAdderUsingOp-Amp.

6. SubtractorUsingOp-Amp.

7. Multiplier/DividerUsingOp-Amp.

8. Differentiator/IntegratorUsingOp-Amp.

9. LowPass/HighPassFilterUsingOp-Amp.

10. BandPass/BandRejectFilterUsingOp-Amp.

11. VoltagetoCurrentConverter(Groundedload).

12. CurrenttoVoltageConverter.

13. SolvingofSimultaneousEquationsUsingOp-Amp.

14. SquareWaveGenerationUsingOp-Amp

15. TriangularWaveGenerationUsingOp-Amp

16. PhaseShiftOscillatorUsingOp-Amp.

17. WeinBridgeOscillatorUsingOp-Amp.

18. AmplitudeModulation&Demodulation.

19. PulseAmplitudeModulation&Demodulation.

20. PulseWidthModulation&Demodulation.

21. AstableMultivibratorUsing555IC

22. MonostableMultivibratorUsing555ICTriangular

23. WaveformGenerationUsing555IC

24. VoltageControlledOscillatorUsing555IC

25. SchmittTriggerUsing555IC

26. FrequencyMultiplicationUsing565IC

27. BinaryWeightedResistorTypeofDAC

28. R-2RLadderTypeofDAC.

29. ADCUsingADC0809

30. DACUsingDAC0800

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERV&VI

COREPRACTICALV-GroupD

L	T	P	C
2	2	2	4

8051MICROCONTROLLER&INTERFACINGLAB

(ANYEMBEDDED BASEDSIMULATIONTOOLMAYALSOBEUSED

(Any17Experiments)

CourseObjectives

ToexposestudentstotheoperationoftypicalMicrocontroller(8051)**simulation tool/** trainer kit.solve different problems by developing different programs&todevelop thequalityof assessing and analyzingthe obtaineddata.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	**Identify**relevantinformationtosupplementtotheMicrocontroller(8051).
CO2	Set up programming strategies and select proper mnemonics and run their program onthetrainingboards.
CO3	**Practice**differenttypesofprogrammingkeepinginmindtechnicalissuesand evaluatepossiblecausesofdiscrepancy2experimentalobservationsincomparison.
CO4	Developtestingandexperimentalprocedures on Microcontroller(8051)**analyze**theiroperationunder differentcases.
CO5	**Prepare** professional quality textual and computational results, incorporating accepteddataanalysisandsynthesismethods,simulationsoftware,andword-processing tools.

Syllabus

1. AdditionofTwo;8BitNumbers&SubtractionofTwo;8BitNumbers

2. MultiplicationofTwo;8BitNumbers

3. DivisionofTwo;8BitNumbers

4. BCDAddition

5. BCDSubtraction

6. FILL

7. BLOCKMOVE

8. 1's&2'sComplementofa16BitNumber.

9. Smallest/Largestof;NNumbers.

10. Ascending/DescendingOrderof;NNumbers.

11. SumofN;8BitNumbers.

12. MultiByteAddition.

13. 3-DigitDecimaltoTwo-digitHexadecimalConversion.

14. Two-digitHexadecimalto3-digitDecimalConversion.

15. ADCInterface.

16. DACInterface.

17. WaveformGenerationUsingDAC.

18. StepperMotorInterface.

19. InterfaceWithSwitches&InterfacewithLED's

20. HexKeyboardInterface.

21. InterfaceWithSingleSevenSegmentDisplay.

22. InterfacingWithMultipleSevenSegmentDisplays.

23. InterfaceWithLCD's.

24. InterfacingWithSolidStateRelay.

25. MovingDisplay.

26. BlinkingDisplay.

27. DigitalClock.

28. TrafficLightControl.

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERV&VI

COREPRACTICALV-GroupD

L	T	P	C
2	2	2	4

16F877MICROCONTROLLER&INTERFACING LAB

(ANYEMBEDDEDBASEDSIMULATIONTOOLMAYALSOBEUSED

(Any17Experiments)

CourseObjectives

ToexposestudentstotheoperationoftypicalMicrocontroller(**16F877**)**simulation tool/** trainer kit.solve different problems by developing different programs&todevelop thequalityof assessing and analyzingthe obtaineddata.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	**Identify**relevantinformationtosupplementtotheMicrocontroller(**16F877**).
CO2	Setupprogrammingstrategiesandselectpropermnemonicsandruntheirprogramonthe trainingboards.
CO3	**Practice**differenttypesofprogrammingkeepinginmindtechnicalissuesandevaluatepossiblecausesofdiscrepancyinpracticalexperimentalobservationsin comparison.
CO4	DeveloptestingandexperimentalproceduresonMicrocontroller(**16F877**)**analyze** theiroperationunderdifferentcases.
CO5	**Prepare**professionalqualitytextualandcomputationalresults,incorporating accepteddataanalysisandsynthesismethods,simulationsoftware,andword-processing tools.

Syllabus

1. AdditionofTwo;8BitNumbers&SubtractionofTwo;8BitNumbers

2. MultiplicationofTwo;8BitNumbers

3. DivisionofTwo;8BitNumbers

4. BCDAddition

5. BCDSubtraction

6. FILL

7. BLOCKMOVE

8. 1's&2'sComplementofa16BitNumber.

9. Smallest/Largestof;NNumbers.

10. Ascending/DescendingOrderof;NNumbers.

11. SumofN;8BitNumbers.

12. MultiByteAddition.

13. 3-DigitDecimaltoTwo-digitHexadecimalConversion.

14. Two-digitHexadecimalto3-digitDecimalConversion.

15. ADCInterface.

16. DACInterface.

17. WaveformGenerationUsingDAC.

18. StepperMotorInterface.

19. InterfaceWithSwitches&InterfacewithLED's

20. HexKeyboardInterface.

21. InterfaceWithSingleSevenSegmentDisplay.

22. InterfacingWithMultipleSevenSegmentDisplays.

23. InterfaceWithLCD's.

24. InterfacingWithSolidStateRelay.

25. MovingDisplay.

26. BlinkingDisplay.

27. DigitalClock.

28. TrafficLightControl.

B.SC. ELECTRONICS AND

COMMUNICATIONSEMESTERV

&VI

CORE PRACTICAL

VPLCPROGRAMMINGLA

B

(ANYEMBEDDEDBASEDSIMULATIONTOOLMAYALSOBEUSED)

(Any17Experiments)

L	T	P	C
2	2	2	4

CourseObjectives

To explain the basic concepts of a Programmable Logic Controller. StudentswillbeabletostatebasicPLCterminologyandtheirmeanings.Studentswillbeableto explainandapplytheconceptofelectricalladderlogic,itshistory,anditsrelationshiptoprogra mmedPLCinstruction.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	Studentswillbeabletodescribetypicalcomponentsofa ProgrammableLogic Controller.
CO2	Studentswillbeabletoexplainandapplytheconceptofelectricalladderlogic, itshistory,anditsrelationshiptoprogrammedPLCinstruction.
CO3	Studentswillbeabletoexplaintheconceptofbasicdigitalelectronicsanddata manipulation.
CO4	Studentswillbeabletousetimer,counter,andotherintermediateprogramming functions
CO5	Studentswillbeabletousetimer,counter,andotherintermediateprogramming functions

Syllabus

1.   StudyofPLCSymbols

2.   StudyofVariousLogicExecutioninLadderDiagram.

3. WritingofLadderLogicforDifferentStatements.

4. LadderDiagramDevelopmentforDifferentTypesofLogicGatesusingSuitableSoftware

5. PLCInput-OutputWiringMethods

6. OperatingSimpleLoadsusingRelays,SwitchesandPushbuttons

7. DifferentApplicationsofPushButtons

8. ProgrammingthePLCViaLadderlogic

9. WorkingofDifferentTypesofTimers

10. Study&Implement;ONdelaytimerinPLC

11. Study&implement;OFFdelaytimerinPLC

12. WorkingOfDifferentTypesofCounters

13. Study&ImplementationofUpCounterinPLCProgramming.

14. Study&ImplementationofDownCounterinPLCProgramming.

15. Interlocking

16. Sequencer

17. SequentialOperationofOn/OffofASetofLights

18. ForwardAndReverseDirectionControlofMotors

19. LatchingandUnlatchingofmotor

20. PreparethePhysicalandProgrammedLadderDiagramfortheControlProblemshownbelow &Implementthesame.

21. PLCProgrammingforBottleFillingPlant.

22. ProcedureforProducingaLadderLogicDiagramforCarParkingSimulation

23. PositionControlforSatelliteDishDCMotors

24. StartingThreePhaseInductionMotorsViaStar-DeltaStarter

25. AutomaticIndicationofWaterTankLevel

26. TrafficLightsIndication

B.SC.ELECTRONICSAND COMMUNICATION

CIRCUITIMPLEMENTATIONUSINGARDUINOUNOBOARDSCOMMONFO RALL PRACTICALS UNDERGROUPD

ANYFIVE

L	T	P	C
2	2	2	4

CourseObjectives

To provide knowledge of different Smart System applications.To familiarizestudentswithArduinoasIDE,programminglanguage&platform.Toprovidekno wledge of Arduino boards and basic components. Develop skills to design andimplement varioussmartsystemapplication.

COURSEOUTCOMES:Aftercompletionofthiscourse,studentableto

CO1	FamiliarwithArduinoenvironmentanditsapplications.
CO2	AbletounderstandArduinoprogrammingwithC++.
CO3	AbletoDesignSmartsystemsapplications.
CO4	LearnandunderstandaboutanynewIDE,compiler,and MCUchipinArduino

Syllabus

1. LEDControlThroughPushButtons

2. PhotoResistorasLightIntensityDetector

3. DCMotorDirectionControlusingL293D

4. DCMotorSpeedControlusingL293D

5. DisplayingTextonLCDDisplay

6. ScrollingTextonLCDDisplay

7. Interfacing4x3KeypadandLCD

8. DisplayingAlphanumericCharactersonDotMatrixDisplay

9. DisplayofNumericCharactersusing7SegmentDisplay.

10.	UnipolarStepperMotorSpeedControlUsingULN2003A
11.	LEDControlThroughSerialCommunication
12.	LEDControlusingInfrared
13.	DisplayingCurrentDateandTimeon16x2LCD
14.	SwitchingControlofACLoadusingTriac
15.	VoltageRegulationAcrossACLoadusingTriac
16.	SwitchingControlofACLoadThroughSMSTextMessage

REFERENCEBOOK

ArduinoProjectsforEngineers-NeerparajRai–BPBPublications –Rs.297/-

B.SC. ELECTRONICS AND

COMMUNICATIONAPPLIEDELECTRONI

CS-I (ALLIED)

(ForB.ScCS, BCA,B.ScIT,&B.ScPHY)

I/IIYEAR-I/IIISEMESTER

L	T	P	C
4			4

COURSEOBJECTIVES:

- Tostudyaboutthefundamentalsofsemiconductor.

- Togainthebasicknowledgeofelectroniccomponentsandthefunctionofpowersupply.

- Tounderstandtheoperationofoscillator,amplifierandfilters.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	Understandtheprincipleofsemiconductordevices.
CO2	Haveathoroughunderstandingofthefundamentalconceptsofelectronic components
CO3	Analyzeanddesignvarioustheconceptualtheoryofthepowersupply.
CO4	Distinguishbetweenthesinusoidalandnonsinusoidal waveforms.
CO5	Acquiretheknowledgeonthetypesandprinciplesofoscillators,amplifiersand filters.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Programme specificqualificationattributesK1,K2, K3,K4)	Hours ofInstruct ion

I	Semiconduct orTheory	IntrinsicSemiconductor–ExtrinsicSemiconductor-TheoryofPNJunctiondiode-ZenerDiode–Avalanche Breakdown - Zener Break down - OperationofPNP&NPNTransistor-CB,CE,CC ConfigurationandCharacteristics-TransistorasanAmplifier.	10

II	Resistors,Capacitors&Inductors	Resistors,Capacitors&InductorsinSeriesandParallel -FactorsgoverningtheResistanceofaResistor,Capacitor & Inductor - Colour Coding of Resistors -Various Other Passive & Active Devices – Ohm's &KirchoffLaws-SeriesCircuits–ParallelCircuits-Series&ParallelCircuits-OpenCircuit-ShortCircuit	10
III	PowerSupply's	HalfWaveRectifier-FullWaveRectifier-BridgeRectifier-CapacitorFilter-FixedICRegulatedPower Supplyusing78XX-DualICRegulatedPowerSupplyusing78XX&79XX.	10
IV	Waveforms	SinusoidalWaveform-Non-SinusoidalWaveform-Peak Value - Peak to Peak Value - Average Value – RMSValue–Period&FrequencyMeasurement–Use ofDigitalMultimeter –UseofCRO.	10
V	Oscillators,Amplifiers&Filters	Barkhausen Criterion – SinsoidalOscillators : Hartley ,PhaseShift&CrystalOscillator.NonSinusoidalOscillators :Astable , Monostable& UJT as a SawtoothOscillator.Amplifiers:RCCoupled&TransformerCoupledAmplifiers.Filters:LowPass,HighPass, BandPass &BandReject Filters .	10

Books forStudy

1. ElectronicDevices&Circuits-S.Salivahanan -TMH-IIEdition

2. Circuits&Networks-Sudhakar-TMH-4thEdition..

B.SC. ELECTRONICS AND

COMMUNICATIONAPPLIEDELECTRONI

CS-II(ALLIED)

(ForB.ScCS,BCA,B.ScIT,&B.ScPHY)

I/IIYEAR-II/IVSEMESTER

L	T	P	C
4			4

COURSEOBJECTIVES:

- Tostudyaboutthefundamentalsconceptsoftransducersandop-amps.
- TogainthebasicknowledgeofICandPCBfabricationprocess.
- Tounderstandthefundamentalsofcommunicationprinciple,modulationtechniques,transmis sionandreception.

COURSEOUTCOMES: Aftercompletionofthiscourse,studentableto

CO1	Understandtheprincipleandtypesofthevarioustransducers.
CO2	analyzeanddeignbasicop-ampcircuits,non-linearcircuits,comparator,signal generators,andoscillator.
CO3	acquirequalitativeknowledgeaboutthefabricationprocessofintegratedcircuit &PCBfabrication
CO4	Comprehendtheworkingprincipleofthecommunicationsystems.

Syllabus

Unit	UnitTitle	IntendedlearningChapters(Program mespecificqualificationattributesK1, K2,K3,K4)	Hours ofInstruct ion
I	**Transducers**	ResistiveTransducers–InductiveTransducers- Capacitive Transducers - Piezo Electric Transducer - ThermoElectricTransducers– TemperatureTransducers–Instrumentation Amplifier – Microphones&LoudSpeakers.	10

II	Op–Amp's	Introduction - The ideal OP-AMP - OP-Amp stages - OP-Ampparameters-Inverting&NonInvertingAmplifier-Adder-Subtractor-Multiplier-Divider-Integrator - Differentiator - V to I Converter - I to VConverter.	10
III	IC Fabrication Process	BasicPlanarProcess-FabricationofaTypicalCircuit-ActiveandPassiveComponents-FabricationofFET,MOSFET&CMOS-Thin&ThickFilmTechnology.	10
IV	PCB Fabrication Process	PCB Types – Layout & General Rules – Design RulesFor Digital Circuit PCB's – Artwork – Properties &Types of Copper Clad Laminates – Photo Printing – Screen Printing–Types of Etchants–ManualRouting –AutoRouting–DesignRuleCheck.	10
V	CommunicationSystems	NeedForModulation–AmplitudeModulation&Detection - Frequency Modulation & Detection – AMTransmitter - AM Receiver – FM Transmitter - FMReceiver–Modulation&Detectionof:PAM–PPM – PWM–PCM.	10

Books forStudy

1. ElectronicDevices&Circuits-S.Salivahanan -TMH-IIEdition
2. PCBDesign–Walter.C.Bosshart–TMH
3. ElectronicCommunicationSystems-Kennedy-TMH–IVEdition.

B.SC.ELECTRONICSANDCOMMUNICATION

APPLIEDELECTRONICSLAB(ALLIED)
(ForB.ScCS, BCA,B.ScIT,&B.ScPHY)

I/IIYEAR-II/IVSEMESTER

(ANYHARDWAREBASEDSIMULATION TOOLMAYALSOBEUSED)

(Any18Experiments)

L	T	P	C
2	1	1	2

CourseObjectives

Tointroduceelectriccircuitsanditsanalysis&
to impart knowledge on solving circuits using network theorems,digital circuits &
electroniccircuits.

COURSEOUTCOMES:Aftercompletionofthiscourse,studentableto

CO1	AnalysethecharacteristicsofPNJunctiondiode,transistors
CO2	Toimpartknowledgeonsolvingcircuitsusingnetworktheorems
CO3	DeterminefrequencyresponseofRCcircuitsandsimulateseries,parallelresonant circuits.
CO4	LearnprincipalofdigitalElectronics.
CO5	Demonstratetheapplicationsofop-amp&timer

Syllabus

1. PNJunctionDiodeCharacteristics

2. CEInputCharacteristics

3. CEOutputCharacteristics

4. Ohm'sLaw

5. Kirchoff'sCurrentLaw.

6. Kirchoff'sVoltageLaw.

7. ResistorsinSeries&Parallel

8. CapacitorsinSeries&Parallel

9. MeasurementofAmplitude&FrequencyUsingCRO.

10. NANDasaUNIVERSALGATE(AND/OR)

11. NORasaUNIVERSALGATE(AND/OR)

12. VerificationofDeMorgan'sTheorem.

13. TruthTableVerificationofBASICGates(Anyonegate)

14. HalfAdder/FullAdder

15. HalfSubtractor/FullSubtractor.

16. EncoderUsing74147IC

17. DecoderUsing7442IC

18. MultiplexerUsing74153IC

19. DemultiplexerUsing74155IC

20. ClockGenerationUsingNAND/NORGATE

21. FullWaveRectifierWithCapacitorFilter.

22. DualICRegulatedPowerSupply(78XX&79XX).

23. InvertingAdder/Non-InvertingAdderUsingOp-Amp

24. SubtractorUsingOp-Amp

25. LowPassFilter/HighPassFilter.

B.SC. ELECTRONICS AND

COMMUNICATIONELECTRONICS–

I(ALLIED)
ForB.Sc[MATHS,STATISTICS,MATHS(CA),
BIO CHEMISTRY,MICROBIOLOGY,BIO-

TECH]I/II YEAR-I/IIISEMESTER

L	T	P	C
4			4

COURSEOBJECTIVES::

To understand operation of semiconductor devices.,DC analysis and ACmodels of semiconductor devices. To verify the theoretical concepts through laboratoryand simulationexperiments..

COURSEOUTCOMES: At theendofcourse,studentwillbeableto:

CO1	Understandthecurrentvoltagecharacteristicsofsemiconductordevices,
CO2	Analyzedccircuitsandrelateacmodelsofsemiconductordeviceswith theirphysicalOperation,
CO3	DesignandanalyzeofelectroniccircuitsLaws
CO4	Evaluatefrequencyresponsetounderstandbehaviorof waveforms.

Syllabus

Unit	UnitTitle	IntendedlearningChapters (Programme specific qualificationattributes K1,K2,K3,K4)	Hours ofInstruction

I	Semiconductor theory	IntrinsicSemiconductor–ExtrinsicSemiconductor-TheoryofPNJunctionDode-ZenerDiode-AvalancheBreakdown-ZenerBreakDown-OperationofPNP&NPNTransistor-CB,CE,CCConfigurationandCharacteristics-Transistoras an Amplifier.	10

II	Resistors , capacitors&inductors	Resistors,Capacitors&InductorsinSeries and Parallel - Factors GverningResistance,Capacitance&Inducatance-ColourCodingofResistors-EnergyStoredinaCapacitor-EnergyStoredinanInductor-VariousOtherPassive&ActiveDevices.	10
III	Circuitlaws	Ohm's Law - Kirchoff's Current Law - Kirchoff'sVoltageLaw-VoltageDivision-CurrentDivision-SeriesCircuits - Parallel Circuits - Series &ParallelCircuits-OpenCircuit-Short Circuit.	10
IV	Waveforms	Sinusoidal Waveform - Non-SinusoidalWaveforms-PeakValue-PeaktoPeakValue-AverageValue-RMSValue–Period&FrequencyMeasurement	10
V	Powersupply	HalfWaveRectifier-FullWaveRectifier - Bridge Rectifier - CapacitorFilter-FixedICRegulatedPowerSupplyusing78XX-DualICRegulatedPowerSupplyusing78XX &79XX.	10

REFERENCEBOOKS:

1. ElectronicDevices&Circuits-S.Salivahanan -TMH-IIEdition

2. Circuits&Networks-Sudhakar-TMH-4thEdition.

B.SC. ELECTRONICS AND

COMMUNICATIONELECTRONICS–II

(ALLIED)

L	T	P	C
4			4

For B.Sc [MATHS,STATISTICS,MATHS (CA),BIOCHEMISTRY,MICROBIOLOGY,BIO-TECH]

I/IIYEAR-II/IVSEMESTER

COURSEOBJECTIVES:
- Toacquirethebasicknowledgeofdigitallogiclevelsandapplicationofknowledgetounderstan ddigitalelectroniccircuits.
- Topreparestudentstoperformtheanalysisanddesignofvariousdigitalelectroniccircuits.
- To learnthe designprocessofregisters,countersandconversionofanalog todigitalconversionandvice-versa.

COURSEOUTCOMES: At theendofcourse,studentwillbeableto:

CO1	Examinethestructureofvariousnumbersystemsanditsapplicationin digitaldesign.
CO2	Haveathoroughunderstandingofthefundamentalconceptsand minimizationtechniquesusedindigitalelectronics.
CO3	UnderstandvariousBooleanalgebraanditsapplications
CO4	Understandvariouscombinationallogiccircuitsanditsapplications
CO5	AnalyzeanddesignvariousElectroniccircuitsanditsapplications

Syllabus

Unit	UnitTitle	Intended learning Chapters(Programme specific qualificationattributes K1,K2,K3,K4)	Hours ofInstruction
I	Numbersystems	Introduction-BinaryNumberSystem-	10

		OctalNumberSystem-DecimalNumber System - Hexadecimal NmberSystem-ConversionFromOneSystem toAnother.	
II	**Binaryrules**	Binary Addition - Binary Subtraction - BinaryMultiplication-BinaryDivision -1's&2'sComplementSubtraction-9's&10'sComplementSubtraction.	10
III	**Booleanalgebra**	Logic GATES - NAND as aUNIVERSALGATE-NORasa UNIVERSAL GATE - Basis Laws ofBooleanAlgebra-PrincipleofDuality –DeMorgan'sTheorem.	10
IV	**Combinational elements**	Half Adder - Full Adder - HalfSubtractor - Full Subtractor - Encoder -Decoder-Multiplexer–Demultiplexer.	10
V	**Electroniccircuits**	Barkhausen Criterion – SinusoidalOscillators (Hartley , Phase Shift&Crystal Oscillator) - Amplitude &Frequency : Modulation & Detection –Amplifiers : RC Coupled &Transformer Coupled . Filters : LowPass, High Pass , Band Pass & BandReject Filters – Op-Amp's & TheirApplications (Addition , Subtraction,Multiplication ,Division, DifferentiationandIntegration).	10

REFERENCEBOOKS:

1. DigitalCircuits&Design–Salivahanan-VikasPub-IIIEdition.

2. ElectronicDevices&Circuits-S.Salivahanan -TMH-IIEdition

B.SC.ELECTRONICSANDCOMMUNICATION

ELECTRONICSLAB(ALLIED)
For B.Sc [MATHS,STATISTICS,MATHS (CA),BIOCHEMISTRY,MICROBIOLOGY,BIO-TECH]

I/IIYEAR-II/IVSEMESTER

L	T	P	C
2	1	1	2

(ANYHARDWAREBASEDSIMULATION TOOLMAYALSOBEUSED)

(Any18Experiments)

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24. SubtractorUsingOp-Amp

25. LowPassFilter/HighPassFilter.

PROFESSIONAL ENGLISH– I

https://drive.google.com/file/d/1-edgjNpnnMIapLxZyqVH9z3jugy53CIm/view?usp=drive_web

PROFESSIONAL ENGLISH-II

https://mail.google.com/mail/u/0?ui=2&ik=6b5209cdff&attid=0.1&permmsgid=msg-a:r351488560116746404&th=17921a031456e9df&view=att&disp=inline&realattid=f_ko3v5ewj0

PERIYAR UNIVERSITY

SALEM – 636011, TAMIL NADU, INDIA

NAAC **A** Grade - State University - NIRF Rank 68

THE REGISTRAR

PU/AD-1/BOS MEETING/ B.Sc.E& C /2020   Date: 30-01-2020

BOARD OF STUDIES - MEETING NOTICE

I am, by direction, to inform that the meeting of the Board of Studies in **B.Sc. Electronics and Communication -UG (Affiliated Colleges)** is scheduled to be held on **12-02-2020 at 10.00 a.m.** at Food Court, Periyar University, Salem-11.

AGENDA

1.   To frame the syllabus for **B.Sc. Electronics and Communication** from the academic year 2020-2021 and thereafter.

2.   Any other item.

I request you to make it convenient to attend the above meeting on 12-02-2020. TA & DA will be paid as per the University norms.(Remuneration will be paid through ECS only)

REGISTRAR i/c 30.1.2020

To:

1.	Ms.S.Vennila Assistant Professor Dept. of Elec. & Communication, Government Arts College, Dharmapuri-636705. Ph:9952626888.	Chairman
2.	Thiru L.Dhatchinamurthy Assistant Professor, Dept. of Elec. & Communication,K.S.R College of Arts & Science, K.S.R. Kalvi Nagar,Tiruchengode – 637209. Ph:9894588233.	Member
3.	Thiru T.Suresh Assistant Professor & Head, Dept. of Elec. & Communication, Salem Sowdeswari College, Kondalampatti, Salem - 636010. Ph:9245519021.	Member
4.	Thiru S.Karthikeyan Assistant Professor, Dept. of Elec. & Communication, K.S.R. College of Arts Science, K.S.R. Kalvi Nagar, Thiruchengode – 637209. Namakkal Dt. Ph:9865650753.	Member

5.	Dr.R.Ramesh Assistant Professor, Department of Physics Periyar University, Salem-11 Ph:9790177663.	Member
6.	Dr.J.Kalyanasundar Assistant Professor, Department of Physics Periyar University, Salem – 636011. Ph:9965432165.	University Nominee
7.	Dr.R.S.Sabeenian, Professor & HOD/ECE, R&D Head – SONA SIPRO, Department of Electronics & Communication Engineering, Sona College of Technology, Salem – 636 005, India. Ph:9894859444.	External Member
8.	Mr. Prakash Manuel Joe J Associate Professor, Dept. of Electronics, PSG College of Arts and Science is a College, Avinashi Rd, PSG CAS, Civil Aerodrome Post, Peelamedu, Coimbatore, Tamil Nadu 641014.	External Member
9.	Thiru Gopalakrishan Manickam Technology Lead, Infosys Limited, Mahindra orld City, Chengalpet, Chennai-603004. Mobile:9842448433.	Industrial Personal
10.	Thiru S.Kannan Assistant Professor & Head, Dept. of Electronics & Communication, Muthayammal College of Arts and Science, Rasipuram, Namakkal-637408. Mobile:9943734799.	Alumni

Copy to: 1. P.A to Vice-Chancellor
2. P.A to Registrar
3. The Librarian, Library, Periyar University.