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**COURSE SCHEME**  
**FOR B.E 7<sup>TH</sup> SEMESTER ELECTRONICS & COMMUNICATION ENGINEERING**  
**FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARDS**

Course No.	Name of the Course	Hours Per Week			Marks			
		L	T	P	Theory	Sessional	Practical	Total
ECE-701	Microprocessor-II	3	2	--	100	50	--	150
ECE-702	VLSI Design & Technology	3	2	--	100	50	--	150
Elective-I ECE-703	(A) Wireless Communication	3	2	--	100	50	--	150
	(B) Optical Fibre Communication							
HUM-712	Industrial Management	3	2	--	100	50	--	150
ECE-704	Industrial Training	--	--	--	--	--	50	50
ECE-705	Minor Project	--	--	9	--	--	150	150
ECE-706	Seminar	--	--	3	--	--	100	100
ECE-711	Microprocessor-II Lab	--	--	2	--	--	50	50
ECE-712	VLSI Lab	--	--	2	--	--	50	50
<b>Total</b>		<b>12</b>	<b>8</b>	<b>16</b>	<b>400</b>	<b>200</b>	<b>400</b>	<b>1000</b>

**Note:** Students have to select one course from Elective I.



**UNIVERSITY OF JAMMU, JAMMU**  
**FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARDS**

**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: ECE/AEI ENGINEERING**  
**COURSE NO: ECE-701**  
**COURSE TITLE: MICROPROCESSOR-II**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**Section-A**

Microprocessor 8086 pin diagram, Architecture, Instruction format & set, Introduction to assembly language programming & techniques, 8086 string instructions & programming, Passing parameters using procedures & macros, Nested procedures & macros, Assembler directives.

8086 Timing diagrams, 8086 interrupts, 8086 in minimum & maximum mode configuration, Bus connection & its remedy, closely & loosely coupled configuration.

**Section-B**

8087 math coprocessor, Pin diagram, Architecture, Instruction set, Interfacing to 8086, Introduction to 8089 I/O processor, Pin diagram, Architecture, Instruction set, Interfacing with 8086, Data sharing through memory management.

Interfacing 8255 with 8086, Interfacing of 8279 with 8086, Interfacing of USART 8251 with 8086, Memory interfacing with 8086.

Introduction, Architecture, Pin diagram of Usart-8251, 80286, 80386, 80486 & Pentium processor, Use of RISC & CISC instructions.

**Books Recommended:-**

- |     |   |                   |
|-----|---|-------------------|
| 01. | Microprocessor & Interfacing Programming  | by Douglas V Hall |
| 02. | Microprocessor Architecture & Programming | by Ramesh Gaonkar |
| 03. | Microprocessor Systems                    | by Liu Gibson     |
| 04. | The Intel Microprocessor                  | by Brey           |

**NOTE:** There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

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**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: ELECTRONICS & COMMUNICATION**  
**COURSE NO: ECE-702**  
**COURSE TITLE: VLSI DESIGN & TECHNOLOGY**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**Section-A**

**An Overview of Silicon Semiconductor Technology: Wafer processing, Oxidation, Etching, Epitaxy, Deposition, Ion-implantation, Lithography, Diffusion and Metallization.**

**MOS Technology: NMOS fabrication and CMOS fabrication using N-Well, P-Well & Twin-Tub processes, VLSI Design flow-Design specification, Design Entry, Final Simulation.**

**MOSFET: Structure and operation, Current voltage characteristics, MOSFET scaling and Non-ideal current voltage effects, Layout design rules, CMOS inverter layout design.**

**Section-B**

**NMOS and CMOS Inverter:** CMOS inverter of operation, Design of CMOS inverter, Switching characteristics of CMOS inverter, Calculation delay times, Switching power dissipation of CMOS inverter.

**Combinational & Sequential MOS Logic Circuits: Simple CMOS logic circuits, Gates Multiplexers, Adders, Sequential MOS logic circuits: Latch circuits and flip flops.**

**NOTE:-** There shall be four questions of 20 marks in each section. Students will have to attempt atleast two questions from each section. Use of calculator is allowed.

***Recommended Books:-***

- |  |                                     |
|--|-------------------------------------|
| 01. Basic VLSI Design                  | Douglas A. Pucknell & K. Eshraghian |
| 02. Principles of CMOS VLSI Design     | Neil H.E Weste & K. Eshraghian      |
| 03. VLSI Fabrication Principles        | S.K. Gandhi                         |
| 04. VLSI Technology                    | S.M. Sze                            |
| 05. Circuit Design for CMOS VLSI       | J.P. Uyemura                        |
| 06. CMOS Digital ICs Analysis & Design | Sung-Mo Kang & Yusuf Lablebici      |

**NOTE:** There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

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**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: ELECTRONICS & COMMUNICATION**  
**COURSE NO: ECE-703(A) ELECTIVE-I**  
**COURSE TITLE: WIRELESS COMMUNICATION**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**Section-A**

**Introduction to Wireless Communication:** Examples of different wireless system, communication system- Cordless Telephone systems, Cellular Telephone system, Introduction to 2G and 3G wireless Network.

**The Cellular Concept:** Introduction, frequency reuse, Handoff strategies, Co channel interference and system capacity, Adjacent channel capacity, Improving Coverage and capacity - Cell splitting, Sectoring.

**Multiple Access Techniques:** Introduction, TDMA, FDMA, CDMA, SDMA,

**Modulation Technique:** BPSK, QPSK,  $\pi/4$ QPSK, MSK, GMSK Transmission & detection.

**Section-B**

**Mobile Radio Propagation:** Free space propagation model, Small scale Multipath propagation, Parameters of Mobile Multipath channels, Types of small scale fading, Rayleigh Distribution, Ricean Distribution, Diversity techniques -Space Diversity, Frequency Diversity, Rake Receiver, Introduction to SISO & MIMO (Multiple I/P Multiple O/P systems).

**Wireless System & Standards:** GSM - Features, Architecture, Channel types, CDMA Digital Cellular standard (IS-95) - Forward & Reverse CDMA channels, Introduction to Bluetooth, Wi-Fi, Wi-mac.

**Books Recommended:-**

01. Wireless Communication : by T.S. Rappaport
02. Personal & Mobile Communication : by R. Panday
03. Mobile Communication Engg. by W.C.Y. Lee Tata McGraw Hill

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

**UNIVERSITY OF JAMMU, JAMMU**  
**FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD**

**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: ELECTRONICS & COMMUNICATION**  
**COURSE NO: ECE-703(B) ELECTIVE-I**  
**COURSE TITLE: OPTICAL FIBRE COMMUNICATION**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**Section-A**

Overview of Optical Fiber Communication: **Block diagram of Fiber Optical Comm. system, Evolution of fiber optic system, Elements of transmission link, Nature of light, Basic optical laws, Advantages and Disadvantage of optical fiber Communication.**

Optical Fiber Structure and Waveguiding: **Mode and configuration, Fiber types, Rays and modes, Step-index fiber structure, Wave equation for step index fiber, Modes in step index fiber, Graded index fiber structure, Numerical Aperture of fibers.**

Signal Degradation in Optical Fiber: **Attenuation, Absorption, Scattering and bending losses, signal degradation in fiber, Group delay, Material dispersion, Waveguide dispersion, Intermodal & intermodal dispersion, Pulse broadening in graded index fiber.**

Section-B

Fiber Material Fabrication and Connectors: **Glass fibers, Halide glass, Chalgenide glass, Plastic fiber, Fiber fabrication, Outside vapor phase oxidation, modified chemical vapor deposition, Plasma activated chemical vapor deposition, Double crucible method, optical fiber connectors, Requirements of good design, Connector types, Single mode fiber connector.**

Optical Sources and Detectors: **LED—materials used, structure, Power, Modulation and quantum efficiency, Laser diode—material, structure and efficiency, Photodiode-PIN--Principle. Avalanche photodiode, Principle, Detector response time.**

Optical Amplifier: **Semiconductor amplifier, External pumping and gain-erbium doped amplifiers, Amplification mechanism.**

Applications: **Optical WDM, TDM networks and their switching, SDH/SONET, Optical ATM.**

**Book Suggested :-**

01. Optical Fiber Communication principles and practice by J.Senior
02. Optical Fiber Communication by Gerd Keiser

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

**UNIVERSITY OF JAMMU, JAMMU**  
**FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD**

**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: COMPUTER ENGG / ECE**  
**COURSE NO: HUM-712**  
**COURSE TITLE: INDUSTRIAL MANAGEMENT**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**Section A**

**Entrepreneurship: - Definition and types, Qualities of good Entrepreneurs - Role of Entrepreneurs in the economic development of a country. Entrepreneurship as a career option for technocrats in India, Schemes and policies for entrepreneurship development, Product Selection.**

**Legal Forms of Industrial Ownership:**

- a) Sole Proprietorship.
- b) Partnership.
- c) Joint Stock Company.

**Industrial Development in India after Independence:** Scope for further growth of Industry, Industrial Policy of India. Economic reforms - to accelerate Industrial development, Eco- reforms.

**Industrial Relations :**

- 1) Workers participation in management.
- 2) Trade Union: Objectives, Present Position, and Weakness.
- 3) Industrial Conflict, Sources and managing conflict
- 4) Collective Bargaining.

**Section B**

**Meaning & Scope of Management:** Scientific Management, Functions of Management, Features of management, Administration Vs Management.

**Management Objectives:** Definition of Objectives, Characteristics, Types, MBO – Definition, Process, Benefits & Limitations.

**Authority:** Sources of Authority, Limits to authority, Delegation of authority, Process, Advantages, Obstacles.

**Decision Making:** - Meaning, Importance & steps in Decision making.

**Departmentation:** Need & Importance, Basis or pattern of Departmentation- Organization lines, staff, functional.

**Personnel Management:** Importance & main functions of Personal department.

**Wage Administration & Job Enrolment:** - Methods of wage payments, Job Analysis, Job Specification and Description, Job Evaluation. Methods of job evaluation.

**Books Recommended:**

1. George Terry – Principles of Management.

2. M.C. Shukla. – Business & Industrial Organisation.
3. Kortz & O'Donnel - Management

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

**UNIVERSITY OF JAMMU, JAMMU**  
**FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD**

**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: ELECTRONICS & COMMUNICATION**  
**COURSE NO: ECE-711**  
**COURSE TITLE: MICROPROCESSOR-II LAB**  
**DURATION OF EXAM: 3 HOURS.**

L	T	P	MARKS
0	0	2	50

**List of Practical**

01. Write a program to calculate the factorial of a number.
02. Write a program for the addition of two numbers.
03. Write program to find average of two numbers.
04. Write a program to find the sum of numbers in the array & store it in Register or Memory.
05. Write a program to find the greatest number from a given array.
06. Write a program find the smallest number from a given array.
07. Write a program for arranging numbers in ascending order.
08. Write a program for arranging numbers in descending order.
09. Write a program to search an element from a given array.
10. Write a program to convert BCD number into its binary equivalent number.
11. Write a program to move a string from one location to another.

**UNIVERSITY OF JAMMU, JAMMU**  
**FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD**

**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: ELECTRONICS & COMMUNICATION**

**COURSE NO: ECE-712**  
**COURSE TITLE:VLSI LAB**  
**DURATION OF EXAM: 3 HOURS.**

L	T	P	MARKS
0	0	2	50

### List of Practical's

01. Write atleast six programs for combinational and sequential circuits using VHDL / verilog Hardware Description Languages.
02. Layout design of a CMOS Inverter.
03. Layout design of 3-input Universal Gate.
04. Implementation of a 4-bit full adder.
05. Layout design of 4x1 multiplexer.

**UNIVERSITY OF JAMMU, JAMMU**  
**FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD**

**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: ELECTRONICS & COMMUNICATION**  
**COURSE NO: ECE-706**  
**COURSE TITLE: SEMINAR**

L	T	P	MARKS
0	0	3	100

This will involve a detailed study of a topic of interest reproduced in the candidate's own style. For this, a student has to prepare a seminar by doing proper survey of literature, compilation of information so gathered and then presentation of the same followed by question-answer session. The report of which has to be submitted by the student well before the conduct of seminar. The handout submitted by the student will be in accordance with the standards of technical papers.

#### **Guidelines and evaluation of Seminar in 7<sup>th</sup> semester:**

The topic of the Seminar is to be finalized and approved by the departmental committee by the end of 6<sup>th</sup> Semester. The committee shall have a convener and atleast two members.

#### **Distribution of Marks:**

Total Marks for Seminar Evaluation = 100 marks  
 1) Project Report = 30 marks  
 2) Presentation = 50 marks  
 3) Attendance = 20 marks.

#### **Award of Marks:**

- Marks Under (1) will be awarded by the Seminar Incharge.
- Marks Under (2) and (3) will be awarded by the Departmental committee

constituted for the purpose.

**UNIVERSITY OF JAMMU, JAMMU**  
**FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD**

**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: ELECTRONICS & COMMUNICATION**  
**COURSE NO: ECE-705**  
**COURSE TITLE: MINOR PROJECT**

L	T	P	MARKS
0	0	9	150

The project will be assigned to the students towards the end of 6<sup>th</sup> semester and will start working on those projects at the commencement of their 7<sup>th</sup> semester. The topic of the project will be decided as per the developments taking place in the field of Electronics and Communication Engineering.

This may require complete literature survey, design, fabrication, simulation of some models and/or some preliminary laboratory experiments etc. The same project shall be extended to 8<sup>th</sup> semester.

**Distribution of Marks as per University statutes:**

Total Marks for End semester Evaluation	=	150 marks	
1) Presentation/ Demonstration	=	45 marks	30%
2) Viva-voce	=	45 marks	30%
3) Actual work done	=	60marks	40%



**Award of Marks**

- Marks under (1) and (2) will be awarded by the Departmental committee constituted comprises of convener and atleast two members.
- Marks under (3) will be awarded by the Project Guide/supervisor concern.

**UNIVERSITY OF JAMMU, JAMMU**  
**FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD**

**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: ELECTRONICS & COMMUNICATION**  
**COURSE NO: ECE-704**  
**COURSE TITLE: INDUSTRIAL TRAINING**

L	T	P	MARKS
0	0	0	50

Students are required to undertake 4 to 6 weeks Practical Training during the summer vacations in the field of Electronics & Communication in Govt./Semi-Govt./Private sector. Thereafter, each student shall be required to submit a report on the practical training to the concern HOD for evaluation.

**Guidelines for evaluation of Practical Training:**

The evaluation shall be done by the departmental committee by the end of 7<sup>th</sup> semester. The committee shall have a convener and atleast two member.

**Distribution of Marks as per the University statues:**

Total Marks for Evaluation	= 50 marks	
i) Report	= 20	40%
ii) Viva-Voce	= 15	30%
iii) Miscellaneous Marks	= 15	30%

Due weightage will be given to those who have opted Industrial Training outside the State as well as keeping in view the profile of that Industry.

**Award of the Marks:**

Marks under (i), (ii) & (iii) will be awarded by the departmental committee constituted for the purpose.

**UNIVERSITY OF JAMMU, JAMMU****COURSE SCHEME****FOR B.E 8<sup>TH</sup> SEMESTER ELECTRONICS & COMMUNICATION ENGINEERING  
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS**

Course No.	Name of the Course	Hours Per Week			Marks				% Change
		L	T	P	Theory	Sessional	Practical	Total	
ECE-801	Microcontroller & their Applications	3	2	-	100	50	---	150	100%
ECE-802	Antenna & Radar Engineering	3	2	-	100	50	---	150	100%
<b>Elective-II</b> ECE-803	(A) Satellite Communication (B) Electronics Circuit Design with IC's (C) Nanotechnology (D) Computer Networks & Communication	3	2	-	100	50	---	150	100%
<b>Elective-III</b> ECE-804	(A) Digital Image Processing (B) Neural Networks & Fuzzy Systems (C) Biomedical Electronics & Instrumentation	3	2	-	100	50	---	150	100%
ECE-811	Microcontroller Lab	--	--	2	--	--	50	50	100%
ECE-805	Major Project	--	--	14	--	--	350	350	0%
<b>Total</b>		<b>12</b>	<b>8</b>	<b>16</b>	<b>400</b>	<b>200</b>	<b>400</b>	<b>1000</b>	

**Remarks:** Under revised scheme, course code of Microcontroller and their Applications has been changed from ECE-803(B) to ECE-801, Antenna and Radar is introduced in place of Radar Systems, Elective-II (ECE-803) consisting of new subjects Satellite Communication, Electronics Circuit Design with IC's, Nanotechnology, Computer Networks & Communication have been introduced in place of Elective-III (ECE-803). Elective-III (ECE-804) consisting of Digital Image Processing, Neural Networks & Fuzzy Systems, Biomedical Electronics & Instrumentation have been introduced in place of Elective –IV consisting of Digital Processing & Computer Networks and Communication .ii) Under revised scheme, Microcontroller Lab having code ECE-811 is introduced.

**UNIVERSITY OF JAMMU, JAMMU****COURSE SCHEME**

**FOR B.E 8<sup>TH</sup> SEMESTER ELECTRONICS & COMMUNICATION ENGINEERING  
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS**

Course No.	Name of the Course	Hours Per Week			Marks			
		L	T	P	Theory	Sessional	Practical	Total
ECE-801	Microcontroller & their Application	3	2	-	100	50	---	150
ECE-802	Antenna & Radar Engineering	3	2	-	100	50	---	150
<b>Elective-II</b> ECE-803	(A) Satellite Communication (B) Electronics Circuit Design with IC's (C) Nanotechnology (D) Computer Networks & Communication	3	2	-	100	50	---	150
<b>Elective-III</b> ECE-804	(A) Digital Image Processing (B) Neural Networks & Fuzzy Systems (C) Biomedical Electronics & Instrumentation	3	2	-	100	50	---	150
ECE-811	Microcontroller Lab	--	--	2	--	--	50	300
ECE-805	Major Project	--	--	14	--	--	350	100
<b>Total</b>		<b>12</b>	<b>8</b>	<b>16</b>	<b>400</b>	<b>200</b>	<b>400</b>	<b>1000</b>

**Note:** Students have to select one course each from Elective -II and Elective-III.

**UNIVERSITY OF JAMMU, JAMMU**  
**FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS**

**CLASS: BE 8<sup>TH</sup> SEMESTER**

**BRANCH: ECE/AEI**

**COURSE NO: ECE-801**

**COURSE TITLE: MICROCONTROLLER & THEIR APPLICATION**

**DURATION OF EXAM: 3 HOURS.**

L	T	P	MARKS	
3	2	0	THEORY	SESSIONAL
			100	50

**Section – A**

**Role of Microcontrollers-** 8 bit Microcontrollers, architecture of Intel 8031/8051/8751, hardware processing, instruction set-simple programs.

**Peripheral interface:** Interrupts, Applications, automobile turn Indicator, Small DC Motor Control.

**16- Bit Microcontroller:** Intel 8096, architecture, modes of Operations, Addressing modes, instruction set, simple programs.

**Section- B**

**Peripheral Functions of 8096:** Interrupt structure, Timers, High Speed Inputs and Outputs, analog Interface, PWM output, serial Ports, Port status and Control Resistors, Watch Dog Timer.

**AVR Microcontroller Series:** Architecture, Instruction set and assembly language programming, Advantage of using RISC Microcontroller, Architectural features of different variant, System Design based on PIC and AVR.

**Books Recommended:-**

01. The 8051 Microcontroller ( architecture, Programming and Applications )  
By: Kenneth J. Ayala -----Penram International.
02. The 8051 Microcontroller and Embedded Systems-  
By: Muhammed Ali Mazidi & Janice Gillispie Mazdi.
03. Design with Microcontroller  
By: John B. Peatman ( Tata McGraw Hill Publications)
04. ARM system development guide  
By: Andrew-n-sloss & Dominic Symes Publisher –Morgan Aausamann.

**NOTE:** There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

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**CLASS: BE 8<sup>TH</sup> SEMESTER**  
**BRANCH: ELECTRONICS & COMMUNICATION**  
**COURSE NO: ECE-802**  
**COURSE TITLE: ANTENNA & RADAR ENGINEERING**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**Section-A**

**ANTENNA PARAMETERS** -Basic ideas of properties of antennas, Radiation patterns, directional properties of dipole antennas, Antenna gain, Antenna aperture and its relation to gain, antenna terminal impedance, self and mutual impedance. Elementary ideas about self and mutual impedance, front to back ratio, antenna beam width and bandwidth, antenna efficiency, antenna beam area, polarization, Antenna temperature and signal to noise ratio, Reciprocity theorem & application

**RADIATION:** Retarded potentials, radiation from an oscillation, Dipole in free space, induction and radiation fields, Radiated power from a current element, radiation resistance, short antennas, radiation from a quarter wave monopole and half wave dipole.

**ANTENNA ARRAYS** –Various forms of arrays, Arrays of two point sources, linear arrays of n-point sources, pattern multiplication Arrays of equal amplitude and spacing (Broadside and end fire arrays), array factor, directivity and beam width, Steered phase array

**Section-B**

**PRACTICAL ANTENNAS**- Types of antennas, (a) VLF and LF antennas (Hertz and Marconi Antennas), medium frequency antenna and Rhombic antennas, Loop antennas, (b) VHF, UHF and SHF antennas: Folded dipole antennas, Yagi-uda antenna, slotted and horn antennas, helical antennas, Turnstile antenna, Log periodic antenna, Antenna with parabolic reflector.

**RADAR :** Radar Block diagram and operation, radar frequencies, application of radar, radar equation, Prediction of range, minimum detectable signal, receiver noise, transmitter Power, pulse repetition frequency and range ambiguity, antenna parameters, system losses and Propagation effects.

**RADAR SYSTEM:** Doppler effect and its application to CW radar, FM CW Radar altimeters, MTI and pulse doppler radar, tracking radar, Advance Radar, Pulse compression, Chip Radar, Synthetic Aperture Radar, Hologram Radar,

**Text Book:-**

1. J. D. Kraus, "Antennas, "McGraw Hill.
2. Antennas Theory and Design, C.A. Balanis, Raw & Harper.
3. Introduction to Radar Systems, by Merill. I Skolnik.
4. Radar Principles, Technology & Applications Byron Edde

**Reference Book:-**

1. F.C. Jordan & B.C.Balman, "Electromagnetic waves & radiating System", P.H.I.
2. Antennas and Radio wave propagation, Collins, R.E., McGraw Hill.
3. Digital Satellite Communications (Second Edition) Tri, T.Ha. 1990.

**NOTE:** There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

**UNIVERSITY OF JAMMU, JAMMU**  
**FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS**

**CLASS: BE 8<sup>TH</sup> SEMESTER**  
**BRANCH: ELECTRONICS & COMMUNICATION**  
**COURSE NO: ECE-803(A) ELECTIVE-II**  
**COURSE TITLE: SATELLITE COMMUNICATION**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**Section-A**

**Introduction:** Evolution and growth of Communication Satellite, Principle of Satellite Communication, Different types of Satellite, Adv. and Disadv. of Satellite Communication, Frequency Allocation and Band spectrum.

**Orbital Mechanics:** Equation of the orbit, Locating the Satellite in the orbit and with respect to earth, Telemetry, Tracking and command systems, Transponder, Earth station subsystem-- LNA, HPA.

**Section-B**

**Satellite link Design** – Introduction, Basic Transmission theory, System Noise temperature, C/N and G/T ratio, Uplink design, Down link design.

**Multiple Access Techniques**-- Introduction, TDMA – Frame structure, Frame efficiency, Super frame, Burst structure, FDMA – Demand assigned FDMA, SPADE system.

**Satellite Applications** – VSAT, MSAT, DB S system , GPS system.

**Textbook:-**

- |    |   |                 |
|----|---|-----------------|
| 01 | Digital Satellite Communications (Second Edition) Tri, T. Ha. 1990. |                 |
| 02 | Satellite Communications  | by T. Pratt     |
| 03 | Satellite Communications  | by Dennis Roddy |

**NOTE:** There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

**UNIVERSITY OF JAMMU, JAMMU**  
**FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS**

**CLASS: BE 8<sup>TH</sup> SEMESTER**  
**BRANCH: ELECTRONICS & COMMUNICATION**  
**COURSE NO: ECE-803(B) ELECTIVE-II**  
**COURSE TITLE: ELECTRONICS CIRCUIT DESIGN WITH IC's**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**Section-A**

**Basic Design Consideration:** Including thermal and PCB design, Design of basic discrete amplifier.

**I.C Regulators:** Series voltage regulator using Amp types, shunt regulators using Op Amp, Switching regulator using Op Amp, Dual voltage regulator, Op Amp current regulator, Monolithic adjustable voltage regulators, Fixed voltage (three terminal) regulators, Dual tracking regulators, Hybrid regulators, Current sensing and current feedback protection, Design examples.

**Amplifier:** Op Amp used as A.F. amplifiers, Monolithic audio amplifiers, Programmable linear (PA) amplifiers, Operational voltage amplifiers (OVAs), Operational transconductance amplifiers (OTAs), Chopper stabilized Op Amp, Differential amplifier, Logarithmic amplifier, Current difference (CD) amplifier, Design examples.

**Section-B**

**Wave Form Generators:** Quadrature oscillator using a 747 dual Op-Amp, VCO using (i) dual 789 Op-Amp, (ii) Op-Amp and 555 timer, Voltage controlled multivibrator, Voltage to frequency converter, Monolithic V/F converter, Crystal oscillator using (i) CA 3000 differential amplifier (ii) Cs (iii) Comparator LIC, Triggered saw tooth generator, Monostable multivibrator circuit, Staircase ramp generator, LM 122 precision timer, Design examples.

**Digital System:** D/A converter-DA switches, Current mode switching principle, Monolithic D/A converter using current mode switching, A/D converter-successive approximation converter, Dual slope integrator ADC, Sample and hold circuits, Frequency synthesizers, Programmable digital generator. Design examples.

**Comparator and Multipliers:** Comparator characteristics, Application of comparator-zero crossing detector, Level detector, Window detector, Logic interface circuit using comparator, Digital transmission isolator using comparator, Logarithmic multipliers, Variable transconductance amplifier. Design examples.

**BOOKS RECOMMENDED:**

- |  |                                 |
|--|---------------------------------|
| 01. Linear Integrated Circuits                       | Thomas Young, John Wiley & Sons |
| 02. Linear Integrated Circuits Manual (i, ii, & iii) | National Semiconductor          |
| 03. Linear Applications Handbook                     | National Semiconductor          |

















c.	Report	=	100	40%
	Total	=	<u>250</u>	