PANJAB UNIVERSITY, CHANDIGARH- 160014 (INDIA)

FACULTY OF ENGINEERING & TECHNOLOGY

SYLLABI

FOR

Bachelor of Engineering (Electronics & Electrical Communication)
Seventh-Eight Semesters
Examinations, 2012-2013
### SEVENTH SEMESTER

<table>
<thead>
<tr>
<th>Theory Paper Code</th>
<th>Paper Title</th>
<th>Theory</th>
<th>Practical</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Hours/Week</td>
<td>Marks Uni. Exam</td>
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<tr>
<td>EECE-701</td>
<td>Digital communication</td>
<td>4</td>
<td>100</td>
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<tr>
<td>EECE-702</td>
<td>Digital Signal Processing</td>
<td>4</td>
<td>100</td>
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<tr>
<td>EECE-703</td>
<td>Wireless and Mobile Communication</td>
<td>3</td>
<td>100</td>
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<tr>
<td>EECE-704</td>
<td>Elective-1*</td>
<td>3</td>
<td>100</td>
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<tr>
<td>Seminar-1</td>
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<td>Minor Project</td>
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<td>Vocational Training</td>
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<td>Grand Total: 1250</td>
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<td>14</td>
<td>400</td>
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Elective-1*

0pt any one from the following:

1. Neural network and Fuzzy Logic
2. Artificial Intelligence
3. Web Technologies
4. Radar Engineering
SCHEME OF EXAMINATION FOR BACHELOR OF ENGINEERING (ELECTRONICS AND ELECTRICAL COMMUNICATION)

EIGHTH SEMESTER

OPTION - 1

<table>
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<tr>
<th>Theory</th>
<th>Practical</th>
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<tbody>
<tr>
<td>EECE-801</td>
<td>Optical Fiber Communication</td>
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<tr>
<td>EECE-802</td>
<td>Computer Network</td>
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<tr>
<td>EECE-803</td>
<td>Elective-II*</td>
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<tr>
<td>EECE-804</td>
<td>Computer Architecture</td>
</tr>
<tr>
<td>EECE-805</td>
<td>VLSI Design</td>
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| Major project | -- | -- | -- | 6 | 100 | 100 | EECE-854 |
| Seminar-2 | -- | -- | -- | 4 | -- | 100 | EECE-855 |
| EECE-800 | General Fitness | -- | -- | -- | 0 | 50 |

Grand Total: 1250

OR OPTION-2

<table>
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<tr>
<th>Paper Code</th>
<th>Paper Title</th>
<th>Duration</th>
<th>Marks Uni. Exam</th>
<th>Internal assessment</th>
<th>Grand Total</th>
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<td>Industrial Training</td>
<td>6 months</td>
<td>650</td>
<td>600</td>
<td>1250</td>
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Elective-II*
1. Digital Image Processing
2. Satellite Communication
3. Nano-Technology

A Student can opt OPTION 1 or OPTION 2.
SYLLABUS FOR
BACHELOR OF ENGINEERING (ELECTRONICS AND ELECTRICAL
COMMUNICATION)
SEVENTH SEMESTER

Paper Title:- DIGITAL COMMUNICATION

Paper Code: - EECE - 701

Max Marks: - 100

Time :- 3 Hrs

Note for paper setter: A Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART-A

Digital Transmission:-
(15)

Digital Carrier Line Encoding & Multiplexing Techniques:
(10)
Line Coding & its properties. NRZ & RZ types, (No derivation), HDB and B8ZS signaling, Fundamentals of time division multiplexing, T1 Digital Carrier system, Synchronization and Signaling of T1, TDM, PCM hierarchy, North-American Digital Hierarchy; T1 to T4 PCM TDM system (DS1 to DS4 signals), Bit versus word interleaving, Statistical TDM.

PART-B

Digital Carrier Modulation & Demodulation Techniques:
(20)
Introduction, Information capacity, Shannon Limit for Information capacity, Bit Rate, Baud & M-Ary Encoding, Amplitude Shift Keying (ASK), ASK Spectrum, ASK Modulator, Coherent ASK Detector, Non-coherent ASK Detector, Frequency Shift Keying (FSK), FSK Bit Rate and Baud, Bandwidth and Frequency Spectrum of FSK, FSK Transmitter, Non-coherent FSK Detector, Coherent FSK Detector, FSK Detection using PLL, Binary Phase Shift Keying, Binary PSK Spectrum, BPSK Transmitter, Coherent PSK Detection, Quadrature Phase Shift Keying (QPSK), QPSK Demodulator, Offset QPSK, π/4 QPSK, Comparison of conventional QPSK, Offset QPSK and π/4 QPSK, Quadrature Amplitude Modulation (QAM); 8 QAM & 16 QAM transmitters and receivers, Band Width efficiency, Differential PSK, Constant Envelope Modulation; Minimum Shift Keying (MSK) & Gaussian Minimum Shift Keying (GMSK)

BOOKS RECOMMENDED:


**Paper Title:** DIGITAL COMMUNICATION LAB  
**Paper Code:** EECE-751  
**Max. Marks:** 75

Note: At least eight experiments are to be done

**LIST OF EXPERIMENTS**

1. Study of Time Division Multiplexing system.
2. Study of pulse code modulation and demodulation.
3. Study of delta modulation and demodulation and observe effect of slope overload.
4. Study pulse data coding techniques for various formats.
5. Data decoding techniques for various formats.
7. Study of frequency shift keying modulator and demodulator.
8. Study of phase shift keying modulator and demodulator.

Experiments can be performed also on Commsim or MATLAB.

**Paper Title:** DIGITAL SIGNAL PROCESSING  
**Paper Code:** EECE-702  
**Max. Marks:** 100  
**Time:** 3 Hrs

**Note for paper setter:** A Total of Eight questions may be set covering the whole syllabus taking *four* from Part A & *four* from Part B. Candidates will be required to attempt any *five* questions taking at least two from each Part.

**PART-A**

**Continuous Time Signals:**
Review of Fourier series & Fourier transform, sampling of continuous time signals.

**Discrete Time Signals:**
Linear time invariant systems, stability & causality, linear constant coefficient difference equation, convolution, Z-Transform & its properties, inverse z transform, Discrete Fourier transform and its properties, fast Fourier transform, decimation in time and decimation in frequency algorithms.

**Digital Filters:**
Frequency domain representation of discrete time systems, systems function, Ideal low pass filter.

**PART-B**

**Design of IIR filters:**
Impulse invariance technique, Bilinear transformation. Design of IIR filters using butter worth, chebyshev and elliptic filter digital frequency transformation.

**Design of FIR filters**
Window technique, frequency sampling technique, equiripple, approximate technique, comparison of FIR and IIR filters.

**Realization of Digital systems:**
Block diagrams and signal flow graphs for FIR and IIR systems. Direct form, cascade and parallel form for IIR.

**BOOKS RECOMMENDED:**

**Paper Title:** DIGITAL SIGNAL PROCESSING

**Paper Code:** - EECE-752 Max Marks:- 75

Note: At least eight experiments are to be done

**LIST OF EXPERIMENTS**
1. Hands on experience on MATLAB
2. Hands on experience on DSP training kits.
3. Obtain Fourier transform of an analog signal.
4. Obtain discreet Fourier transform of a finite duration signal.
5. Design on IIR low pass filter using butter worth technique.
6. Design FIR low pass filter.
7. Display filtered signals in time domain.
8. Determine the spectral characteristics of speech.

Paper Title: - WIRELESS AND MOBILE COMMUNICATION

Paper Code: - EECE- 703 Max. Marks: - 100 Time :- 3 Hrs

Note for paper setter: A Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART-A

1. Introduction:-
   (10)

2. Modulation Techniques:-
   (11)
   Digital Modulation for Mobile radio, Analysis under fading channel, diversity techniques and Rake demodulator. Introduction to Spread Spectrum Communication Multiple Access Techniques used in mobile Wireless Communications: FDMA/TDMA/CDMA.

PART-B

3. Wireless Networking:-
   (12)

4. Wireless Standards:-
   (12)
   Wireless standards-GSM, IS-95, UMTS-IMT-2000, Signaling, Call Control, Mobility Management and location Tracing

BOOKS RECOMMENDED:


5. Stallings, Wireless Communication and Networks


8. Related IEEE/IEE publications

ELECTIVES

Paper Title: - NEURAL NETWORKS AND FUZZY LOGIC

Paper Code: - EECE 704 Max. Marks: - 100 Time: - 3Hrs

Note for paper setter: A Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART-A

Neural Networks Characteristics:
(08)

Basic learning laws:-
(05)
Hebb’s rule, Delta rule, Widrow and Hoff LMS learning rule, correlation learning rule, instar and outstar learning rules.

Unsupervised Learning:
(05)
Competitive learning, K-means clustering algorithm, kohonen’s feature maps.

Radial Basis Function Neural Networks:
(05)
Recurrent networks, Real Time Recurrent, and learning algorithm.
PART-B

Introduction to Counter Propagation Networks:-
(06)
CMAC network, ART networks.

Applications of neural nets such as pattern recognition:
(06)
Optimization, control, speech and decision-making.

Fuzzy Logic: -
(10)
Basic concepts of Fuzzy Logic, Fuzzy VS Crisp Set, Linguistic variables, membership functions, operations of fuzzy sets, Fuzzy IF-THEN rules, variable inference techniques, defuzzification techniques, basic fuzzy inference algorithm, applications of fuzzy logic, fuzzy system design, implementation of fuzzy system, useful tools supporting design.

BOOKS RECOMMENDED :

2. Yegna Narayanan, "Artificial Neural Networks".
3. Bart Kosko, "Neural Networks and Fuzzy Logic".
4. Simon Haykin, "Neutral Networks".
5. Yen and Langari, “Fuzzy Logic: Intelligence, Control and Information”, Pearson Education India.

Paper Title: - ARTIFICIAL INTELLIGENCE

Paper Code: - EECE 704 Max. Marks: - 100 Time: - 3Hrs

Note for paper setter: A Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART-A

Introduction:-
(03)
The importance of AI, Early work in AI, AI and related fields, introducing intelligence in the methods of attack, criteria for success.
Problem Solving:-
(08)

Knowledge Representation:-
(08)
Definition and importance of knowledge, representing single facts in logic, resolution non-monotonic reasoning, Dealing within inconsistencies and uncertainties, Fuzzy logic, Bayesian probabilistic interference, dempster shaffer theory, Ad-Hoc methods, Heuristic reasoning methods, structural representation of knowledge graphs, frames and related structures.

PART-B

Natural Language Processing:-
Overview of Linguistics, Grammars and Languages, Basic Paying Techniques, Semantic Analysis and Representation Structures, Natural language generation, natural system.
(10)

Pattern Recognition:-
Recognition and classification process, learning classification patterns, recognizing and understanding speech.
(10)

Expert System:-
Rule based system architectures, model based system, constraint satisfaction dealing with uncertainties, knowledge acquisition and validation expert system building tools. Introduction to neural networks, learning algorithms and models.
(06)

BOOKS RECOMMENDED:
1. Dan W. Patterson, Introduction To Artificial Intelligence and Expert System, PHI.

Paper Title: - WEB TECHNOLOGIES
Paper Code: - EECE 704 Max. Marks: - 100 Time: - 3Hrs

Note for paper setter: A Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART- A

Internet And World Wide Web: - (06)
Introduction, Internet Addressing, ISP, types of Internet Connections, Introduction to WWW, WEB Browsers, WEB Servers, URLs, http, WEB applications, Tools for WEB site creation.

**HTML:**
Introduction to HTML, Lists, adding graphics to HTML page, creating tables, linking documents, frames, DHTML and Style sheets

**Java Script:**
Introduction, programming constructs: variables, operators and expressions, conditional checking, functions and dialog boxes, JavaScript DOM, creating forms, introduction to Cookies.

**PART-B**

**Java:**
Introduction to java objects and classes, control statements, arrays, inheritance, polymorphism, Exception handling, Multithreading, Building the Java Applets, Boxes, Radio Button, Managing Multiple controls, Scrollbars, Choice controls, Scrolling lists, Windows, Menu and Dialog Boxes, Pop up Windows, Graphics in Java, Mouse events, Drawing Objects, Fonts, Canvases, Images, Image maps, Graphics, Animation.

**XML:**
Why XML, XML syntax rules, XML elements, XML attributes, XML DTD displaying XML with CSS.

**BOOKS RECOMMENDED:**

1. H.M. Deitel, P.J. Deitel Java,How to Program, 6th edition
3. Web Enabled Commercial Application Development, by Ivan Bayross, BPB.

**Paper Title:** RADAR ENGINEERING

**Paper code:** EECE 704

Max. marks: 100 Time: 3 Hrs

**Note for paper setter:** A Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

**PART-A**

**Introduction to Radar Systems:**
(20)
Radar equation, FM-CW radar, altimeter, MTI, pulse Doppler radar, Tracking radar-lobe switching, conical scan, mono-pulse, FM pulse compression radar. SAR, ECCM.

**PART-B**
Radar Antennas :
(07)
Paraboloid, lenses, cosecant squared antenna.

Navigation:--
(18)
Loop antenna, automatic direction finder, radio range, TACAN, ILS, GCA, Microwave landing System, LORAN & DECCA, Missile guidance and seeker systems.

BOOKS RECOMMENDED:


Paper Title: - SEMINAR 1

Paper Code: - EECE-753

Seminar topics to be allotted by teacher concerned based on the latest topic in the subject concerned.

Paper Title:- MINOR PROJECT

Paper Code:- EECE -754 Max Marks:- 100

Project topic to be allotted by guide concerned.

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SYLLABUS FOR
BACHELOR OF ENGINEERING (ELECTRONICS AND ELECTRICAL
COMMUNICATION)

EIGHTH SEMESTER

Paper Title: - OPTICAL FIBER COMMUNICATIONS

Paper code: EECE 801  Max. Marks: - 100  Time: - 3Hrs

Note for paper setter: A Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART-A

Introduction:

Optical Fibers:

PART-B

Optical Transmitters:

Optical Receivers:

Multi channel Systems:
WDM Light wave systems, Optical TDM Systems, Subscriber Multiplexing, Code Division Multiplexing.
BOOKS RECOMMENDED:

2. Senior J. Optical Fiber Communications, Principles & Practice, PHI.

Paper Title: OPTICAL FIBER COMMUNICATIONS

Paper Code: EECE 851 Max. Marks: 25

Note: At least eight experiments are to be done

1. To determine the Numerical aperture of a given fiber and losses in optical fiber.
2. To determine the V. Parameter the core radius and core cladding dielectric constant difference of a Step Index Single Mode fiber.
3. To measure the cut off wavelength of a single mode fiber.
4. To study fiber optical analog link.
5. To study fiber optical digital link.
6. To study the effect of EMI/RFI on an optical fiber medium.
7. To study the effect of pulse broadening on the bandwidth of a fiber optical link.
8. To set up the multiplexer and observe the simultaneous transmission of several channels on fiber optical link.
9. To study Manchester coding/decoding of fiber optical link.
10. To study the linearized A-Law PCM coding on fiber optical link.
11. To study laser communication system.
12. To set up digital optical link using PC.
13. To study various characteristics of fiber using PC.
14. Use of connectorisation kit.
15. To study the following instruments:
   (a) Fiber optical power meter.
   (b) Fiber optical power source.
Paper Title: COMPUTER NETWORK

Paper Code: EECE 802 Max. Marks: - 100 Time:-
3Hrs

Note for paper setter: A Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART-A

Brief Introduction:
Uses of computer Networks, Network Hardware, Network software, OSI and TCP/IP reference Models, Novell Netware, ARPA Networks, NSF NET, Internet Communication services, SMDS, X. 25 ISDN
Network standardization.

Physical Layer:
Brief introduction of Transmission media, RS-232c and RS-449 switching circuits, virtual circuits, Narrow band, ISDN.

Data Link Layer:
Design issues, Elementary data link protocols, sliding window protocols, protocol specifications, Data link layer in the internet and ATM.

Medium Access Sub Layer:
Channel allocation problems, ALOHA, Carrier Sense Multiple Access Protocol, CSMA/CD, CDMA

PART-B

Network Layer:
Design issues, Routing Algorithm, congestion control algorithm Internet working, the network layer in the Internet.

Transport Layer:
Services, protocols, Performance issues.

Application Layer:

BOOKS RECOMMENDED:

Computer Networks by Andrew S. Tanebaum (3rd Edition), PHI.

Paper Title: COMPUTER NETWORKING

Paper Code: EECE 852 Max. Marks : 25

Note: At least eight experiments are to be done
1. To study different connecting cables and their comparisons.
2. To study sharing and transfer of data in local area network.
3. To study the ping commands and its utilities.
4. To study the remote login in computer system.
5. To configure a single pc as a router.
6. To examine the differences VLAN and LAN.
7. To plan a network in an organization
8. To study IP configuration.
9. To study netstat, all commands.

**ELECTIVES**

**Paper Title:** DIGITAL IMAGE PROCESSING

**Paper Code:** EECE 803

Max Marks: 100  
Time: 3Hrs

**Note for paper setter:** A Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

**PART-A**

**Introduction**
Fundamental Steps in Image Processing, Elements of Digital Image Processing, Image Acquisition, Storage, Processing, Communication, Display.

**Image Perception**
Structure of the human eye, light, luminance, brightness, contrast, image model, sampling and quantization-uniform and non uniform, basic relationships between pixels, imaging geometry, camera model, stereo imaging.

**Image Enhancement**
Spatial domain methods, Frequency domain methods, Enhancement by point processing, histogram processing, image subtraction, image averaging, spatial filtering, smoothing filters, sharpening filters, Enhancement in the frequency domain, Color image processing.

**PART-B**

**Image Transforms**
Image Compression
Fundamentals, Coding Redundancy, Interpixel Redundancy, Psychovisual Redundancy, Fidelity
Criteria, Image Compression Models, Source Encoder and Decoder, Channel Encoder and Decoder,
Elements of Information Theory, Measuring Information, Information Channel, Fundamental Coding
Theorems, Using Information Theory, Error-Free Compression, Variable-Length Coding, Bit-Plane
Coding, Lossless Predictive Coding, Lossy Compression, Lossy Predictive Coding, Transform Coding,
Image Compression Standards.

BOOKS RECOMMENDED
1. Digital Image Processing, by William K. Pratt, TMH

Paper Title: - SATELLITE COMMUNICATION
Paper Code: - EECE 803 Max. Marks: - 100 Time: -
3Hrs

Note for paper setter: A Total of Eight questions may be set covering the whole syllabus taking four from
Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two
from each Part.

PART-A

Introduction:
Origin of Satellite Communication, Current state of Satellite Communication, Advantages of Satellite
Communication, Active & Passive satellite, Orbital aspects of Satellite Communication, System’s
Performance.

Communication Satellite Link Design:
Introduction, general link design equation, System noise temperature, C/N & G/T ratio, atmospheric &
econospheric effects on link Design, complete link design, interference effects on complete link design
earth station Parameters.

Satellite analog & digital communication:
Base band analog (voice) signal, FDMA Techniques, S/N ration, SCPC & CSSB systems, digital base band
signals & modulation Techniques.
PART-B

Multiple Access Techniques:
TDMA frame structure, burst structure, frame efficiency, Super frame, frame acquisition & synchronization, TDMA vs. FDMA, burst time plan, Beam hopping, satellite switched, Erlang call congestion formula, demand assignment Ctrl, DA - FDMA system, DA - TDMA.

Satellite Applications:
Satellite TV, telephone services via satellite, Data Communication services and satellites for earth observation, weather forecast, military appliances, scientific studies.

BOOKS RECOMMENDED:

Paper Title:- NANO TECHNOLOGY

Paper Code: EECE 803 Max. Marks:- 100 Time:- 3Hrs

Note for paper setter: A Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART- A

Introduction to Physics of the Solid State:

Properties of Individual Nanoparticles:
Introduction to Semiconducting Nanoparticles, Introduction to Quantum Dots, wells, wires, Preparation of Quantum Nanostructures, Introduction to Carbon Nanotubes, Fabrication, Structure, Electrical properties, Vibrational properties, Mechanical properties.

**Biological Materials:**

Biological Building Blocks, Nucleic Acids, Biological Nanostructures.

**PART B**

**Tools:**

TEM, Infrared and Raman Spectroscopy, Photoemission and X-RAY spectroscopy, Electron microscopy, SPMs, AFMs, Electrostatic force Microscope, Magnetic force microscope

**Nanoscale Devices:**

Introduction, Nanoscale MOSFET-planer and non planer, Resonant-tunneling diodes, Single electron transistor, Quantum-Dot, Nano-electrochemical systems, Molecular/Bimolecular electron devices,

**REFERENCE BOOKS:**

1. Nanotechnology: G.Timp, Bell Labs, Murray Hill, NJ(Ed.)
2. Introduction to Nanotechnology-Charless P. Poole, Wiley International

**Paper Title:** - COMPUTER ARCHITECTURE

**Paper Code:** EECE 804  
**Max. Marks:** 100  
**Time:** 3 Hrs

**Note for paper setter:** A Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

**PART A**

**Basic Computer Organization and Design:**

Set of Computer Instructions, Registers, timing and Control Signals, flow charts for instruction cycle, flow charts for interrupt cycle, Design of hard wired control unit, control unit, control memory, Design of micro-programmes control unit.

**Central Processing Organization:**

Processor bus organization Arithmetic Logic Unit (ALU)

**Arithmetic Processor Design:**

Addition and subtraction of unsigned binary numbers, Addition and subtraction Algorithm for signed binary numbers, Multiplication Algorithm, Division algorithm for signal and unsigned binary numbers, Floating Point Arithmetic Operations.
PART-B

Memory Organization:
Memory technology, address mapping in RAM & ROM, memory Hierarchies, virtual memory, cache memory, Interleaved and Associative memories, memory management unit, hard disk drive, floppy disk drive and CD-ROM.

Parallel Processing
Types of parallel processors, performance considerations, pipe line processors, multiprocessors, Array processors.

BOOKS RECOMMENDED:

Paper Title:- VLSI DESIGN

Paper Code:- EECE 805 Max Marks:- 100 Time: 3 Hrs

Note for paper setter: A Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART — A

1. Introduction to MOS Technology:
   Enhancement & depletion mode transistors.

2. MOS Transistors:
   Parameters pass transistor, NMOS inverters, CMOS Inverters, MOS Transistor circuit model, Latch up in CMOS circuits, Basic gates, Depletion & enhance mode pull ups.

3. MOS Circuit Design Processes:
   MOS layers stick diagrams, design rules and layout.

4. Basic circuit concepts:
   Sheet resistance concept applied to MOS transistors and Inverters Area Capacitance of layers, Inverter delays, Super buffers, propagation delays.

PART-B

5. Subsystem Design and Layout:
   Switch logic, gate logic, inverter, two input NMOS,CMOS and BICMOS NAND and NOR gates, Design of Combinational Circuits, PLA Design of Sequential Circuits –two phase clock dynamic shift registers, register to register transfer, Finite State Machines.
6. **Implementing Integrated System Design:**
   Patterning and fabrication, hand layout and digitization using a symbolic layout language, the Caltech immediate form for LSI layout description, the multi-project chip.

5. **Overview of an LSI Computer System and Design of OM2 Data Path Chip:**
   System overview, overall structure of data path, ALU, ALU register, Buses, Shifter, Array etc.

**BOOKS RECOMMENDED:**

3. VLSI Design by Pucknell

**Paper Title:**-SEMINAR-2

**Paper Code:**-EECE 855

Seminar topics to be allotted by teacher concerned based on the latest topic in the subject concerned.

**Paper Title:**-MAJOR PROJECT

**Paper code:**-EECE 854

Max. Marks:- 100

Project topics to be allotted by guide concerned.