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**CLASS: B.E.4TH SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE TITLE: SYSTEM PROGRAMMING**  
**COURSE NO.: COM-403**  
**DURATION OF EXAM: 3 HOURS**

<u>L</u>	<u>T</u>	<u>P</u>
3	2	-

<u>MARKS</u>	
Theory	Sessionals
100	40

Section-A

**Introduction to Software Processors:** - What is system software? Components of system software, Evolution of system software, General Machine Structure, Machine Language, Translators, Loaders, Interpreters.

**Assemblers:-** Element of Assembly language programming overview of assembly process, Design of Two-pass Assembler. A single pass Assembler, Macros and Macro processors, Macro Instructions, Features of Macro, Macro calls within Macros.

**Software processors for interactive Environment:** - Interactive Computing and program Development, Interpreters. Incremental compilers.

**Software tools:-**Spectrum of software Tools, Text Editors, Debug Monitors, programming Environments.

Section-B

**Loaders and Linkage Editors:-**General loader scheme, Compile and go loader, Absolute loader, relocating loader, direct linking loader, Loading, Linking and relocation, design of absolute loader and direct linking loader.

**Features of Higher level languages (HLL):-** Importance and features of HLL, Extensive data types and structures, Scope rules, Storage Allocation, Functional Modularity.

**Compilers:-**General Model, Introduction to various phases of compiler, passes of a compiler, Introduction to Parser and Parsing Techniques.

## TEXT/REFERENCES:-

1. **System programming and operating systems** : by Dharmdhere. D.M. TMH
2. Introduction of systems software : D. dhare—TMH
3. Systems programming: J.J. Donavan—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 JUNE 2010, 2011 & 2012**

**CLASS: B.E.4TH SEMESTER**  
**BRANCH: COMPUTER ENGG**  
**COURSE TITLE: DISCRETE MATHEMATICS.**  
**Course No. MTH-413**  
**DURATION OF EXAM: 3 HOURS**

L      T  
3      2

MARKS  
Theory      Sessionals  
**100      40**

**SECTION – I**

**SETS, RELATIONS, MATHEMATICAL LOGIC**

1. Finite and infinite sets, countable and uncountable sets,
2. Principle of inclusion and exclusion, Mathematical Induction, Pigeon-Hole principle.
3. Logical operators, truth tables, Law of inferences and propositional calculus.

**ALGEBRAIC SYSTEM**

1. Relations and functions, types of functions, Lattice, chains, Anti chains
2. Groups and sub groups, Related theorems, cosets, normal subgroups and group Homomorphism
3. Rings, integral domains and fields; examples and related results.

**SECTION - II**

**GRAPH THEORY**

1. **Basic terminology, multi graphs and weighted graphs, connectivity ; walk, trail and path, circuits & Cycles, shortest path in weighted graphs, Algorithm of shortest path,**
2. Hamiltonian and Eulerian paths and circuits, Eulerian trail & circuit, Eulerian graphs, Hamiltonian cycle, Hamiltonian graph, Konisberg Bridge problem, Chinese Postman problem, Traveling Sales Person problem, Planar graph and Euler's formula.
3. Trees and cut sets:- Trees, Rooted Trees, path lengths in rooted trees, prefix codes binary search trees, spanning trees and cut sets.

**BOOKS RECOMMENDED :**

1. Discrete Mathematics by C.L. Liu.
2. Graph Theory by Narsingh Deo
3. Discrete Mathematical structure with applications to computer science by Trembley and Manohar.

NOTE: There shall be total Eight questions of 20 Marks each, Four from each Section. Students shall have to attempt Five questions selecting at least two from each Section. Use of calculator is allowed.

**UNIVERSITY OF JAMMU, JAMMU**  
**FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012**

**CLASS: B.E.4TH SEMESTER**  
**BRANCH: COMPUTER ENGG**  
**COURSE TITLE: ELECTRONICS-II.**  
**Course No. ECE-411**  
**DURATION OF EXAM: 3 HOURS**

				<b>Marks</b>	
<b>L</b>	<b>T</b>	<b>P</b>	<b>Theory</b>	<b>Sessional</b>	<b>Practical</b>
<b>2</b>	<b>2</b>	<b>0</b>	<b>100</b>	<b>40</b>	<b>0</b>

**SECTION - I**

**FEEDBACK AMPLIFIERS**

Classification of amplifiers, Feedback concept, Advantages of negative feedback Way of introducing negative feedback in amplifiers, Gain with & without negative feedback , effect of negative feedback on Input & Output resistances of amplifiers. Bandwidth with negative feedback & their analysis. Procedure for analysis of feedback amplifiers, Analysis of different topologies.

**OSCILLATORS**

Necessity of oscillator, Barkhusein criteria, Gain with Feedback, Types of Oscillators, Audio frequency(R-C phase shift, Wein bridge) & radio frequency( Collpitt, Clapp, Hartley ) oscillators with necessary derivation for determining gain & frequency of oscillation.  
 Crystal Oscillator.

**SECTION - II**

**VOLTAGE REGULATORS**

Necessity of voltage regulated supplies, Factors effecting unregulated power supply, Stabilization, Types of voltage regulators-Series & shunt regulators. Series voltage regulator using emitter follower & its expression for  $S_v$  &  $R_o$ . Pre regulators, Short Circuit protection circuits, Monolithic regulators , SMPS.

**OPERATIONAL AMPLIFIERS & ITS APPLICATION**

Basic Differential Amplifier- its working & types, Small signal analysis using H-parameters, Differential & Common mode gain, Building block of op-amp, Circuit symbol features & Electrical parameters of OP-Amp, Op-amp in open loop & closed loop configuration with derivation. OP-amp as voltage follower, Inverter, I-V converter, Summing, Scaling & average amplifiers(Non Inverting & Inverting), Op-amp as clipper, clamper, peak detector, comparators & Schmitt trigger, Integrator, Differentiator, Timer-555 & its Applications.

**Book Recommended:**

- |  |                    |
|--|--------------------|
| 01. Integrated Electronics             | By Millman Halkais |
| 02. Electronics Devices                | By Bolystead       |
| 03. Electronics Devices                | By Malvino Leach   |
| 04. Op-Amp & Linear Integrated Circuit | By R.A. Gyakwad.   |

NOTE : There shall be Eight Questions of 20 Marks each, Four from Each Section. Five questions have to be attempted in all selecting at least two from each Section.

**UNIVERSITY OF JAMMU, JAMMU.**  
**For Examination to be held in June 2010, 2011 & 2012**

<b>Class: BE 4<sup>th</sup> Semester</b>				<b>Marks</b>		
<b>Branch: COMPUTER ENGINEERING</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Theory</b>	<b>Sessional</b>	
<b>Practical</b>						
<b>Course No:- ECE-412</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>100</b>	<b>40</b>	<b>--</b>
<b>Course Title:- Communication Engg.</b>						
<b>Duration of Exam: 3 Hours</b>						

**SECTION - I**

Introduction to Elect. Comm. System, Concept & need for modulation, Definition of signal to noise ratio & noise figure, Representation of signal & system (periodic non-periodic etc.), Spectral analysis of signal (Fourier series & fourier Transforms), Representation of AM. Frequency spectrum of AM wave, Power relation in Am wave, Modulation & demodulation of AM, SSB techniques, Balanced modulator, Type of SSB, Modulation & demodulation of SSB signals.

Theory of FM, Representation & frequency spectrum of FM, Pre-Emphasis De-Emphasis, Wide band & narrow band FM, Generation & detection of FM signal, Comparison with PM & AM.

**SECTION - II**

Pulse modulation techniques, Sampling & sampling theorem & its proof, Aliasing effect, Natural & flat top sampling principle generation & detection of PAM, PPM, PWM, PCM, DM, ADM, Time division multiplexing, Frequency division multiplexing.

Digital modulation Techniques: Generation & detection of ASK,FSK,BPSK.

Information Theory: Information , information rate, Entropy ,Source-coding & coding Efficiency , Shannon –Fano coding, huff-man coding, Channel capacity theorem.

Books Recommended:

1. Electronics Comm. System By G. Kennedy
2. Principles of Comm. System By. Taub & Schilling

Reference Book

1. Communication System By Simon Haykins

NOTE : There shall be Eight Questions of 20 Marks each, Four from Each Section. Five questions have to be attempted in all selecting at least two from each Section.

**UNIVERSITY OF JAMMU, JAMMU**  
**FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012**

**CLASS: B.E.4TH SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE TITLE: DIGITAL ELECTRONICS LAB.**  
**Course No. COM-404**

L	T	P	<b><u>MARKS</u></b>
		2	40

**List of Practicals:-**

1. Verification of truth table of basic gates.
2. Verification of truth tables of ADDER/SUBTRACTER using IC-7483
3. Verification of truth tables of MULTIPLEXER/DEMULTIPLEXER
4. Verification of truth tables of BCD –7- Segment Display
5. Verification of truth tables of Code Conversion.
6. Design of Flip-Flops using IC chips.
7. Design of Two's complementor ckts using shift registers.
8. Design and Implementation of Asynchronous MOD-12 counters.
9. Design of a sequential ckt for character generation
10. Study of PLA'S and PAL's.

**UNIVERSITY OF JAMMU, JAMMU**  
**FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012**

**CLASS: B.E.4TH SEMESTER**  
**BRANCH: COMPUTER ENGG**  
**COURSE TITLE: PC HARDWARE & MAINTENANCE LAB.**  
**Course No. COM-405**

L	T	P	<b><u>MARKS</u></b>
	-	-	40
		2	

**List of Practicals:-**

1. Study of Keyboards – Mechanical Keyboards, Membrane Keyboards,
2. Study of Printers – Dot Matrix, Inkjet Printers.
3. Study of SMPS.
4. Assembling the units of Computer,.
5. Fault Finding in the various units of Computer, fault finding Codes and Beeps.
6. Software loading at different Platforms such as DOS, Windows –95 /98 2000.
7. Use of Antivirus Software.
8. Preparation of user Manuals/ Service Manuals for various Computer Blocks.

**UNIVERSITY OF JAMMU**  
**For Examination to be held in June 2010, 2011 & 2012**

<b>Class: BE 4th Semester</b>					
<b>Branch: Computer Engg.</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Practical</b>	
<b>Course No: ECE-413</b>	-	-	2	40	
<b>Course Title: Electronics-II Lab</b>					
<b>Duration of Exam: 3 Hours</b>					

**List of Practicals**

1. To study the operation characteristics of the P.N. junction, Ge/Si (Forward & Reverse Charactersitics).
2. To study the operation characteristics of Zener diode (Forward & Reverse Charactersitics).
3. Half wave Rectifier.
4. Full wave / Bridge Rectifier.
5. To study the operation charactersistics (Input / Output) of PNP / NPN Transistor (Common Emitter / Common Base).
6. To study the frequency response of signal amplifier (CE/CB).

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**FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012**

**CLASS: B.E.4TH SEMESTER**  
**BRANCH: COMPUTER ENGG**  
**COURSE TITLE: COMMUNICATION ENGG. LAB.**  
**Course No. ECE-414**

	<u><b>L</b></u>	<u><b>T</b></u>	<u><b>P</b></u>		<u><b>MARKS</b></u>
	-	-	2		40

**List of Practicals:-**

1. To plot the response of RF Tuned amplifier.
2. To find the modulation index of AM signal.











Programmable Interface Devices: - Basics of Programmable I/O, General Purpose Programmable Peripheral Devices – 8255A, 8259A, Direct Memory Access Controller – 8237, 8279, 8253, 8155.

**Reference:**

1. **Microprocessor Architecture, Programming and Applications with 8085/8080 - Ramesh S. Gaonkar.**
2. **Introduction to Microprocessors - Aditya Mathur**

**Note:-** There shall be eight questions of 20 marks each, Four from each section. Five questions have to be attempted selecting atleast two questions from each section.

**UNIVERSITY OF JAMMU**  
**FOR EXAMINATION TO BE HELD FROM DECEMBER 2010 ONWARDS**

**CLASS: B.E 5TH SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE TITLE: AUTOMATA AND FORMAL LANGUAGES**  
**COURSE No. COM-504**  
**DURATION OF EXAM: 3 HOURS**

$\frac{L}{3} \quad \frac{T}{2}$

**MARKS**  
Theory    Sessionals  
**100      40**

**Section-A**

**Introduction:**-Symbols, string Concatenation, alphabet, Language, Tree, Mathematical Induction Proofs , States, Transition Tables, Finite Automata, Regular Expressions, Push- down Automata, Turing Machine, Context Free grammars.

**Finite Automata :-** Deterministic Finite Automata ( DFA), Designing, Non- deterministic finite Automata ( NFA) without E-moves, Conversions, Equivalence, NFA with E-moves, Regular expression designing, Finite machine with output assigned, Moore and mealy machines, Conversion and Equivalence.

**Section- B**

**Turing Machines:**-Turing Hypothesis, Turing Computability, Non- deterministic, Multitape and other versions of Turing machines, Churches Hypothesis, Primitive Recursive functions, Universal Turing machines, decidability, Halting problem, Stack Automata.

**Regular Grammar & Context free Languages:** -Context free Grammar, Context free Languages, reduced form of Grammar, Ambiguous and Non- Ambiguous grammar, acceptors and generators, Relations between Classes of Languages, Pumping lemma of regular sets, Chomsky's hierarchy of languages, derivation Trees.

**References:-**

1. **Introduction to Automata Languages & Computation**  
- by A.V. AHO, J. E. Hopcroft & J.D. Ullman
2. **Introduction Theory of Computer Science**  
- by E. V. Krishna Moorthy

**Note:-** There shall be eight questions of 20 marks each, Four from each section. Five questions have to be attempted selecting atleast two questions from each section.

**UNIVERSITY OF JAMMU**  
**FOR EXAMINATION TO BE HELD FROM DECEMBER 2010 ONWARDS**

**CLASS: B.E 5TH SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE TITLE: COMPUTER NETWORKS**  
**COURSE No. COM-505**  
**DURATION OF EXAM: 3 HOURS**

**L      T**  
**3            2**

**MARKS**  
**Theory    Sessionals**  
**100        40**

**Section A**

**Review of data Communication Systems:** - Introduction to communication system, synchronous and asynchronous systems, serial and parallel system, Modems, RS 232 interface, uses of computer networks, Network topologies, OSI Reference Model, TCP-IP Reference Model.

**Computer Networks:-** X .25 Networks, Physical layer : Transmission media, ISDN services, ATM networks, Cellular Radio, SONNET

**Data Link Layer:** - Design Issues, Protocols (Sliding window protocols) HDLC.

Medium Access Sub layer: Static Channel v/s Dynamic Channel, Aloha, Multiple access protocols, IEEE 802.3, 802.4, 802.5, Bridges, FDDI.

**Section B**

**Network Layer:** - Routing Algorithms, Congestion Control, Internetworking.

**Transport Layer :-** Transport services, Elements of Transport protocols.

**Session Layer & Presentation Layer:-** Design Issues

**Application Layer :-** Presentation and Network security, Data Compression, DNS, ASN-1, email, Usenet, Introduction to WWW, DES, Ciphers, Authentication, Firewalls.

**Reference/Books :-**

1. Data Communication - By William L. Schweber.
2. Computer Networks - By Andrew S. Tanenbaum.
3. Communication Network System for Computer - By Davies & Barbq

**Note:-** There shall be eight questions of 20 marks each, Four from each section. Five questions have to be attempted selecting atleast two questions from each section.

UNIVERSITY OF JAMMU  
FOR EXAMINATION TO BE HELD FROM DECEMBER 2010 ONWARDS

**CLASS: B.E 5TH SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE TITLE: COMPUTER ORGANISATION AND ARCHITECTURE.**  
**COURSE No. COM-506**  
**DURATION OF EXAM: 3 HOURS**

<u>L</u>	<u>T</u>	<u>MARKS</u>	
3	2	Theory	Sessionals
		100	40

**Section A**

**Introduction:-** Basic structure of Computers, stored programme concept, Basic Operational concepts, Functional Units, Machine language, concept of memory locations, addresses, addressing modes, instruction format, comparison between mainframe, mini Computer, microcomputer.

**Processing and execution:-** Processing unit, execution of instructions, control step sequence, different types of instruction, ALU Design, Arithmetic Processes, Control Unit Design, Hardwired & Micro programmed Control Unit.

**Input output organisation:-** I/O Systems – Programmed Control, Interrupt controlled & DMA Data transfer Schemes, I/O Processors.

**Section B**

**Memory Management:-** Memory organisation, Characteristics of memory size, Access time, Read/write cycle time, Sequential and Random access semi conductor memories, Virtual memory, Cache memory, Memory Hierarchy, Secondary storage devices- Magnetic Disks, Magnetic Tapes, CD ROM's.

**Parallel processing –** Basic Concepts, Types of parallel Processors, Pipelined processors, Pipelined Structures,  
Introduction to SAP Machines.

**REFERENCES:-**

1. **Computer Architecture & Organisation : John P. Hayes ( Mc Graw Hill )**
2. **Computer System Architecture : Morris Mano**
3. **Computer System Architecture : V.K. Jain**
3. **Computer Organisation : Carl V. Hamacher.**
4. **Digital Electronic : Malvino Brown.**

**Note:-** There shall be eight questions of 20 marks each, Four from each section. Five questions have to be attempted selecting atleast two questions from each section.

**UNIVERSITY OF JAMMU**  
**FOR EXAMINATION TO BE HELD FROM DECEMBER 2010 ONWARDS**

**CLASS: B.E 5TH SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE TITLE: DATA STRUCTURES LAB**  
**COURSE NO: COM-521**  
**DURATION OF EXAM: 3 HOURS**

L T P  
 - - 2

**MARKS**  
 Practicals  
**40**

All practicals shall be based on theory syllabus. Students will be required to implement Algorithms using C and submit at least 10 practicals .

**UNIVERSITY OF JAMMU**  
**FOR EXAMINATION TO BE HELD FROM DECEMBER 2010 ONWARDS**

**CLASS: B.E 5TH SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE TITLE: MICROPROCESSOR LAB**  
**COURSE NO: COM-522**  
**DURATION OF EXAM: 3 HOURS**

L T P  
 - - 2

**MARKS**  
 Practicals  
**40**

**List of experiments :-**

1. Block Transfer:- Data bytes are stored in memory locations from XX50H to XX5FH To insert an additional five bytes of data, it is necessary to shift the data string by five memory location. Write a program to store a data string from XX55H To XX64H. Use any 16 bytes of data to verify your program.
2. Addition with Carry: Six bytes of data are stored in memory locations starting at XX50H. dd all the data bytes . Use register B to save any carry generated while adding the data bytes. Store the sum at two consecutive memory locations XX70H and XX71H
3. Checking for a particular data byte: A set of eight readings is stored in memory location starting at XX50H . Write a program to check whether a byte 40H exists in the set. If it does , stop checking, and display its memory location, otherwise output FFH
4. Write a program for BCD to Seven Segment LED code conversion.
5. Write a program for Binary to ASCII code conversion.
6. Write a program for BCD addition.
7. Write a program for multiplication of Two 8 bit unsigned nos.

**Interfacing experiments**

- 1) Study of 8255 interfacing card.
- 2) Study of 8279-interface card.
- 3) Study of 8257 DMA controller interface card.
- 4) Study of 8253 PIC Interface card.

- 5) Interfacing of 8085 with Stepper Motor.  
6) Interfacing of 8085 with ADC and DAC.

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**FOR EXAMINATION TO BE HELD FROM DECEMBER 2010 ONWARDS**

**CLASS: B.E 5TH SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE TITLE: COMPUTER NETWORKS LAB.**  
**COURSE NO: COM-523**  
**DURATION OF EXAM: 3 HOURS**

L	T	P	<b><u>MARKS</u></b>
-	-	2	Practicals
			<b>40</b>

**Case Study of LAN**

Students shall be exposed to the designing & working of a LAN, along with suitable Software.

**UNIVERSITY OF JAMMU**  
**FOR EXAMINATION TO BE HELD FROM DECEMBER 2010 ONWARDS**

**CLASS: B.E 5TH SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE TITLE: WEB TECH LAB.**  
**COURSE NO: COM-524**  
**DURATION OF EXAM: 3 HOURS**

L	T	P	<b><u>MARKS</u></b>
-	-	2	Practicals
			<b>40</b>

Database creation, Operation on the RDBMS, Normalization of Database, Relational Database SQL Commands, Data Definition, Data Manipulation, Data Control, Use of Odd set of Operators, Security in Database, Using PL- SQL.





**UNIVERSITY OF JAMMU**  
**COURSE SCHEME**  
**FOR B.E 6<sup>TH</sup> SEMESTER COMPUTER ENGG.**  
**FOR EXAMINATION TO BE HELD IN JUNE, 2011 ONWARDS**

Course		Curriculum Hrs/week			Marks			TOTAL
Number	Title	L	T	P	Theory	Sessional	Practical	
COM-601	Advanced Microprocessor.	3	2	-	100	40	-	140
COM-602	Analysis & Design of Algorithms	3	2	-	100	40	-	140
COM-603	RDBMS	3	2	-	100	40	-	140
COM-604	Multimedia	3	2	-	100	40	-	140
COM-605	Operating System.	3	2	-	100	40	-	140
COM-606	Software Engg	3	2	-	100	40	-	140
COM-607	Advanced Microprocessor Lab.	-	-	2	-	-	60	60
COM-608	Operating System Lab.	-	-	2	-	-	50	50
COM-609	RDBMS Lab	-	-	2	-	-	50	50
<b>Total</b>		<b>18</b>	<b>12</b>	<b>6</b>	<b>600</b>	<b>240</b>	<b>160</b>	<b>1000</b>

**UNIVERSITY OF JAMMU****FOR EXAMINATION TO BE HELD FROM JUNE 2011 ONWARDS**

**CLASS: B.E 6TH SEMESTER**  
**BRANCH: COMPUTER ENGG.**  
**COURSE TITLE: ADVANCED MICROPROCESSOR.**  
**COURSE No. COM-601**  
**DURATION OF EXAM: 3 HOURS**

	L	T	<u>MARKS</u>	
	3	2	Theory	Sessionals
			<b>100</b>	<b>40</b>

**Section A**

**Introduction to 16-bit Microprocessor: - 8086/8088 architecture, Concept of segmented Memory, Addressing Modes, Instruction Set, Introduction to 80186, 80286, 80386.**

**8086 Family Assembly Language Programming and Techniques:-** Simple Sequence programs. Flags, Jumps, While- Do, Repeat-Until Implementations, Programs using Procedures.

**8086 CPU Hardware Design: -** 8086 Signals, Minimum and Maximum Mode of CPU model, System Bus Timing, 8086 Interrupt Vector Table, Interrupt Service Subroutine, Applications, Addressing Memory and Ports in Micro Computer System.

**Section B**

**Numerical Data Processor (8087): -** NDP's data types, Processor Architecture, Instruction set Interfacing with 8086/88.

**Digital Interfacing: -** Programmable Parallel Ports, Handshake I/P & O/P Interfacing a microprocessor to keyboard/alphanumeric displays, interfacing with printer, Lathe.

**Multiprocessor Configuration: -** Queue Status, lock facility, 8086/88 based Multiprocessor system, Coprocessor configuration, Introduction to Pentium IV, closely and loosely coupled configuration.

**References/Texts:-**

- |                                 |                   |
|---------------------------------|-------------------|
| 1. Microprocessor & Interfacing | - Douglas V. Hall |
| 2. Programming & Design         | - LIU & Gibson    |
| 3. IBM PC Programming           | - Peter Afzel     |

**Note :-** There shall be eight questions of 20 marks each, four from each section. Five questions have to be attempted selecting atleast two questions from each section. Use of Calculator is allowed

UNIVERSITY OF JAMMUFOR EXAMINATION TO BE HELD FROM JUNE 2011 ONWARDS**CLASS: B.E 6TH SEMESTER****BRANCH: COMPUTER / I.T. ENGG.****COURSE TITLE: ANALYSIS AND DESIGN ALGORITHMS.****COURSE No. COM-602****DURATION OF EXAM: 3 HOURS**

<u>L</u>	<u>T</u>	<u>MARKS</u>	
3	2	Theory	Sessionals
		100	40

Section A

Introduction to Algorithms, Analysing the Performance of an Algorithm, Space /Time complexity, Asymptotic Notation, Recurrence Relations, Performance measurement, write Algorithms in SPARK's.

**Heap & Hash Tables:-** Representing a Heap, Operations on Heaps, Applications, Building a Heap, Hash Table, Hashing Functions, Resolving Collision by separate Chaining, Open Addressing, Quadratic Probing, Double Hashing, Rehashing.

**Lower Bound Theory:-** Comparison Trees For searching & Sorting , Parallel Comparison trees, Oracle & Adversary Arguments, Lower Bounds through Reduction.

NP-Hard and NP- Complete Problems: -Basic concepts, Non-Deterministic Algorithms, Polynomial Time Algorithms, NP-hard & NP –complete classes, Look's Theorem, Introduction to Approximation Algorithms.

Section B

Design Techniques:-

1. Divide and Conquer:- General methods, Binary Search, Finding the Maximum & Minimum, Mergesort, Quick Sort & Selection sort, Strassen's Matrix, Multiplication.
2. Greedy Method :- General Methods, Optimal Storage on Tapes, Knapsack Problem, Job Sequencing with Deadlines, Optimal Merge Patterns, Single Source, shortest path..
3. Dynamic Programming :- General Methods, Multistage Graphs, I/O Knapsack, Reliability Design, Traveling Salesperson problem.
4. Back Tracking :- General Method, The 8- Queens Problem, Hamiltonian Cycles, Knapsack Problem.
5. Branch & Bound :- The method, I/O Knapsack Problem, Traveling Salesperson Problem.

**References:-**

1. **Fundamentals of Computer Algorithms.** by Ellis Horowitz, Sartaj Sahni.
2. **Data Structure & Algorithm** by J.M. Hopcraft , Ullman.

**Note :-** There shall be eight questions of 20 marks each, four from each section. Five questions have to be attempted selecting atleast two questions from each section. Use of Calculator is allowed

UNIVERSITY OF JAMMUFOR EXAMINATION TO BE HELD FROM JUNE 2011 ONWARDS

**CLASS: B.E 6TH SEMESTER**  
**BRANCH: COMPUTER ENGG.**  
**COURSE TITLE: RDBMS**  
**COURSE No. COM-603**  
**DURATION OF EXAM: 3 HOURS**

<u>L</u>		<u>T</u>		<u>MARKS</u>	
3	2	Theory	Sessionals	100	40

Section A

**Basic Concepts:-** Data Modeling-Records and files-Abstraction and data integration- Views-Data independence-Components of DBMS-Advantages and disadvantages.

**Data Models:-** Data associations ,Data models classification , Entity - relationship model, Relational ,Network and Hierarchical models, Comparison of these models.

**File Organization :-** Introduction, Serial Files, Sequential files, Index Sequential files, Direct Files , Indexing using tree structure, Logical and physical pointers, Record placement.

Section B

**Relational Model and Relational Data-base Design:-** Attributes and domains, Tuples, Relations and schemas, relation representation, keys, Integrity rules, Relational algebra , Relational Calculus. Data Manipulation using SQL. Normalization using functional dependency, Normalization using join dependencies, Normalization using join dependencies, Domain key normal form.

**Crash Recovery:-** Reliability, Transactions, Recovery in a centralized DBMS, Reflecting updates to the database and recovery, Buffer management, Virtual memory, Disaster recovery.

**Distributed Databases:-**Introduction, Advantages and disadvantages of DBMS, Networks Data distribution, Object naming, distributed query processing.

**Reference Books:-**

1. Database System Concepts :Korth,Silberchatz - TMH
2. An introduction to Database Systems :Bipin C. Desai
3. Principles of Data Base Management Systems:Aho Ullman
4. Oracle :Ivan Bayross.

**Note :-** There shall be eight questions of 20 marks each, four from each section. Five questions have to be attempted selecting atleast two questions from each section. Use of Calculator is allowed.

**UNIVERSITY OF JAMMU****FOR EXAMINATION TO BE HELD FROM JUNE 2011 ONWARDS**

**CLASS: B.E 6TH SEMESTER**  
**BRANCH: COMPUTER ENGG**  
**COURSE TITLE: MULTI MEDIA.**  
**COURSE No. COM-604**  
**DURATION OF EXAM: 3 HOURS**

L	T	<u>MARKS</u>	
		Theory	Sessionals
3	2	100	40

**SECTION- A**

Introduction to Multimedia, Multimedia Networks, Multimedia Information Representation, Media & Data Streams, Image, documents, Video & Audio File Formats & their representation, Audio & Video Compression, Text & Image Compression.

Multimedia Communications, Networks & Standards relating to Interpersonal Communication, Interactive Applications over the Internet, Reference Models, Multimedia Operating System & Synchronization.

**SECTION- B**

Broadband ATM Networks, Protocol Architecture, ATM LANs, ATM MAN's, High Speed PSTN, Access Technologies.

Multimedia Applications & Architecture, Multimedia Databases.

**Books Recommended:**

1. Multimedia Computing, Communication & Application by Steinmetz R & K. Nahrstedt.
2. Multimedia in Practice - Technology & Application by Jeffcoate J.
3. Multimedia Communication by Fred Halsall.

**Note :-** There shall be eight questions of 20 marks each, four from each section. Five questions have to be attempted selecting atleast two questions from each section. Use of Calculator is allowed

**UNIVERSITY OF JAMMU****FOR EXAMINATION TO BE HELD FROM JUNE 2011 ONWARDS**

**CLASS: B.E 6TH SEMESTER**  
**BRANCH: COMPUTER ENGG.**  
**COURSE TITLE: OPERATING SYSTEM.**  
**COURSE No. COM-605**  
**DURATION OF EXAM: 3 HOURS**

<u>L</u>	<u>T</u>	<u>MARKS</u>	
3	2	Theory	Sessionals
		<b>100</b>	<b>40</b>

**Section A**

**Introduction Concepts:-** Operating System functions & Characteristics, Historical Evolution of O.S., O.S. Services, User O.S. Interface, Computer System Architecture, O.S. Design and Implementation and structure, System calls, System Programs, Virtual Machines, Spooling.

**Process Management:-** Study of state models, process Scheduling, Job Scheduling, Scheduling Criteria, Scheduling Algorithms, Multiple Process Scheduling.

**Process Coordination:**

- **Synchronization** : Race-Conditions, critical -Section problems, semaphores, Bounded-Buffer Problem, Readers-writers Problem, Dining -Philosophers Problem

**Section B**

**Deadlocks** : Characteristics, Deadlock Prevention, Avoidance, Detection, Recovery.

**Memory Management:** Logical & Physical Address space, Contiguous & Non-Contiguous Memory Allocation, Paging, Structure of Page Table, Segmentation, Demand paged memory management, Page replacement, Allocation of Frames, Thrashing, Swapping & Overlays, Cache Memory.

**CASE STUDY:**

Introduction to UNIX, UNIX File System, Visual Editor, Essential Unix Commands, system Administration, Bourne Shell, C Shell, Process Creation, Trapping Signals, Process Termination, Inter Process Communication, shared Memory, Pipe Lines, Semaphores, Messages.

**Reference/ Books Recommended :-**

1. Operating System by Stuart E. Madnik, Jhon J. Donovan.
2. Operating System by J.L. Peterson & Silberschtz .
3. Operating System Principle by H.D. Deitel.
4. Design of UNIX Operating system by Maurice J. Bach.

**Note :-** There shall be eight questions of 20 marks each, four from each section. Five questions have to be attempted selecting atleast two questions from each section. Use of Calculator is allowed

UNIVERSITY OF JAMMUFOR EXAMINATION TO BE HELD FROM JUNE 2011 ONWARDS

**CLASS: B.E 6TH SEMESTER**  
**BRANCH: COMPUTER / I.T. ENGG.**  
**COURSE TITLE: SOFTWARE ENGG.**  
**COURSE No. COM-606**  
**DURATION OF EXAM: 3 HOURS**

		<u>MARKS</u>	
L	T	Theory	Sessionals
3	2	100	40

**Section A**

**Introduction to Software Engineering:-** Software Considerations: Software characteristics Software crisis Software myths, Software Engineering paradigms.

**System and software Planning :-** Planning phase of system definition, system analysis, Modeling the system architecture, system specification, Software planning objectives, Software scope ,Software project estimation, Decomposition techniques, Empirical estimation models ,Automated estimation models, Software project scheduling , Software acquisition, Software re-engineering.

**Software requirement analysis :-** Requirement analysis, Analysis principles, specifications requirement analysis tools, Data flow diagrams.

**Software Design Fundamentals :-** The design process, Design fundamentals ,Effective modular design, Data design, Architectural design, procedural design, Design documentation.

**Section B**

**Data flow oriented design :** Design and information flow, design process considerations, transform analysis, transaction analysis, Design post processing ,

Design optimization. Design process considerations. Jackson System development.

**Software Quality Assurance:-** Software quality and software quality assurance, Software reviews, software quality metrics, software reliability, complexity measures, storage and processing time analysis.

**Software testing and maintenance:-** Software Testing Fundamentals, Whitebox Testing, Basic Path Testing , Control Structure Testing , Black Box Testing . Software Testing Strategies, Unit Testing Integration Testing , Validation Testing , System Testing .

**Software maintenance:** Definition , Maintenance characteristics, Maintainability, Maintenance Tasks, Maintenance Side Effects, Reverse Engineering and Re-engineering.

**Reference books:-**

1. **Software Engineering, A practitioner's approach: R.S. Pressman.**
2. **Integrated approach to Software Engineering : Pankaj Jalote**
3. **Software Engineering : M.L. Shooman.**

**Note :-** There shall be eight questions of 20 marks each, four from each section. Five questions have to be attempted selecting atleast two questions from each section. Use of Calculator is allowed



UNIVERSITY OF JAMMUFOR EXAMINATION TO BE HELD FROM JUNE 2011 ONWARDS**CLASS: B.E 6<sup>TH</sup> SEMESTER****BRANCH: COMPUTER****COURSE TITLE: ADVANCED MICROPROCESSOR LAB.****COURSE NO: COM-607****DURATION OF EXAM: 3 Hrs**

<b>L</b>	<b>T</b>	<b>P</b>	<b><u>MARKS</u></b>
-	-	2	<b>PRACTICALS</b>
			<b>60</b>

**Following are the programs in Assembly Language**

1. Write a program for comparison of two strings.
2. Write a program for converting BCD to binary (hex) number.
3. Write a program for multiplying two 8-bit numbers and display their 16-bit product.
4. Write a program for addition of 2 numbers.
5. Write a program for division of two numbers.
6. Write a program to display a message on monitor.
7. Write a program to perform subtraction using 2's complement.
8. Write a program to count the number of words in a string.
9. Write a program to calculate the factorial of n number.
10. Write a program to multiply nos. without using MUL instruction.

UNIVERSITY OF JAMMUFOR EXAMINATION TO BE HELD FROM JUNE 2011 ONWARDS**CLASS: B.E 6<sup>TH</sup> SEMESTER****BRANCH: COMPUTER****COURSE TITLE: OPERATING SYSTEM LAB.****COURSE NO: COM-608****DURATION OF EXAM: 3 Hrs**

<b>L</b>	<b>T</b>	<b>P</b>	<b><u>MARKS</u></b>
-	-	2	<b>PRACTICALS</b>
			<b>50</b>

- Implementation of UNIX and DOS Commands.
- Designing Programs using the concept of Shell Programming.
- Usage of Vi Editor of UNIX.

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FOR EXAMINATION TO BE HELD FROM JUNE 2011 ONWARDS

**CLASS: B.E 6<sup>TH</sup> SEMESTER**

**BRANCH: COMPUTER**

**COURSE TITLE: RDBMS LAB.**

**COURSE NO: COM-609**

**DURATION OF EXAM: 3 Hrs**

**L T P**  
**- - 2**

**MARKS**  
**PRACTICALS**  
**50**

Database creation, Operation on the RDBMS, Normalization of Database, Relational Database SQL Commands, Data Definition, Data Manipulation, Data Control, Use of Odd set of Operators, Security in Database, Using PL- SQL.

**UNIVERSITY OF JAMMU, JAMMU.****COURSE SCHEME****FOR B.E 7<sup>TH</sup> SEMESTER COMPUTER ENGINEERING****FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARDS**

Course No.	Name of the Course	Hours Per Week			Marks			
		L	T	P	Theory	Sess.	Practical	Total
HUM-711	Industrial Management.	3	2	-	100	50	-	150
<b>ELECTIVE-I</b> COM-701	A) Soft Computing B) Network Security (for Computer Engg.) C) Mobile computing (for Computer Engg.)	3	2	-	100	50	-	150
COM-702	Distributed Systems	3	2	-	100	50	-	150
<b>ELECTIVE-II</b> COM-703	A) Computer Graphics B) Digital Image Processing	3	2	-	100	50	--	150
COM-704	A) Soft Computing Lab B) Network Security Lab C) Mobile computing Lab	-	-	4	-	-	50	50
COM-705	Computer Graphics Lab	-	-	4	-	-	50	50
COM-706	Seminar	-	-	4	-	-	100	100
COM-707	Industrial Training	-	-	-	-	-	50	50
COM-708	Minor Project	-	-	4	-	-	150	150
<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 I and Elective-II .

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

**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: COMPUTER ENGINEERING/ ECE**  
**COURSE NO: HUM-711**  
**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**  
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**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE NO: COM-701(A) (ELECTIVE-I)**  
**COURSE TITLE: SOFT COMPUTING**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**SECTION- A**

**Artificial Neural Networks: Basic concepts - Single layer perception - Multilayer Perception - Supervised and Unsupervised learning - Back propagation networks - Kohnen's self organizing networks - Hopfield network, Feed forward network, Hopfield network**

**Neural network models:** neural network models, layers in neural network and their connections. Instar, outstar, weights on connections, threshold function, application- Adaline and madaline

**Back propagation:** feed forward back propagation network- mapping, layout, training, BPN applications

**Learning and training:** objectives of learning, Hebb's rule, delta rule, learning vector quantizer, associative memory models, one-shot learning, resonance, stability, training and convergence

**SECTION-B**

**Fuzzy Systems:** Fuzzy sets and Fuzzy reasoning - Fuzzy matrices - Fuzzy functions - Decomposition -Fuzzy automata and languages - Fuzzy control methods - Fuzzy decision making.

**BAM- Bidirectional associative memory,** inputs and outputs, weights and training. FAM- fuzzy associative memory, association.

**Neuro - Fuzzy Modeling:** Adaptive networks based Fuzzy interface systems - Classification and Regression Trees -Data clustering algorithms - Rule based structure identification - Neuro-Fuzzy controls -Simulated annealing – Evolutionary computation.

**Genetic Algorithms:** Survival of the Fittest - Fitness Computations - Cross over - Mutation - Reproduction -Rank method - Rank space method.

**BOOKS RECOMMENDED:**

1. Jang J.S.R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall 1998.
2. Laurene Fausett, "Fundamentals of Neural Networks", Prentice Hall, 1994.
3. George J. Klir and Bo Yuan, "Fuzzy sets and Fuzzy Logic", Prentice Hall, USA 1995.
4. N. J. Nelsson, "Artificial Intelligence - A New Synthesis", Harcourt Asia Ltd., 1998.
5. D.E. Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y, 1989.

**NOTE:** There shall be total Eight Questions of 20 marks each, Four questions from each section and students have to attempt Five questions selecting at least two 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 ENGINEERING**  
**COURSE NO: COM-701(B) (ELECTIVE-I)**  
**COURSE TITLE: NETWORK SECURITY (FOR COMPUTER ENGG.)**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**SECTION-A**

**Introduction**

Introduction to N/w Security, Security Approaches, Security Policies, Principle of Security, Introduction to common attacks, IP-Spoofing, Model for N/w Security, Encryption & Decryption.

**Cryptography: Concepts & Techniques**

Introduction to Cryptography, Private/Public Key Cryptography, Plain Text, Cipher Text, Substitution and Transposition techniques, Steganography.

**Symmetric Key Cryptography**

Overview, Algorithm Types & Modes, DES Scheme, RC5, Blowfish, AES Scheme, Differential and Linear Crypto analysis, Key Distribution and Management.

**SECTION-B**

**Asymmetric Key Cryptography**

Overview, Key Management basics, RSA Algorithm, Digital Signatures, Message Digest, Hash Function(SHA), Message Authentication Code(MAC), Authentication protocols.

**IP Security**

Architecture, Authentication Header, Encapsulating, Security Payload, Security Associations, Key Management, E-mail Security, Web Security, Viruses & related threats.

**Firewalls & Intrusions**

Design Principles, Characteristics, Types of Firewalls, Intruders, Audit Records, Intrusion Detection Systems

**Computer Lab Work:-**

1. Implementation of Encryption/Decryption Algorithm using C/C++.
2. Implementation of Symmetric Cryptography Algorithm using C/C++.
3. Implementation of Asymmetric Cryptography Algorithm using C/C++.
4. Implementation of Firewalls.

**Books Recommended:-**

1. Cryptography & Network Security by Atul Kahate
2. Cryptography & Network Security by William Stallings
3. Computer Networks(Latest Edition) by Andrew S. Tanenbaum

**NOTE:** There shall be total Eight Questions of 20 marks each; four questions from each section and students have to attempt five questions selecting at least two from each section. Use of Calculator is allowed.

**UNIVERSITY OF JAMMU, JAMMU**  
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**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE NO: COM-701(C) (ELECTIVE-I)**  
**COURSE TITLE: MOBILE COMPUTING (FOR COMPUTER ENGG.)**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**SECTION A**

**WIRELESS COMMUNICATION FUNDAMENTALS:** Introduction – ITU-T, Wireless transmission, Frequencies for radio transmission, Signals, Antennas, Signal Propagation, Multiplexing, Modulations, Spread spectrum, MAC, Space Division Multiple Access (SDMA), Frequency Division Multiple Access (FDMA), Time Division Multiple Access (TDMA), Code Division Multiple Access (CDMA), Cellular Wireless Networks.

**TELECOMMUNICATION NETWORKS:** Telecommunication systems – Global System for Mobile Communication (GSM), General Packet Radio Service (GPRS), Digital Enhanced Cordless Telecommunications (DECT), Universal Mobile Telecommunications System (UMTS), International Mobile Telecommunications 2000 (IMT2000).

**WIRELESS LAN:** Wireless LAN - IEEE 802.11 Family of Standards, Architecture, Services. HiperLAN. Bluetooth Protocol Stack

**SECTION B**

**MOBILE NETWORK LAYER :** Mobile IP, Dynamic Host Configuration Protocol (DHCP), Routing Protocols – Destination Sequenced Distance Vector (DSDV), Dynamic Source Routing (DSR).

**TRANSPORT AND APPLICATION LAYERS:** TCP in Wireless Mobile Networks – Indirect TCP, Snooping TCP, Mobile TCP, Fast Retransmit/Recovery, Freezing, Selective Retransmission, Wireless Application Protocol (WAP), WAP 2.0, Wireless Transport Layer Security (WTLS)

**MOBILE COMMUNICATION ISSUES:** Security Issues, Health Issues, Mobile E-Commerce Issues

**TEXT BOOKS**

1. Jochen Schiller, “Mobile Communications”, PHI/Pearson Education, Second Edition, 2003. (Unit I Chap 1,2 &3- Unit II chap 4,5 &6-Unit III Chap 7 Unit IV Chap 8- Unit V Chap 9&10.)
2. William Stallings, “Wireless Communications and Networks”, PHI/Pearson Education, 2002. (Unit I Chapter – 7&10-Unit II Chap 9)
3. A. Mehrotra. GSM System Engineering. Artech House, 1997.
4. Charles Perkins. Mobile IP. Addison Wesley, 1999.
5. Charles Perkins (ed.) Adhoc Networks. Addison Wesley, 2000

**REFERENCES**

1. Kaveh Pahlavan, Prasanth Krishnamoorthy, “Principles of Wireless Networks”, PHI/Pearson Education, 2003.
2. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, “Principles of Mobile Computing”, Springer, New York, 2003.
3. Hazysztof Wesolowshi, “Mobile Communication Systems”, John Wiley and Sons Ltd, 2002.

**NOTE:** There shall be total Eight Questions of 20 marks each; four questions from each section and students have to attempt five questions selecting at least two 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 ENGINEERING**  
**COURSE NO: COM-702**  
**COURSE TITLE: DISTRIBUTED SYSTEMS**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**Section-A**

**Introduction:** - Definition, Goals, Hardware Concepts, Software Concepts, the Client Server Model, Layered Protocols. Characterization of Distributed Systems, Design issues and user requirements, Interprocess Communication-Synchronous and Asynchronous.

Remote Procedure Call, Remote Object Invocation, Message oriented Communication.

**Processes:** - Threads, Clients, Servers, Code, Migration, Naming Entities, Locating Mobile Entities.

**Synchronization:** Clocks, Logical Clocks, Global State, Election Algorithms, Mutual Exclusion, Distributed Transaction.

**Section – B**

**Consistency & Replication:** Data Centric, Consistency Model, Distribution Protocols, Consistency Protocols, casually-consistent, Lazy replication.

**Fault Tolerance:** Basic Concepts, process, Resilience, Reliable Client- Server communication, Group Communication, distributed Commit, Recovery.

**Security:** Design issues, Secure Channel, Management, Distributed File Systems SUN, NFS, JINI.

**Books Recommended:-**

1. Distributed Systems: “Principles & Paradigms” by Andrew S. Tannenbaum, Martin Ransteen.
2. Distributed Systems: “Concepts & Design” by Couloris G., Dollimore and Kindberg T, P.K.Sinha.
3. **Distributed Operating System, PHI, IEEE Press.**
4. **Singhal & Shivaratri , “Advanced concepts in OS”, TMH Tanenbaum**

**NOTE:** There shall be total Eight Questions of 20 marks each; four questions from each section and students have to attempt five questions selecting at least two 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 ENGINEERING**  
**COURSE NO: COM-703(A) (ELECTIVE-II)**  
**COURSE TITLE: COMPUTER GRAPHICS**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**SECTION A**

**Computer Graphic Systems:-** Video display devices, Raster scan displays, Video controller, Display Processors, Random Scan displays, Color CRT monitors, Graphics monitors and workstations, Direct View storage tubes, Flat Panel Displays. Three-dimensional viewing devices. Input devices :- Keyboards, Mouse, Trackball and space ball, Joysticks, Data glove, digitizers, image scanners, touch panels, Light pens, Voice systems, Hard copy Devices. Graphic software, Co-ordinate representations, Functions standards, PHIGS WORKSTATIONS.

**Graphic Output primitives & their Attributes:-** Points and lines, lines drawing algorithms : DDA algorithm, Bresenham's line algorithm, Parallel line, Line Attributes, type, width, pen and brush options, line color, circle generation algorithm, properties of circle, Midpoint circle Algorithm

**Geometric Transformations: -** 2-D and 3-D Transformation: Translation, Scaling, Rotation, Matrix Arithmetic and Matrix Composition, Three dimensional viewing

**SECTION B**

**Two Dimensional Viewing:-** The viewing pipeline, Viewing coordinate reference frame, Window to Viewport coordinate transformations, 2-D viewing functions, Clipping Operations, point clipping, line clipping procedures like Cohen -Sutherland line clipping, line clipping using non rectangular clip windows. Polygon clipping procedures: Sutherland Hodgeman polygon clipping, polygon filling Algorithms

**Parallel and Perspective Projections: -** Parallel projections, Perspective projections, Shading, Shadows, Shading modes

**Books Recommended:-**

1. Computer Graphics :Donald Hearn,M.pauline Baker-phi
2. Interactive Computer graphics : Newman and Sprowll-Tmh
3. Computer Graphics :A Programming approach :Stevan Harrington
4. Fundamentals of ICG: J.D Foley+ and A.v Dam,Addition Wesle
5. Schaum series

**NOTE:** There shall be total Eight Questions of 20 marks each; four questions from each section and students have to attempt five questions selecting at least two 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 ENGINEERING**  
**COURSE NO: COM-703(B) (ELECTIVE-II)**  
**COURSE TITLE: DIGITAL IMAGE PROCESSING**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
			THEORY	SESSIONAL
L	T	P		
3	2	0	100	50

### Section A

**Introduction and Fundamental to Digital Image Processing:** What is Digital Image Processing, Origin of Digital Image Processing, Examples that use Digital Image Processing, Fundamental steps in Digital Image Processing, Components of Digital Image Processing System, Image sensing and acquisition, Image sampling, quantization and representation, Basic relationship between pixels.

**Image Enhancement in the Spatial Domain & Frequency domain:** Background, Basic gray level transformation, Histogram processing, Basics of spatial filtering, Introduction to Fourier Transform and the Frequency Domain, Discrete Fourier Transform. Frequency-Domain filters.

**Image Restoration:** Image Degradation/Restoration Process, Noise models, Restoration in presence of noise, Inverse Filtering, Minimum Mean Square Filtering, Geometric mean filter, Geometric transformations.

### Section B

**Color Image Processing:** Color Fundamentals, Color models, Basis of full color image processing, Color transformations.

**Image Compression:** Image encoding and segmentation, Encoding: Mapping, Quantizer, Coder, Error free compression, Lossy compression schemes, JPEG Compression standard.

**Image Segmentation & Representation:** Detection of discontinuities, Mathematical morphology-Binary, Dilation, crosses, Opening and closing, simple methods of representation, Signatures, Boundary segments, Skeleton of a region.

#### BOOKS RECOMMENDED:

- |                       |                              |
|-----------------------|------------------------------|
| 1. PRATT N.K.         | “Digital Image Processing”   |
| 2. ROSENFELD AND KAK. | “Digital Picture Processing” |
| 3. PRATT              | “Image Transmission”         |
| 4. ANDREWS & HUNT     | “Digital Image Restoration”  |

**NOTE:** There shall be total Eight Questions of 20 marks each; four questions from each section and students have to attempt five questions selecting at least two 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 ENGINEERING**  
**COURSE NO: COM-704**  
**COURSE TITLE: A) SOFT COMPUTING LAB.**  
**B) NETWORK SECURITY LAB.**

**C) MOBILE COMPUTING LAB.****DURATION OF EXAM: 3 HOURS.**

L	T	P	MARKS
0	0	4	50

NOTE: THERE SHALL BE 6 TO 8 PRACTICALS BASED UPON THE THEORY COURSE.

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

**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE NO: COM-705**  
**COURSE TITLE: COMPUTER GRAPHICS LAB**  
**DURATION OF EXAM: 3 HOURS.**

L	T	P	MARKS
0	0	4	50

The practicals will be based on theory Syllabus. The students are required to submit at least following 10 programs

**(Implement using C/C++)**

1. Simple DDA line drawing program.
2. Shaded simple DDA line drawing program.
3. Bresenham's line drawing program.
4. Draw a given scene on a given viewport.
5. Draw and fill shapes.
6. Animation of picture.
7. Bresenham's circle drawing algorithm.
8. Cohen Sutherland line clipping program.
9. Mouse interfacing program.
10. Create a mirror image of a polygon & scale it.

**UNIVERSITY OF JAMMU, JAMMU**  
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**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE NO: COM-706**  
**COURSE TITLE: SEMINAR**

L	T	P	MARKS
0	0	4	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.

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**FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD**

**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE NO: COM-707**  
**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 Computer Engineering and applications 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 for 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.

**FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD**

**CLASS: BE 7<sup>TH</sup> SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE NO: COM-708**  
**COURSE TITLE: MINOR PROJECT**

L	T	P	MARKS
0	0	4	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 Computer 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.

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**COURSE SCHEME  
FOR B.E 8<sup>TH</sup> SEMESTER COMPUTER 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
(Elective-I) HUM-812	A) Organization Behaviour							
	B) Business Policy and Strategic management	3	2	--	100	50	--	150
(Elective-II) COM- 801	A) Advanced Computer Architecture							
	B) Data Warehousing & Data Mining (for Computer Engg.)	3	2	--	100	50	--	150
COM-802	Artificial Intelligence (for Computer Engg.)	3	2	--	100	50	--	150
(Elective-III) COM-803	A) Compiler Design							
	B) Distributed Databases	3	2	--	100	50	--	150
COM-804	Major Project.	--	--	12		--	400	400
<b>Total</b>		<b>12</b>	<b>8</b>	<b>12</b>	<b>400</b>	<b>200</b>	<b>400</b>	<b>1000</b>

Note: Students have to select one course each from Elective I, Elective-II and Elective-III

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**CLASS: BE 8<sup>TH</sup> SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**COURSE NO: HUM-812(A) (ELECTIVE- I)**  
**COURSE TITLE: ORGANIZATIONAL BEHAVIOUR**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**Section A**

**Fundamental Concepts of Organizational Behavior:** What is an organization? Major types of organizations, Formal and Informal organization, Need to study O.B and some basic ideas about O.B. introduced by Maslow, Herzberg. Models of organizational behavior.

**Individual behavior and its determinants:** - Personality, Perception, Learning ability, attitude, beliefs, values, stress and counseling, Interpersonal behavior, Types and sources of conflict, Resolution of conflict.

**Communication:** - Communication within an organization, Importance, Types of communication- Electronic communication, Effective Communication.

**Section B**

**Organization as a Social system:** Concept of Organization Development, Characteristics of Organization Development, Organization Development Process, Organizational Change, Resistance to Change, Managing change, Management Development, Education & Training.

**Leadership and Organization Development:** - Meaning and nature of Leadership, Leadership style, Traits of effective leaders, Employees Participation in Management, Organization development and change, training and managing development.

**Quality of work life:** Concept of Management Information System.

**Books Recommended:**

1. Organisational Behaviour - Keith Davis
2. Organisation and Management -Mullers.
3. Organisational Behaviour - Robbins

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: COMPUTER ENGINEERING**  
**COURSE NO: HUM-812(B) (ELECTIVE- I)**  
**COURSE TITLE: BUSINESS POLICY AND STRATEGIC MANAGEMENT**  
**DURATION OF EXAM: 3 HOURS.**

L	T	P	MARKS	
3	2	0	THEORY	SESSIONAL
			100	50

**Section A**

Introduction to business policy, the corporate strategy – concepts and objectives, formulation of corporate strategy, environmental scanning opportunity and threats.

Corporate profile strategies and weakness strategic alterations, concepts of distinction competence, strategy and personnel values, strategy and social values, strategy and technological change of choice or strategy and corporate planning in India.

**Section B**

Implementation of strategy, strategy and organizations design, mobilization of physical and human resources management information and control.

Role of motivation, corporate culture and organizational commitment, mergers and acquisitions, Performance appraisal.

Leadership and its various styles, stress, evaluation of strategy, strategic management in the non-profit organizations, strategic management in international environment.

**Books Recommended:**

1. Gluck, William F. : Strategic Management and Business Policy.
2. Sehellenberger, Rober & Bozeman, F. Glenn : Policy Formulation and Strategy Management.
3. Chopra, K.S. : Business Policy for Indian Industries.
4. Rogers, David C.D. : Business Policy and Planning.
5. Thompson, Arthur A & Strickland, A.J. : Strategy and Policy.

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: COMPUTER ENGINEERING**  
**COURSE NO: COM-801(A) (ELECTIVE-II)**  
**COURSE TITLE: ADVANCED COMPUTER ARCHITECTURE**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**SECTION – A**

Introduction to advanced Architecture: Parallel Processing, Architectural classification schemes, Characteristics and organization of Cache memories, characteristics of I/O subsystems.

Pipelining and Vector Processing: Classification of Pipeline Processors, General pipelines and reservation tables, interleaved memory organizations, Principles of Designing pipeline processors, Characteristics of vector Processing.

Array Processing: SIMD Computers and Processor enhancements, SIMD Array Processors, Masking and Data Routing Mechanisms, SIMD interconnection Networks, Performance evaluation methods.

**SECTION – B**

Multiprocessor Systems: Loosely Coupled and Tightly Coupled multiprocessors, Processor characteristics for multiprocessing, interconnected Networks for multiprocessors.

Parallel Memory Organization: Interleaved Memory Configurations, Multicache Problems, Modeling for evaluation of Virtual memory.

Parallel computer models and Program Parallelism: Models of parallel computers, Introduction to Parallel Algorithms, Parallel Programming Paradigms, Issues in implementing algorithms on Parallel Computers.

**Books Recommended:-**

1. Computer Architecture: A Qualitative Approach by Hennessey & D.A. Patterson.
2. Computer Architecture: Pipelined & Parallel Processor Design by Michael J. Flynn.
3. Advanced Computer Architecture by Kai Hwang & Briggs.
4. Foundations of Parallel Processing by R.K.Ghose, Rajan Moona and Phalguni Gupta.

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: COMPUTER ENGINEERING**  
**COURSE NO: COM-801(B) (ELECTIVE-II)**  
**COURSE TITLE: DATA WAREHOUSING & DATA MINING (FOR COMPUTER ENGG.)**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**SECTION A**

**Introduction to Data Warehousing & Data Mining:** Need for data Warehousing & Data Mining, Data Mining on different kinds of Data, Data Mining Functionalities - Characterization and Discrimination, Association Analysis, Classification and Prediction, Cluster Analysis, Outlier Analysis, Evolution Analysis, Classification of Data Mining System, Data Mining Applications.

**Data Warehouse and OLAP Technology for Data Mining:** Differences between Operational database systems and Datawarehouse, Multidimensional Data Model- Data Cubes, Star, Snowflakes & Fact Constellations Schemes, Concept Hierarchies, OLAP Operations, Starnet Query Model, Data Warehouse, 3-Tier Architecture, Types of OLAP Servers: ROLAP, MOLAP, HOLAP, Data Warehouse Usage, On-Line Analytical Processing to On-Line Analytical Mining, Data Marts, Meta Data.

**SECTION B**

**Data Preprocessing and Mining:** Data Cleaning, Data Integration & Transformation, Data Reduction, Discretization and Concept Hierarchy Generation. Kinds of Knowledge to be Mined, Concept Hierarchies, Interesting measures, Presentation & Visualization of Discovered Patterns.

**Concept Description and Association Rules Mining:** Concept Description, Data Generalization and Summarization based Characterization, Analytical Characterization, Attribute Relevance Analysis. Association Rules Mining Basic Concepts, Mining Single Dimensional Boolean Association Rules from Transactional databases- Apriori Algorithm

**Intoduction to classification and Prediction:** Basic Concepts, Classification by Decision Tree Induction, Linear and multiple Regression, Non Linear Regression

**Books Recommended:**

1. Data Mining: Concepts & Techniques - Jiawei Hun, Micheline Kamber, Academic Press, by Morgan Kanfman Publishers, 2001.

2. Modern Data Warehousing Mining & Visualization Core Concept by George M. Marakas , Pearson Education.
3. Data Mining by Pieter Adrians, Dolf Zantinge, Addison Wesley 2000.
4. Data Mining with Microsoft SQL Server by Seidman, Prentice Hall of India. 2001.

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: COMPUTER ENGINEERING**  
**COURSE NO: COM-802**  
**COURSE TITLE: ARTIFICIAL INTELLIGENCE (FOR COMPUTER ENGG.)**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**Section-A**

**Artificial Intelligence:** - The AI problems, AI techniques, The level of the model, criteria for success, AI tasks. Problems, problem spaces & Research: - Defining the problem as a space, search, production system problem characteristics, Production system characteristics, Issues in the design of search programs, two path problems.

**Symbolic reasoning under uncertainty:-** Introduction to non - monotonic Reasoning, Logics for non-monotonic reasoning, Implementation Issues, Augmenting a Problem Solver. Implementation by:

- a) Depth - First Search b) Breadth - First Search

**Statistical reasoning :-** Probability & Bayes Theorem, Certainty Factors & Rules Based Systems, Bayesian networks, Dempster Shafer Theory , Fuzzy logic , Introduction to Expert System development.

**Section-B**

**Using Predicate logic:-** Representing simple facts, Its Logic representing instances and its relationship , Computable Functions & Predicates, Resolution, Natural Deduction, Conversion to Clause Form.

**Representing knowledge using rules:** - Procedural Vs Declarative Knowledge, Logic Programming Forward Vs Backward Searching, Matching, Control Knowledge.

**Heuristic Search Techniques:** - Generate & test, Hill Climbing, Best First Search, Problem reduction, Constraint, Satisfaction, Means and analysis.

**Knowledge Representation Issues:** - Representation and mappings, approaches to knowledge representation, Issues of knowledge representation, the frame problem, Semantic networks.

**Books Recommended:-**

1. Artificial Intelligence -- Elaine Rich Kevin Knight
2. Principles of A.I Expert system development -- David W. Rolston.

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: COMPUTER ENGINEERING**  
**COURSE NO: COM-803(A) (ELECTIVE-III)**  
**COURSE TITLE: COMPILER DESIGN**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**Section-A**

**Introduction** –Languages Processors, the typical structure of a Compiler.

**Programming Language** – High level programming languages, definition of programming languages, the syntax and semantics of basic data and control structures in high level programming languages.

**Lexical analysis** – Role of Lexical Analyzer ,Input buffering, A simple approach to Design of Lexical Analyzers, Regular Expressions ,Finite Automata, Regular expression to Finite Automata, Conversion of NFA to DFA, Minimizing the number of states of a DFA .

**The Syntactic Specification of Programming Languages** – Definition of Grammars (Context free grammar), derivation, parse tree, ambiguity, non-context free language constructs.

**Basics Parsing Techniques** – Parsers- Shift reduce parsing, Operator precedence parsing, top -down parsing, Predicative parsers, LR parsers.

**Section-B**

**Syntax directed translation-** Syntax directed translation schemes. Implementation of syntax directed translators.

**Intermediate code Generation** - Intermediate code, postfix notation, three address code- quadruples triples, translation of Assignment statement, Boolean Expression, Statements that alter the flow of control.

**Symbol Table Organization** – The content of symbol table, Data structure of symbol table

**Run- Time memory allocation** -Static and Dynamic memory allocation, Static allocation of space – Activation trees, activation records, Procedure calls, parameter passing.

**Error Detection and Recovery**-Errors, lexical phase errors, syntactic phase errors, semantic errors.

**Code optimization-** Loop optimization, DAG Representation of basic blocks, Global data flow Analysis.

**Code generation-** Issues in the design of code generator, Peephole optimization, a simple code generator Register Allocation & Assignment.

**Books Recommended:-**

1. Principles of compiler design - Alfred V.Aho, Jeffrey D Ullman
2. Principles of compiler design - Aho v. Ullman, Sethi
3. Theory of parsing Translation & Compiling - Aho . ullman
4. Compiler construction-Munish Jha
5. Compilers Principles, Techniques & Tools-Alfred V. Aho, Monika S Lam, Ravi Sethi, Jeffrey D Ullman.

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: COMPUTER ENGINEERING**  
**COURSE NO: COM-803(B) (ELECTIVE-III)**  
**COURSE TITLE: DISTRIBUTED DATABASE**  
**DURATION OF EXAM: 3 HOURS.**

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

**SECTION A**

Transaction and schedules, concurrent execution of transaction, conflict and views serializability, testing for serializability, concepts in recoverable and cascadeless schedules.

Lock based protocols, time stamp based protocols, multiple granularity and multiversion techniques, enforcing serializability for locks, locking system with multiple lock modes, architecture for locking scheduler.

Distributed transaction management, data distribution, fragmentation and replication techniques, distributed commit, distributed locking schemes, long duration transactions, moss concurrency protocol.

**SECTION B**

Issues of recovery and atomicity in distributed database, traditional recovery technique, log based recovery, recovery with concurrent transactions, recovery in message passing systems, checkpoints, algorithm for recovery line, concepts in orphan and inconsistent messages.

Distributed query processing, multiway joins, semi joins, cost based query, optimization for distributed database, updating replicated data, protocols for distributed deadlocks detection, eager and lazy replication techniques.

**Books Recommended:**

- M Tamer Ozsu Patrick Valdureiz, "Principles of distributed database systems", Ray.
- David A. Bell, Jane B. Grimson, "Distributed database system"
- Donald K. Burleson, "Managing Distributed Database"
- Felix F. Romas, "Advanced Distrubuted Systems".

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: B.E 8th SEMESTER**  
**BRANCH: COMPUTER ENGINEERING**  
**Course No. COM – 804**  
**COURSE TITLE: MAJOR PROJECT**

L	T	P	MARKS
0	0	12	400

The student will complete their assigned project work initiated in 7<sup>th</sup> semester under course No.COM-708 and submit a detailed project report individually to the Head of the department.

Guidelines for evaluation of Project work in 8<sup>th</sup> semester:  
 There shall be a mid semester evaluation, followed by a End Semester (Final) Evaluation

Sub-distribution of marks:

- For External Examiner : 100
- For Internal Examiner : 300

Sub-distribution of internal Marks:

- Mark distribution of internal Project work as per the University statutes shall be based on:

a.	Viva-Voce	=	90	30%
b.	Presentation	=	90	30%
c.	Report	=	120	40%
Total		=	300	