Scheme and Syllabus of
B.E. MBA (Computer Science and Engineering)
3rd TO 10th Semester 2012-2013

University Institute of Engineering and Technology, Panjab University, Chandigarh
## Scheme of Examination of B.E. MBA integrated in Computer Science & Engineering

### Second Year - Third Semester B.E. MBA (CSE)

<table>
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# Scheme of Examination of B.E. MBA integrated in Computer Science & Engineering

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**Total** 18 4 9 30 300 500

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**Total** 18 4 12 30 300 500
# Scheme of Examination of B.E. MBA integrated in Computer Science & Engineering (2012-13)

## Fourth Year - Seventh Semester B.E. MBA (CSE)

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| Option 2 | CSE 860 | Industrial Training | - | - | - | -     | 550  | 650          | 1200  |

| Total |         |         | 550| 650| 1200 |

### Conditions for Choosing Option 1 or Option 2 in 8th Semester:

A student may opt for either Option 1 or one semester industrial training (Option 2) in lieu of subjects of 8th Semester (Option1). The marks for six months training will be equal to the total marks of 8th Semester study. A student can opt for six semester training (Option 2) under following conditions:-

- The student got selected for job in campus placement and the employer is willing to take that student for the training.
- The student got offer of pursuing training from reputed government research organization/govt. sponsored projects/govt. research institution provided that student should not be paying any money to get trained. For pursuing this training student needs the prior approval from the Coordinator / Chair Person of the respective branch.
# Scheme of Examination of B.E. MBA integrated in Computer Science & Engineering (2012-13)

## Fifth Year - Nineth Semester B.E. MBA (CSE)

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**STUDENTS HAVE TO SELECT 3 SUBJECTS FROM MAJOR AND 2 FROM MINOR**
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<td>Manpower Planning and Performance Appraisal</td>
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STUDENTS HAVE TO SELECT 2 SUBJECTS FROM MAJOR AND 2 FROM MINOR
SYLLABUS FOR
B.E. MBA integrated in Computer Science & Engineering (2012-13)

THIRD SEMESTER

Paper Title: DATA STRUCTURES

Paper Code: CSE311
Credits: 04

Max. Marks (Final Exam): 50
Max. Marks (Sessional Exam): 50
Time: 3 Hours
Total Lectures: 45
L T P 3 1 0

Note: Examiner shall set eight questions covering four questions from each section. Candidate will be required to attempt five questions, selecting at least two from each section.

Objectives: This course should provide the students with a fairly good concept of the fundamentals of different types of data structures and also the ways to implement them. Algorithm for solving problems like sorting, searching, insertion & deletion of data etc. related to data structures should also be discussed. After completion of this subject student should be able to choose a appropriate data structure for a particular problem.

SECTION – A

Linear Data Structures:
Sequential representations – Arrays (one, two, multi dimensional) and Records, Binary Search, Stacks, Queues and Circular queues; Link Representation - Linear linked lists, circularly linked lists. Doubly linked lists, Garbage collection and Compaction. (12)

Recursion:
Design of recursive algorithms, Tail Recursion, When not to use recursion, Removal of recursion. (03)

Sorting Algorithms:
Bubble sort, Selection Sort, Insertion Sort, Quick Sort, Merge Sort, Heap sort and Radix Sort. (07)

SECTION – B

Non-linear Data Structure:

Hashing:
Hashing Functions, collision Resolution Techniques. (02)

File Structures:
Index Techniques: Hashed Indexing, Tree Indexing – B Trees; File Organizations: Sequential, Random, Linked Organizations, Inverted Files. (06)

Text Books:

References:
Paper Title: DATA STRUCTURES (Practical)

Paper Code: CSE361
Credits:02
Max. Marks: 50
L T P 0 0 3

Note: At least ten practical should be covered based on the following directions:

Implementation of array operations: Traversal, Insertion & Deletion at and from a given location

Stacks: Implementation of Push, Pop; Conversion of Infix expression to Postfix, Evaluation of Postfix expressions.

Queues: Circular Queue: Adding & deleting elements.

Linked list: inserting, deleting, implementation of stacks & queues using linked lists; Polynomial addition.


Implementation of Graphs

Implementation of sorting and searching algorithms

Hash tables implementation: searching, inserting and deleting

Paper Title: PERIPHERAL DEVICES & INTERFACES

Paper Code: CSE313
Credits:04
Max. Marks (Final Exam): 50
Max. Marks (Sessional Exam): 50
Time: 3 Hours
Total Lectures: 45
L T P 3 1 0

Note: Examiner shall set eight questions covering four questions from each section. Candidate will be required to attempt five questions by selecting at least two from each section.

Objectives: The objective of this course is to provide knowledge about integrated circuit memories & the functional details of various peripheral devices.

SECTION – A

The Memory Element:
RAM, Linear Select Memory Organization, Decoders, Dimensions of Memory access, connecting Memory chips to a computer bus, Static RAM, Dynamic RAM, ROM, Digital recording techniques.

System Resources:
Interrupt, DMA Channel, I/O Port Addresses and resolving and resolving the conflict of resources. I/O buses- ISA, PCI, SCSI, EISA, Local bus, VESA Local bus, PCI bus, PCI Express, Accelerated graphics port bus.

SECTION – B

Video Hardware:
Introduction to Multimedia Kit, Multimedia building blocks, Video display technologies, DVI Digital signals for CRT Monitor, LCD Panels, Video adapter types, Integrated Video/ Motherboard chipset, Video RAM, Video driver and multiple Monitor, Graphic accelerators, Advanced 3D Techniques.

Input/ Output Driver software aspects:
Role of device driver, DOS and UNIX/ LINUX device drivers.
Design & Integration of Peripheral devices to a computer system as a Case Study

Text Book:

References:

Paper Title: HARDWARE LAB. (PRACTICAL)

**Paper Code:** CSE363  
**Credits:** 02  
**Max. Marks:** 50  
**L T P:** 0 0 3

**Note:** Practical based on:

1. **Introduction to various hardware elements:**  
   Monitors, Printers, Keyboards, Mouse, Different memory elements.
2. **Different types of buses and their interfaces.**
3. **Assembly of PC**
4. **Introduction to Network elements:**  
   Routers, Bridges, hubs, Switches, hardware tools and management tools.

Paper Title: Organization Behavior (Theory)

**Paper Code:** IBM 301  
**Credits:** 04  
**MM(Final):** 50  
**MM(Sessional):** 50  
**Time:** 3 Hours  
**Total Lectures:** 45  
**L T P:** 3 0 0

**Note:** Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

**Part-A**


Perception: Factors Influencing perception- perceptual selectivity Linkage between perception and Individual decision making-ethics in decision making.

Personality and Emotional Quotient (EQ): The meaning of personality, its determinants-personality Traits; The big five model, Emotional quotient.

Motivation & Morale: Concepts to Applications.

The Group: Foundations of Group Behaviour: Stages of Group Development: The five-stage Model,
Dynamics of Informal Groups: Norms and Roles in Informal Groups-Nature, Significance and management of Informal Organization -Dynamics of Formal Work Group


Part-B


Power & Politics: Definitions of Power-Distinction between Power and Authority-Bases of Power-Power Structure and Block, Impression management-political behavior in organizations.

Conflict & Inter Group Behaviour & Collaboration: Sources of Conflict, Intra-individual Conflict, Interpersonal Conflict, Inter-group behavior and Conflict, Organizational Conflict, Negotiations-Approaches to Conflict Management-Collaboration.


References
1. Behavior in Organizations ,Greenberg, Baron , PHI
3. Organization Behavior ,Fred Luthans , TMH

Paper Title: DIGITAL ELECTRONICS

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<th>Paper Code: EC316</th>
<th>Max. Marks (Final Exam): 50</th>
<th>Max. Marks (Sessional Exam): 50</th>
<th>Time: 3 Hours</th>
<th>Total Lectures: 45</th>
<th>L T P: 3 1 0</th>
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Note: Examiner shall set eight questions covering four questions from each section. Candidate will be required to attempt five questions by selecting at least two from each section.

Objectives: To Introduce the basic concepts related to the Digital Electronics

SECTION – A

Introduction :

Number System and Code:
Decimal Binary, Hexadecimal, Octal's complement, 2's complement, addition and substraction, weighted binary codes, Error detecting codes, Error correcting codes, Alphanumeric codes

Counters & Shift Register :
Ripple Counters, Design of Modulo-N ripple counter, Up-Down counter, design of synchronous counters with-and without lockout conditions, design of shift registers with shift-left, shift-right & parallel load facilities, universal shift registers.
**Data Converters:**
Sample & Hold switch, D/A converters: Weighted type, R-2R ladder type; A/D Converters: Counter-Ramp' type, Dual Slope Type, Successive approximation type, flash type; Specifications of ADC & DAC.

**SECTION – B**

**Digital Logic Families:**
Characteristics of digital circuits: Fan in, fan out, power dissipation, propagation delay, noise margin; Transistor-transistor Logic (TTL), TIL, NAND Gate with active Pull Up, its input and output Characteristics, Types of TTL Gates (Schottky, standard, low power, high speed). Emitter Coupled Logic (ECL), ECL gate, its transfer characteristics, level translation in ECL & TTL, MOS Gates, MOS Inverter, CMOS Inverter, Rise & Fait time of MOS & CMOS gates, Interfacing TIL & CMOS Circuits, Comparison of Characteristics of TTL, ECL, MOS & CMOS logic circuits, Tristate Logic & its applications.

**Semiconductor Memories & Programmable Logic:**
RQM, PROM, EPROM, EEPROM; RAM: Static RAM, Typical Memory Cell, Memory Organization, Dynamic RAM cell, Reading " Writing Operation in RAM, PLA, PAL " FPGA

**Text Books:**

**Paper Title: DIGITAL ELECTRONICS, (PRACTICAL)**

**Paper Code:** EC366

**Credits:** 01

**Max. Marks:** 50

**L T P:** 0 0 2

**Note:** Do any Eight experiments

1. To study truth tables of AND, OR, NOR, NAND, NOT and XOR Gates.
2. To verify the truth tables of RS, of JK and T Flip Flops.
3. To fabricate and test the truth table of half/full adder.
4. To design and implement a Modulo-N Counter.
5. To design and implement a Universal shift register
6. Design and fabrication of synchronous counter
7. Design fabrication of combinational circuits using Multiplexers
8. To convert 8 bit Digital data to Analog value using DAC.
9. To convert Analog value into 8 bit Digital data using ADC
10. To design and fabricate the given sequential Circuits using Flip-flops as Memory elements
Note: Examiner shall set eight questions covering four questions from each section. Candidate will be required to attempt five questions, at least two from each section.

Objectives: Provide students with the opportunity to gain experience in microprocessor-based system design, assembly language programming, and I/O interfacing to microprocessors.

SECTION – A

Microprocessor Architecture and Microcomputer Systems:
Microprocessor Architecture Memory, Input and Output Devices, The 8085 MPU, Example of an 808S-Based Microcomputer, Memory Interfacing, The SDK-85 Memory System.

Interfacing I/O Devices:

Programming the 8085:
Introduction to 8085 Assembly Language Programming, The 8085 Programming Model, Instruction Classification, Instruction format, Data Transfer (Copy) Operations, Arithmetic Operations, Logic Operations Branch Operations, Writing Assembly Language Programs.

Programming Techniques with Additional Instructions:

SECTION – B

Counters and Time Delays:
Counters and Time Delays, Hexadecimal Counter, Modulo: Ten, Counter, Generating Pulse Waveforms, Debugging Counter and Time-Delay Programs.

Stack and Subroutines:
Stack, Subroutine, Conditional Call and Return Instructions.

Interrupts:
The 8085 Interrupt, 8085 Vectored interrupts.

Interfacing Data Converters:

General-Purpose Programmable Peripheral Devices:
The 82S5A Programmable Peripheral Interface, Illustration: Interfacing Keyboard and Seven- Segment Display, Illustration: Bi- directional-Data Transfer between Two Microcomputers, The 8254 Programmable Interval Timer, The 8259 A Programmable Interrupt Controller, Direct Memory. Access (DMA) and the 8257 DMA Controller, serial communication, Programmable communications interface 8251.

Text Book:
1. Ramesh S. Gaonkar : Microprocessor Programming and Architecture, Applications with the 8085, third edition, Publisher (Justified)

References:
2. Douglas V. Hall : Microprocessors and Interfacing programming
1. Familiarization of 8085 kits.
2. Verification of arithmetic and logic operations using above kits. (At least 5 programs)
3. Development of interfacing circuits of various control applications based on 8085.
4. Application of assembly language using 8085 instructions set to develop various programs.
5. Applications of data movement instructions to develop relevant programs.
SYLLABUS FOR  
B.E. MBA integrated in Computer Science & Engineering (2012-13) 

FOURTH SEMESTER

Paper Title: ANALYSIS & DESIGN OF ALGORITHMS

Paper Code: CSE411  Max. Marks (Final Exam): 50  Time: 3 Hours
Credit:04  Max. Marks (Sessional Exam): 50  Total Lectures: 45
L T P: 3 1 0

Note: Examiner shall set eight questions covering four questions from each section. Candidate will be required to attempt five questions by selecting at least two from each section.

Objectives: The subject will give an insight into performance analysis, measurements and optimization of the various algorithm development techniques. After completing this subject students will be able to choose one algorithm technique for any kind of problem.

SECTION – A

Introduction:
Role of Algorithms in Computing; Growth of functions: Asymptotic Notation, Standard notation & common functions; Introduction to Recurrences: substitution method, recursion-tree method, master method; Randomizing Algorithms;

Divide and Conquer:
Performance analysis of Binary Search, Merge sort, Quick sort, Selection sort;

Greedy Algorithms:
Elements of Greedy strategy, Activity Selection Problem, Knapsack problem, Single source Shortcut paths problem, Minimum Spanning tree problem and analysis of these problems.

SECTION – B

Dynamic Programming:
Elements of dynamic programming, Assembly-line scheduling problem, Matrix-chain multiplication, Multistage Graph, All Pairs Shortest paths, Longest common subsequence, 0/1 Knapsack.

Back Tracking:
General method, 8 queen's problem, Graph coloring, 0/1 Knapsack Problem

NP-Completeness:
Polynomial Time, polynomial-time verification, NP-completeness & reducibility, NP-complete problems

Text Book:
1. Introduction to Algorithms  :  Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest
2. Fundamentals of Computer Algorithms  :  Ellis Horowitz, Sartaj Sahni (Galgotia)

References:
Paper Title: ANALYSIS & DESIGN OF ALGORITHMS (PRACTICAL)

**Paper Code:** CSE461  
**Max. Marks:** 50  
**Credits:** 02  
**L T P:** 0 0 3

*Note:* Practical based on theory paper to solve problems using following methods:

1. Divide & Conquer
2. Greedy Method
3. Dynamic Programming
4. Backtracking

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Paper Title: DATABASE MANAGEMENT SYSTEM

**Paper Code:** CSE412  
**Max. Marks (Final Exam):** 50  
**Max. Marks (Sessional Exam):** 50  
**Time:** 3 Hours  
**Total Lectures:** 45  
**L T P:** 3 1 0

*Note:* Examiner will set eight questions covering four questions from each section. Candidates will be required to attempt five questions, selecting at least two from each section.

**Objectives:** This course offers a good understanding of database systems concepts and prepares the student to be in a position to use and design databases for different applications.

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**SECTION – A**

**Introduction to Database Systems:**
(06)

**Physical Data Organization:**
File Organization and Indexing, Index Data Structures, Hashing, B-trees, Clustered Index, Sparse Index, Dense Index, Fixed length and Variable Length Records.  
(06)

**Data Models:**
Relational Model, Network Model, Hierarchical Model, ER Model: Entities, Attributes and Entity Sets, Relationships and Relationship Sets, Constraints, Weak Entities, Class Hierarchies, Aggregation, Conceptual Database Design with the ER Model, Comparison of Models.  
(05)

**The Relational Model:**
Introduction to the Relational Model, ER to Relational Model Conversion, Integrity Constraints over Relations, Enforcing Integrity Constraints, Relational Algebra, Relational Calculus, Querying Relational Data.  
(05)

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**SECTION – B**

**Relational Query Languages:**
SQL: Basic SQL Query, Creating Table and Views, SQL as DML, DDL and DCL, SQL Algebraic Operations, Nested Queries, Aggregate Operations, Cursors, Dynamic SQL, Integrity Constraints in SQL, Triggers and Active Database, Relational Completeness, Basic Query Optimization Strategies, Algebraic Manipulation and Equivalences.  
(07)

**Database Design:**
Functional Dependencies, Reasoning about Functional Dependencies, Normal Forms, Schema Refinement, First, Second and Third Normal Forms, BCNF, Multi-valued Dependency, Join Dependency, Fourth and Fifth Normal Forms, Domain Key Normal Forms, Decompositions.  
(05)
**Transaction Management:**
ACID Properties, Serializability, Two-phase Commit Protocol, Concurrency Control, Lock Management, Lost Update Problem, Inconsistent Read Problem, Read-Write Locks, Deadlocks Handling, 2PL protocol.

**Database Protection:**
Threats, Access Control Mechanisms, Discretionary Access Control, Grant and Revoke, Mandatory Access Control, Bell LaPadula Model, Role Based Security, Firewalls, Encryption and Digital Signatures.

**Text Book:**

**References:**

**Paper Title:** DATABASE MANAGEMENT SYSTEM (PRACTICAL)

**Paper Code:** CSE462

**Credits:** 02

**Max. Marks:** 50

**L T P:** 0 0 3

**Note:** This practical will enable students to retrieve data from relational databases using SQL. Students will also learn about triggers, cursors, stored procedures etc.

1. Introduction to SQL and installation of SQL Server / Oracle.
2. Data Types, Creating Tables, Retrieval of Rows using Select Statement, Conditional Retrieval of Rows, Alter and Drop Statements.
3. Working with Null Values, Matching a Pattern from a Table, Ordering the Result of a Query, Aggregate Functions, Grouping the Result of a Query, Update and Delete Statements.
7. Stored Procedures and Exception Handling.
8. Triggers and Cursor Management in PL/SQL.

**Paper Title:** OBJECT ORIENTED PROGRAMMING

**Paper Code:** CSE 414

**Credits:** 04

**Max. Marks (Final Exam):** 50

**Max. Marks (Sessional Exam):** 50

**Time:** 3 Hours

**Total Lectures:** 45

**L T P:** 3 1 0

**Note:** Examiner shall set eight questions covering four questions from each section. Candidate will be required to attempt five questions, at least two from each section.

**Objectives:** To understand the basic concepts of object oriented programming languages and to learn the techniques of software development in C++.
SECTION – A

1. Principles of Object Oriented Programming
2. Tokens, Expressions and control structures, various data types, and data structures, Variable declaration, Operators and scope of operators.
3. Pointers, Functions, Classes and Objects: Prototyping, referencing the variables in functions, memory allocation for classes and objects, Array of objects, pointers to member functions.
4. Constructors and Destructors, Operator Overloading and type conversion.
5. Inheritance: Derived classes, types of inheritance, and various types of classes.

SECTION – B

6. Virtual functions and Polymorphism.
8. Exception Handling and Generic programming with templates: Introduction to templates, overloading of template functions and Inheritance.

Text Book:


References:

2. Bala Guruswamy : Object oriented programming with C++, TATA McGraw Hill

Paper Title: OBJECT ORIENTED PROGRAMMING (PRACTICAL)

Paper Code: CSE464
Credits: 02

Note: Programs related to:

1. Functions, Classes and Objects
2. Constructors and Destructors
3. Operator Overloading and Type Conversion
4. Inheritance and Virtual Functions
5. Files
6. Exception Handling and Generic Programming

Paper Title: IT for Managers (Theory)

Paper Code: IBM 401
Credits: 04

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Part A
Information Technology (IT) : IT and society, IT infrastructure in India vis-à-vis developed nations (Telecommunication, Internet reach, PC, Broadband, Mobile Phones), IT applications in Healthcare & Education

System Investigation & Analysis, Networking: System Analysis & Design, Symbols used in modeling a business process, modeling different business processes, Networking concepts: Ethernet, IP addressing,
Functioning of Routers, Bridges, hubs and switches in a network, Telecommunication (GSM, CDMA, Wireless and other new technologies)

Internet & Intranet: Functioning of Internet, Encryption & Digital signatures, Firewalls, Fraud on the Internet, Virus, Hacking & Denial of Service attacks, Intellectual Property Protection on the Internet, Intranet & security

Part B

E-Commerce & E-Governance: E-Commerce models, Intermediaries in E-Commerce, study of successful models like E-Choupal, E-Payments (E-Cash, E-Wallets) and major players in the area, Online Shopping, Revenue models for Online Shopping Portals, Web Auctions: study of portals like EBay, dealing with E-Waste, E-Governance in India, study of implementation of E-Governance in different states in India, scope for further improvement

New Technologies shaping the IT field: Study of new technologies like RFID, WiMAX, Bluetooth, GPS, smart cards etc and their implementation case studies

Online Banking: infrastructure and implementation of Online Banking in India, intermediaries in online banking

Cloud Computing: The business model of cloud computing, advantages and drawbacks of adopting the cloud computing framework.

Recommended Books:
1. Business Data Communications & Networking, Jerry FitzGerald, Alan Dennis, John Wiley
2. Information Technology for Management: Improving Performance in the Digital Economy, Efraim Turban, Linda Volonino, John Wiley

Paper Title: COMPUTER ARCHITECTURE AND ORGANIZATION

<table>
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<td>Max. Marks (Sessional Exam): 50</td>
<td>Total Lectures: 45</td>
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L T P 3 1 0

Note: Examiner will set eight questions covering four questions from each section. Candidates will be required to attempt five questions, selecting at least two from each section.

Objectives: This course offers a good understanding of the various functional units of a computer system and prepares the student to be in a position to design a basic computer system.

SECTION – A

Register Transfer Language and Micro-Operations:
Basic Concepts, Complements, Fixed and Floating Point Representation, Register Transfer Language, Inter Register Transfer Arithmetic, Bus and Memory Transfers, Arithmetic, Logic and Shift Micro-Operations, Arithmetic Logic Shift Unit. (06)

Basic Computer Origination and Design:
Instruction Codes, Computer Instructions, Timing and Control, Execution of Instructions, Input Output and Interrupt, Design of Basic Computer. (06)

Programming the Basic Computer:

Central Processing Unit:
General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control. (06)
SECTION – B

Microprogrammed Control and Pipelining:
Control Memory, Address Sequencing, Microinstruction Formats, Pipelining, Arithmetic and Instruction Pipelining. (06)

Computer Arithmetic:
Addition and Subtraction of unsigned Binary Numbers, Addition, Subtraction, Multiplication and Division Algorithm. (05)

Input-Output Organization:
Input-Output Interface, Asynchronous Data Transfer, DMA, Priority Interrupt, I/O Processor, Serial Communication. (06)

Memory Organization:
Memory Hierarchy, Associative Memory, Virtual Memory, Cache Memory, Memory Management Hardware. (05)

Text Book:


References:

SYLLABUS FOR
B.E. MBA integrated in Computer Science & Engineering (2012-13)

FIFTH SEMESTER

Paper Title: OPERATING SYSTEM

Paper Code: CSE511
L T P : 3 1 0 Credits: 4

Max. Marks (Final Exam): 50
Time: 3 Hours
Max. Marks (Sessional Exam): 50
Total Lectures: 45

Note: - Examiner shall set eight questions covering four questions from each section. Candidate will be required to attempt five questions, at least two from each section.

Objectives: This course should provide the students with good understanding of Operating System including its architecture and all its components. Good conceptions on all the subjects like processes, inter-process communication, semaphore, message passing, classical IPC problems, scheduling, memory management, file systems, security and protection mechanism, I/O hardware and software, deadlocks, etc. should be provided.

SECTION – A

Introduction: What is an O.S., O.S. Functions; Different types of O.S.: batch, multi-programmed, time sharing, real time, distributed, parallel; General structure of operating system, O/S services, system calls.


Memory Management: background, logical vs. physical address space, memory management without swapping; swapping; contiguous memory allocation, paging, segmentation, segmentation with paging; Virtual Memory, demand paging, performance, page replacement, page replacement algorithms (FIFO, Optimal ,LRU); Thrashing.

SECTION – B

File Systems: Files - file concept, file structure, file types, access methods, File attributes, file operations; directory structure, allocation methods (contiguous, linked, indexed), free-space management (bit vector, linked list, grouping), Protection mechanisms.

Secondary Storage : Disk Structure, Disk Scheduling ( FCFS, SSTF, SCAN, C-SCAN, LOOK), Disk Management (Disk Formatting, Boot Blocks, Bad Blocks), Swap Space Management (Swap Space use, Swap Space Location, Swap Space Management)

Deadlocks: Introduction to deadlocks, Conditions for deadlock, Resource allocation graphs, Deadlock Detection and Recovery, Deadlock Avoidance, Deadlock Prevention

Case Studies: Brief introduction of MS-DOS, Windows, UNIX and LINUX.

Text Book:

References:
Paper Title: OPERATING SYSTEM (PRACTICAL)

Paper Code: CSE561
Credits: 2 L T P: 0 0 3
Note: Practical Problems related to
1. Learning Basic Features and Operating Environment of UNIX and LINUX.
2. Introduction to Shell and Shell Commands.
3. Shell programming: creating a script, making a script executable, shell syntax (variables, conditions, control structures, functions, commands.
4. Process: starting new process, replacing a process image, duplicating a process image, waiting for a process.
5. Programming with semaphores.

Paper Title: SOFTWARE ENGINEERING

Paper Code: CS 512
Credit: 04
Max. Marks (Final Exam): 50
Max. Marks (Sessional Exam): 50
Total Lectures: 45
L T P: 3 1 0

Note: Examiner will set eight questions covering four questions from each section. Candidates will be required to attempt five questions, selecting at least two from each section.

Objectives: This course aims to give students a theoretical foundation in software engineering. Students will learn about the principles and methods of software engineering, including current and emerging software engineering practices and support tools.

SECTION – A

Introduction:

Software Process Models:

Project Management Concepts:
Management Activities, Project Planning, Project Scheduling, Size Estimation – LOC, FP; Cost Estimation Models – COCOMO, COCOMO-II.

Software Requirements Analysis and Specification Concepts:

SECTION – B

Software Design and Coding Concepts:
Testing:

Technical Metrics for Software:

CASE (Computer Aided Software Engineering) and Introduction to UML:

Text Book:

References:

Paper Title: SOFTWARE ENGINEERING (PRACTICAL)

Notes: This practical will enable students manage software projects using MS-Project. Students will learn about preparing analysis and design models using UML modeling concepts through Rational Rose. Students will also be exposed to CASE tools.
1. Study the features of MS-Project.
2. Use MS-Project/OpenProj/similar tool to draft project plan for a particular project case study.
3. Use MS-Project/OpenProj/similar tool to generate various reports like Gantt chart, Network diagram, Resource usage sheet.
4. Use MS-Project/OpenProj/similar tool to track the progress of a project.
5. Study the concepts of UML modeling.
6. Use Rational Rose/StarUML/similar tool to generate use case diagrams.
7. Use Rational Rose/StarUML/similar tool to generate sequence diagrams.
8. Use Rational Rose/StarUML/similar tool to generate class diagrams.
9. Use Rational Rose/StarUML/similar tool to generate collaboration diagrams.
10. Study the features of a particular CASE tool for requirements specification, analysis, design and cost estimation.
11. Apply each of the above tools to a particular case study.

Paper Title: COMPUTER NETWORK

Paper Code: CSE513
L T P : 3 1 0 Credits: 04
Max. Marks (Final Exam): 50
Max. Marks (Sessional Exam): 50
Time: 3 Hours
Total Lectures: 45

Note: Examiner will set eight questions covering four questions from each section. Candidates will be required to attempt five questions, selecting at least two from each section.

Objectives: This course aims to give students a theoretical foundation in software engineering. Students will learn about the principles and methods of software engineering, including current and emerging software engineering practices and support tools.

SECTION – A

Introduction:
Data Communication: Components, Data Flow; Network Categories: LAN, MAN, WAN (Wireless / Wired); Network Software: Concept of layers, protocols, interfaces and services; Reference Model: OSI, TCP/IP and their comparison; (06)

Physical Layer:
Concept of Analog & Digital Signal; Bit rate, Bit Length; Transmission Impairments: Attenuation, Distortion, Noise; Data rate limits: Nyquist formula, Shannon Formula; Multiplexing: Frequency Division, Time Division, Wavelength Division; Transmission media: Twisted pair, coaxial cable, fiber optics, wireless transmission (radio, microwave, infrared); Circuit Switching & Packet Switching. (08)

Data Link Layer:
Error correction & Detection; Flow & Error Control; Sliding window protocols: Stop & Wait ARQ, Go back n ARQ, Selective repeat ARQ; Examples of DLL Protocols-HDLC, PPP; Medium Access Sub layer: Channel Allocation; Random Access: ALOHA, CSMA protocols; Controlled Access: Polling, Reservation, Token Passing; Examples of IEEE 802.3, 802.11 standards;k (10)

SECTION – B

Network Layer:
Logical Addressing: IPv4 and IPv6; Packet Formats & their comparison: IPv4 and IPv6; Routing algorithms: Distance vector, Link State Routing, Hierarchical Routing, Broadcast & Multicast Routing; Congestion Control: Principles of Congestion Control, Congestion prevention policies, Leaky bucket & Token bucket algorithms (10)

Transport Layer:
Addressing, flow control & buffering, multiplexing & de-multiplexing, crash recovery; Example transport protocols: TCP, SCTP and UDP; (08)

Application Layer:
Network Security; Domain Name System; Simple Network Management Protocol; Electronic Mail; (03)

Text Book:
1. Andrew S. Tanenbaum : “Computer Networks”, Pearson Education
3. Andrew S. Tanenbaum : Tata Mcgraw Hill
References:

Paper Title: COMPUTER NETWORK (Practical)  MM :50
Paper Code: CSE563
L T P : 0 0 3
Credits : 02

Note: Practical Problems related to:
1. To familiarize with the various basic tools (crimping, krone etc.) used in establishing a LAN.
2. To study various topologies for establishing computer networks.
3. To familiarize with switch , hub, connecters, cables (cabling standards) used in networks
4. To familiarize with routers & bridges
5. To use some basic commands like ping, trace-root, ipconfig for trouble shooting network related problems.
6. To use various utilities for logging in to remote computer and to transfer files from / to remote computer.
7. To develop a program to compute the Hamming Distance between any two code words.
8. To develop a program to compute checksum for an ‘m’ bit frame using a generator polynomial.
9. To develop a program for implementing / simulating the sliding window protocol
10. To develop a program for implementing / simulating a routing algorithm
11. To study various IEEE standards (802.3, 802.11, 802.16)

Paper Title: PRINCIPLES OF PROGRAMMING LANGUAGES
Paper Code: CSE514
Max. Marks (Final Exam): 50
Credits : 04  L T P :3 1 0
Max. Marks (Sessional Exam): 50
Time: 3 Hours
Total Lectures: 45

Note: Examiner shall set eight questions covering four questions from each section. Candidate will be required to attempt five questions, at least two from each section.

Objectives: This course should provide the students with a fairly good concept of fundamental concepts and design issues of programming languages and become familiar with major programming paradigms. Understand similarities and differences between models and know when to use them and also learn programming techniques appropriate for each model.

SECTION – A
Introduction:
Study of principles and major concepts in various programming paradigms like imperative, functional, object-oriented and logic programming. Introduction to various phases of compilers,
Formal translation models: BNF Grammars.

**Imperative programming:**
Location, reference and expressions, assignment and control, data types, blocks, procedures and modules.
Object Oriented Programming: Classes and objects, abstraction and encapsulation, inheritance, Polymorphism, virtual functions and classes, abstract classes.

**Logic Programming:**
Unification, SLD-resolution, Backtracking, Cuts.
Concepts Of Concurrent Programming: Processes, synchronization primitives.

**SECTION – B**

**Functional Programming:**
Functions as first class objects, higher order functions, polymorphic datatypes, type checking and type inference

**Introduction to storage management:**
Static storage management, Heap storage management.

**Illustration of the above concepts using representative languages:** C++, Java, and Prolog etc.

**Text Book:**
1. Pratt & Zelkowrtz, Programming Languages : Design & Implementation, Pearson Education

**References:**

**Paper Title:** Marketing Management

<table>
<thead>
<tr>
<th>Paper Code: IBM 501</th>
<th>Max. Marks (Final Exam): 50</th>
<th>Time: 3 Hours</th>
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<td>L T P 3 0 0 Credits : 03</td>
<td>Max. Marks (Sessional Exam): 50</td>
<td>Total Lectures: 45</td>
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</table>

**Note:** Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

**Objectives:** (i) To understand the nature, tasks and the environment under which marketing operates. (ii) To study the theory, principles and practical aspects of various marketing functions. (iii) To learn to take marketing decisions.

**Part A**

**Introduction to Marketing:** [5]
Definition; Scope and Importance of Marketing; Key Customer Markets; Concepts/Philosophies of Marketing; Holistic Marketing Concept; Marketing Tasks; Marketing Mix

**Marketing Environment:** [5]
Marketing Environment; New Marketing Realities; New Consumer Capabilities; Demographic Environment; Social-Cultural Environment; Natural Environment; Technological Environment and Political-Legal Environment; SWOT analysis.

**Analyzing Markets:** [5]
Marketing Research Process; Sources of data collection; factors influencing consumer behavior; buying
decision process; post-purchase behavior; Organizational Buying; Stages in the Buying Process.

**Market Segmentation:**
Levels of market segmentation; segmenting consumer markets; Niche Marketing; segmenting business markets; Michael Porter’s five forces model; Analyzing competitors; strategies for market leaders; Targeting and Positioning.

**Part B**

**Product Decisions:**
Product characteristics; classifications; differentiation; packaging and labeling; Product Life Cycle.

**Pricing Strategies:**
Understanding Pricing; Setting the Price; Initiating and Responding to Price Changes; Reactions to Competitor’s Price Changes.

**Marketing Channels:**
Marketing Channels: Role of Marketing Channels; Identifying Major Channel Alternatives; Types of Intermediaries; Channel-Management Decisions, Retailing, Wholesaling.

**Marketing Communication:**
The Role of Marketing Communications; Communications Mix-Advertising, Sales Promotion, Public Relations and Publicity, Events and Experiences, Direct and Interactive Marketing, Personal Selling.

**References:**
2. Ramaswamy, V.S. & Namakumari, S: Marketing management, planning, implementation and control.

**Paper Title:** Human Resource Management

**Paper Code:** IBM 502

**L T P:** 3 0 0  
**Credits:** 3

**Max. Marks (Final Exam): 50**  
**Max. Marks (Sessional Exam): 50**  
**Total Lectures:** 45

**Time:** 3 Hours

**Note:** Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

**Objectives:** The objective of the paper is to make student aware of the various functions and importance of the HR department in any organization. It is basically concerned with managing the human resources, whereby the underlying objective is to attract retain and motivate the human resources in any organization, which is the most challenging and daunting look for any organization today.

**Part-A**


Job analysis : Methods - IT and computerized skill inventory - Writing job specification - HR and the responsive organization.

Recruitment and selection process : Employment planning and forecasting – Building employee
commitment: Promotion from within - Sources, Developing and Using application forms - IT and recruiting on the internet.

Employee Testing & selection: Selection process, basic testing concepts, types of test, work samples & simulation, selection techniques, interview, common interviewing mistakes, Designing & conducting the effective interview, small business applications, computer aided interview.

Part-B

Training & Development: Orientation & Training: Orienting the employees, the training process, need analysis, Training techniques, special purpose training, Training via the internet Performance appraisal: Methods - Problem and solutions - MBO approach – The appraisal interviews - Performance appraisal in practice.

Managing careers: Career planning and development - Managing promotions and transfers.


References:

SYLLABUS FOR
B.E. MBA integrated in Computer Science & Engineering (2012-13)

SIXTH SEMESTER

Paper Title: WEB TECHNOLOGIES

Paper Code: CSE611
L T P : 3 1 0 Crédits : 04
Max. Marks (Final Exam): 50
Max. Marks (Sessional Exam): 50
Time: 3 Hours
Total Lectures: 45

Note: Examiner shall set eight questions covering four questions from each section. Candidate will be required to attempt five questions, at least two from each section.

Objective: Aim of this paper is to familiarize the students with current technologies used in Web development and maintenance.

SECTION – A

INTERNET AND WORLD WIDE WEB:
Introduction, Internet Addressing, ISP, types of Internet Connections, Introduction to WWW, WEB Browsers, WEB Servers, URLs, http, WEB applications, Tools for WEB site creation. (4)

HTML:
Introduction to HTML, Lists, adding graphics to HTML page, creating tables, linking documents, frames, DHTML and Style sheets. (6)

Java Script:
Introduction, programming constructs: variables, operators and expressions, conditional checking, functions and dialog boxes, JavaScript DOM, creating forms, introduction to Cookies (11)

SECTION – B

JAVA:
Introduction to java objects and classes, control statements, arrays, inheritance, polymorphism, Exception handling. (6)

XML:
Why XML, XML syntax rules, XML elements, XML attributes, XML DTD displaying XML with CSS. (6)

AJAX
Introduction, HTTP request, XMLHttpRequest, AJAX Server Script, AJAX Database. (6)

PHP
Introduction, syntax, statements, operators, sessions, E-mail, PHP and MySQL, PHP and AJAX. (6)

Text Books:

References:
1. Ivan Bayross : Web Enabled Commercial Application Development, BPB
2. Schafer : HTML,CSS, JavaScript,Perl, Python and PHP, Wiley India Textbooks.

Paper Title: WEB TECHNOLOGIES (Practical)
Paper Code: CSE661
L T P: 0 0 3 Credits: 02
Max. Marks:50

Note: Students have to perform following experiments related to
1. Creation of Web pages using: HTML, DHTML
2. Creation of Web pages using JavaScript
3. Implementing basic concepts of Java
4. Creation of Web pages using AJAX
5. Database and AJAX
6. XML
7. PHP

Paper Title: Managerial Economics

Paper Code: IBM 601
L T P: 3 0 0 Credits: 03
Max. Marks (Final Exam): 50
Max. Marks (Sessional Exam): 50
Total Lectures: 45

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Objectives: To provide students with an understanding of basic economic principles of production & exchange-essential tools in making business decisions in today’s global economy. The object presents the foundation to understanding how the economy works, covering microeconomic description of business applications, including pricing for profit maximization, price elasticity, market structures and modeling of business in varying economic climates. The focus is on market economics, the organization that operation there and their business strategies.

Part A
Introduction to Managerial Economics and Demand Concepts: Nature Scope and Importance of Managerial Economics, opportunity costs, incremental principle, time perspective, Equi marginal principles, Individual Demand, Market Demand, Kinds of Demand, Determinants of Demand, Demand Functions and Law of Demand, Income and Price elasticity of demand, substitution effect


Production Function: Concept and types, Returns to Factor and Returns to Scale, Law of Variable Proportions, law of diminishing marginal returns

Cost concepts and Analysis: Concept of Cost, Short run and Long-run Cost Curves, Relationships among various costs

Revenue Curves: Concept and Types.

Part B
Perfect Competition: Characteristics, Equilibrium Price, Profit Maximizing output in Short Run and Long Run, Price Discrimination; Imperfect Competition, Monopolistic Competition, Oligopoly and Barriers to Entry.
Economic Environment of Business - Meaning of GDP, Monetary and Fiscal Policy, Deficit Financing, Inflation, Subsidies, Devaluation of Rupee, Liberalization, Privatization and Disinvestment

References:
1. Craig Peterson, Lewis and Jain: Managerial Economics, Pearson Education
2. Mark Hirshey: Managerial Economics, Thomson
3. Dr. V. Panduranga Rao: Microeconomics-IBS Publication
7. K.K. Dewett: Modern Economic Theory, S. Chand & Sons, New Delhi
8. Mote, Paul Gupta: Managerial Economics, Vikas Publisher, New Delhi
9. A. Koutsoyiannis: Modern Microeconomics, Mc Millan, New Delhi
10. R.L. Varshney & K. L. Maheshwari: Managerial Economics, S.Chand & Sons, New Delhi

Paper Title: COMPUTER GRAPHICS

Paper Code: CSE613
L T P: 3 1 0 Credit: 04
Max. Marks (Final Exam): 50 Time: 3 Hours
Max. Marks (Sessional Exam): 50 Total Lectures: 45

Note: Examiner will set eight questions covering four questions from each section. Candidates will be required to attempt five questions, selecting at least two from each section.

Objectives: This course offers a good understanding of computer graphics concepts and prepares the student to be in a position to understand and draw graphics for different applications.

SECTION – A

Overview of Graphics Systems:
Video Display Devices, Direct View Storage Tubes, Flat Panel Displays: Emissive and Non-Emissive Displays; Plasma Panel, Thin Film Electroluminescent and Liquid Crystal Displays, Color Display Techniques: Shadow Mask and Beam-penetration Methods, Three Dimensional Viewing Devices, Raster Scan Systems, Display Processor, Random Scan Systems, Co-ordinate Representations, Screen Coordinates.

Output Primitives:

Two Dimensional Geometric Transformations and Viewing:
Basic Transformations: Translation, Rotation and Scaling, Matrix Representations, Composite Transformations, Viewing Pipeline, Window to Viewport Coordinate Transformation, Clipping Operations: Line, Polygon, Curve and Text Clipping.

SECTION – B

Three Dimensional Concepts, Transformations and Viewing:
Three Dimensional Display Methods, Three Dimensional Transformations; Three Dimensional Viewing Pipeline; Viewing Coordinates; Specifying the View Plane, Projections: Parallel Projections, Perspective Projections.

Splines and Curves:
Curved Lines and Surfaces, Spline Representations, Cubic Splines, Bezier Curves and their properties, B-Spline Curves.
Visible Surface Detection Methods:
Classification of Visible Surface Detection Methods, Back Face Detection, Depth Buffer, A-Buffer, Scan Line and Depth-Sorting Methods, Wireframe Methods, Concepts of Computer Animation, Design of Animation Sequences.

Text Book:

References:

Paper Title: COMPUTER GRAPHICS (Practical)

Paper Code: CSE663
L T P: 0 0 3 Credits: 02

Note: This practical will enable students to draw basic graphics objects, perform transformations and build graphics applications in C.

1. Introduction to graphics programming in C/C++.
2. Initializing graphics system. Basic graphics functions.
3. Drawing lines, circles, ellipses and other common objects.
4. Boundary Fill, Flood Fill and other region filling algorithms.
5. Two dimensional transformations (Translation, Rotation, Scaling Reflection, Shear) on different objects.
6. Clipping algorithms.
7. Programs related to splines and curves, animation sequences.

Paper Title: ARTIFICIAL INTELLIGENCE

Paper Code: CSE614
L T P: 3 1 0 Credit: 04

Max. Marks (Final Exam): 50
Max. Marks (Sessional Exam): 50
Time: 3 Hours
Total Lectures: 45

Objectives: To introduce the AI techniques to solve problems and search strategies to find optimal solution paths from start to goal state. The course also introduces different knowledge representation methods with introduction to natural language processing and expert systems

Note: Examiner shall set eight questions covering four questions from each section. Candidate will be required to attempt five questions, at least two from each section.

SECTION – A
Introduction:
Artificial Intelligence and its applications, Artificial Intelligence Techniques, criteria of success, Intelligent Agents, Nature and structure of Agents, Learning Agents (6)

Problem solving techniques:
State space search, control strategies, heuristic search, problem characteristics, production system characteristics, Generate and test, Hill climbing, best first search, A* search, Constraint satisfaction problem, Mean-end analysis, Min-Max Search, Alpha-Beta Pruning, Additional refinements, Iterative Deepening (9)

Knowledge representation:
Mapping between facts and representations, Approaches to knowledge representation, procedural vs declarative knowledge, Forward vs. Backward reasoning, Matching, conflict resolution, Non-monotonic reasoning, Default reasoning, statistical reasoning, fuzzy logic Weak and Strong filler structures, semantic nets, frame, conceptual dependency, scripts. (8)

SECTION – B

Planning:
The Planning problem, planning with state space search, partial order planning, planning graphs, planning with propositional logic, Analysis of planning approaches, Hierarchical planning, conditional planning, Continuous and Multi Agent planning (6)

Learning:
Forms of Learning, inductive learning, Decision trees, Computational learning theory, Logical formulation, knowledge in learning, Explanation based and relevance based learning, statistical learning, Learning with complete data and hidden variables, instance based learning, (10)

Introduction to Natural Language processing and Expert system:

Text Book:

References:

Paper Title: ARTIFICIAL INTELLIGENCE (Practical)

Paper Code: 664
L T P : 0 0 3 Credits : 02
Note: Practical Problems related to

1. Program Related to Problem Solving techniques of AI
   - Breadth First Search
   - Depth First Search
   - Heuristic Search
   - Best Search
   - Min-Max Search with alpha-beta pruning
   - Tic-Tac-Toe problem
- N-Queens and N-Knight problem
- Unification Algorithm

2. Introduction To AI Languages such as LISP, PROLOG
3. Representing Knowledge using RuleML
4. Using semantic Web
5. Knowledge of using Neural Networks, Fuzz logic, genetic algorithms
6. Other new AI Techniques

Paper Title: MODELING AND SIMULATION

Paper Code: CSE615
L T P 3 1 0 Credits:04
Max. Marks (Final Exam): 50
Max. Marks (Sessional Exam): 50
Total Lectures: 45

Time: 3 Hours

Note: Examiner shall set eight questions covering four questions from each section. Candidate will be required to attempt five questions, at least two from each section.

Objectives: This course should provide the students with good understanding of various techniques of Simulation.

SECTION – A

Introduction: What is modeling and simulation, application areas, definition and types of system model and simulation, introduction to discrete-event and continuous simulation.

Simulation Methods: Discrete-event Simulation, Time advance Mechanisms, Components and organization of Discrete-event simulation, Flowchart of next-event time advance approach, Continuous Simulation.

Queueing Models: Single server queueing system, introduction to arrival and departure time, flowcharts for arrival and departure routine. Event graphs of queueing model. Determining the events and variables, Event graphs for inventory model.

SECTION – B


Distribution Functions: Stochastic activities, Discrete probability functions, Cumulative distribution function, Continuous probability functions. Generation of random numbers following binomial distribution, poisson distribution, continuous distribution, normal distribution, exponential distribution, uniform distribution.

Simulation Languages: Basic Introduction to Special Simulation Languages:-GPSS/ MATLAB/ Network Simulators.

Text Books:
References:
2. Rudra Pratap: “Getting Started with MATLAB 7”, Oxford University Press.

Paper Title: MODELING AND SIMULATION (Practical)

Paper Code: CSE 665
L T P: 0 0 3 Credits:02
Note: Practical Problems related to

1. **Programming in MATLAB:** Introduction, Branching statements, loops, functions, additional data types, plots, arrays, inputs/outputs etc.
2. Introduction regarding usage of any Network Simulator.

Paper Title: Corporate Legal Environment

Paper Code: IBM 602
L T P: 0 0 3 Credit: 03
Max. Marks (Final Exam): 50
Max. Marks (Sessional Exam): 50
Time: 3 Hours
Total Lectures: 45

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Objective: Corporate legal environment represents that external environment in which the organization has to work. The course covers the basic laws which a student must be aware of.

Part A
The Contract Act 1872: Introduction: Meaning of contract; Types of contract; Essential elements of a valid contract. Offer: Meaning and Definition of offer; Types; Rules regarding offer; Revocation of offer; Lapse of offer.
Acceptance: Meaning and Definition of acceptance; Rules regarding acceptance; Revocation of acceptance. Consideration: Definition; Types; Rules; Exceptions
Capacity of Parties: Position of Minor, Person of unsound mind, Persons disqualified by law.
Free consent; Discharge of contract, Remedies for Breach of contract, Contract of Indemnity, Contract of Guarantee

Sales of Goods Act 1930: Meaning; Difference between Sale of Goods and Agreement to Sale, Essentials of Contract of Sale; Difference between Contract of Sale and Hire-Purchase Agreements; Conditions and Warranties; Transfer of property or ownership; Performance of Contract of Sale; Rights of Unpaid Seller; Auction Sale.

The Companies Act, 1956: Definition; Meaning; Features; Types of companies; Incorporation of a company; Memorandum of Association; Articles of Association and Prospectus; Doctrine of Indoor Management; Lifting of Corporate Veil; Registration and Incorporation of a company; Doctrine of Ultravires Transactions; Winding up of company.
Part B

Information Technology Act-2000: Objective of the act, documents excluded from the scope of the act, digital signatures, types of digital signatures in India, certifying authorities in India, regulation of certifying authorities, duties of subscribers, offences, appellate tribunal, penalties and adjudication

References:
2. An Introduction to Mercantile Laws- N.D. Kapoor, Sultan Chand & Sons
Paper Title: COMPILER DESIGN

Objectives: This course will provide the in-depth knowledge of different concepts involved while designing a compiler.

SECTION – A

Introduction: Compilers and Translators; The phases of the compiler – Lexical Analysis, Syntax Analysis, Intermediate Code Generation, Optimization, Code generation, Bookkeeping, Error handling.

Lexical Analysis: The role of the lexical analyzer, Tokens, Patterns, Lexemes, Input buffering, Specifications of a token, Recognition of a tokens, Finite automata: Regular expressions, NFA, DFA. Design of a lexical analyzer generator.


SECTION – B

Syntax directed translation: Syntax directed definitions, Synthesized and inherited attributes, Construction of syntax trees.

Run time environments: Source language issues (Activation trees, Control stack, scope of declaration, Binding of names), Storage organization (Subdivision of run-time memory, Activation records), Storage allocation strategies, Symbol tables: storage, data structures used.

Intermediate code generation: Intermediate languages, Graphical representation, Three-address code, Implementation of three address statements (Quadruples, Triples, Indirect triples).


Text Book:

1. Aho, Ullman

References:

1. Dhamdhere
   : Compiler Construction- Principles and Practice Macmillan, India 198
2. Holub
   : Compiler Design in C, PHI.
**Paper Title: COMPILER DESIGN (PRACTICAL)**

**Paper Code:** CSE751  
**Max. Marks (Final):** 75  
**Max. Marks (Sessional):** 75  

**L T P:** 0 0 3

**Note:** Students have to perform the below-mentioned experiments using any language or tool available.

1. Implementation of lexical analyzer for a hypothetical language.
2. Implementation of LL parser.
3. Implementation of SLR parser.
4. Implementation of CLR parser.
5. Implementation of LALR parser.

**Paper Title: MULTIMEDIA SYSTEM DESIGN**

**Paper Code:** CSE712  
**Max. Marks (Final Exam):** 100  
**Max. Marks (Sessional Exam):** 50  
**Time:** 3 Hours  
**Total Lectures:** 45

**Objectives:** This course introduces the multimedia systems and their applications to students. This course covers the different compression standards used in multimedia, some current technology and related issues.

**Note:** Examiner shall set eight questions covering four questions from each section. Candidate will be required to attempt five questions, at least two from each section.

**SECTION – A**

**Introduction:**
Multimedia and its types, Introduction to Hypermedia, Hyper Text, Multimedia Systems and their Characteristics, Challenges, Desirable Features, Components and Applications, Trends in Multimedia (4)

**Multimedia Technology:**

**Storage Media:**
Magnetic and Optical Media, RAID and its levels, Compact Disc and its standards, DVD and its standards, Multimedia Servers (4)

**Audio:**

**SECTION – B**

**Basics of Compression:**

**Image and Graphics Compression:**
Colour in Images, Types of Colour Models, Graphic/Image File Formats: TIFF, RIFF, BMP, PNG, PDF, Graphic/Image Data, and JPEG Compression, GIF Compression (6)
Video Compression
Basics of Video, Video Signals, Analog Video, Digital Video, TV standards, H. 261 Compression, Intra Frame Coding, Inter-frame (P-frame) Coding, MPEG Compression, MPEG Video, The MPEG Video Bitstream, Decoding MPEG Video in Software

Multimedia Communication:
Building Communication network, Application Subsystem, Transport Subsystem, QOS, Resource Management, Distributed Multimedia Systems

Text Book:
1. Ralf Steinmetz and Klara Nahrstedt: Multimedia Computing Communications and Applications By Pearson Educations

References:

Paper Title: SOFTWARE TESTING AND QUALITY ASSURANCE

Paper Code: CSE713
L T P: 3 1 0

Max. Marks (Final Exam): 100
Max. Marks (Sessional Exam): 50
Time: 3 Hours
Total Lectures: 45

Note: Examiner will set eight questions covering four questions from each section. Candidates will be required to attempt five questions, selecting at least two from each section.

Objectives: This course offers a good understanding of the concepts, methods and techniques of software testing and quality assurance and prepares students to be in a position to develop error free and quality software.

SECTION – A

Introduction:

Software Quality Assurance Concepts and Standards:

Risk Management and Change Management:

SECTION – B

Software Testing:
Testing Techniques:

Testing Process and Specialized Systems Testing:

Text Book:

References:

Paper Title: SOFTWARE TESTING AND QUALITY ASSURANCE (Practical)

Paper Code: CSE753
L T P: 0 0 3
M.M(External): 75
M.M(Internal): 75

Note: This practical will enable students use and design software quality assurance and testing tools.

1. Study of different quality assurance and software testing tools.
2. Use of black box testing techniques to test programs.
3. Use of white box testing techniques to test programs.
4. Use of Object Oriented Testing Techniques to test programs.
5. Use of a software testing tool.
6. Use of a quality assurance tool.
7. Testing a web based system.
8. Design and Implementation of a quality assurance / software testing tool.
Paper Title: Accounting for Managers

**Paper Code:** IBM 701  
**Max. Marks (Final Exam):** 100  
**Time:** 3 Hours  
**Max. Marks (Sessional Exam):** 50  
**Total Lectures:** 45

**Note:** Examiner shall set eight questions, four from Part – A and four from Part – B of the syllabus. Candidate will be required to attempt any five questions selecting at least two from each part.

**Objectives:** To understand the concept and importance of accounting for managers.

**Part – A**
Accounting and its functions; Basic Accounting Concepts and Accounting Conventions; Accounting Principles; Generally Accepted Accounting Policies (GAAP); Accounting Standards; Branches of Accounting: Financial Accounting; Cost Accounting; Management Accounting; Accounting Equation; Accounting Structure; Types of Accounts.  
Rules regarding Journal Entries; Recording of Journal Entries; Ledger Posting; Trial Balance; Preparation of Final Accounts; Trading Account; Profit & Loss Account; Balance Sheet; Treatment of Adjustments into trial balance.  
Meaning of Management Accounting; Nature; Scope; Objectives; Functions of Management Accounting; Relationship between Financial and Management Accounting; Tools and Techniques of Management Accounting; Limitations; Meaning of Financial Statement; Importance and Limitations of Financial Statement; Meaning and Objectives of Financial Statement Analysis; Limitation of Financial Analysis.  
Ratio Analysis: Meaning of Ratio; Interpretation of Ratios; Significance of Ratio Analysis; Limitations of Ratio Analysis; Classification of Ratio; Analysis of Short-term financial position; Analysis of Long term financial position; Analysis of profitability.

**Part – B**
Fund Flow Analysis: Meaning and Concept of Funds; Meaning of Fund Flow; Meaning of Fund Flow Statement; Significance; Limitations; Procedure of Preparing Fund Flow Statement; Schedule Showing Change in working capital; Adjusted Profit & Loss Account; Statement of Sources and Applications of Funds. Treatment of Adjustment;  
Cash Flow Analysis: Meaning; Classification of Cash Flow; Comparison between Fund Flow Statement and Cash Flow Statement; Difference between Cash Flow Statement and Cash Budget Limitations; Preparation of Cash Flow Statement (as per AS-3); Treatment of Adjustments.

**Text Books:**  
1. Managerial Accounting, Hilton, Ramesh, Jaidev, TMH

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**Paper Title:** STATISTICS & BUSINESS RESEARCH METHODOLOGY

**Paper Code:** IBM 702  
**Max. Marks (Final Exam):** 100  
**Time:** 3 Hours  
**Max. Marks (Sessional Exam):** 50  
**Total Lectures:** 45

**Note:** Examiner shall set eight questions, four from Part – A and four from Part – B of the syllabus. Candidate will be required to attempt any five questions selecting at least two from each part.

**Objective:** The objective of this course is to make the students familiar with statistics used in Business Research Methodology.

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Part A

Research Design: Meaning, Characteristics and various concepts relating to research design and classification of research design, Importance.

Measurement and Scaling: Data Types Nominal, Ordinal and Ratio scale; scaling techniques.

**Part B**

Formulation of Hypothesis: Confidence Intervals, Meaning, Characteristics and concepts relating to testing of Hypothesis (Parameter and statistic, Standard error, Level of significance, type-I and Type-II errors, Critical region, one tail and two tail tests); Procedure of testing Hypothesis. Numerical problems based on chi-square test, Hypothesis tests for one population mean: Z test, t-test, Wilcoxon Signed-Rank test, Inferences for two population means, Mann-Whitney Test, F-test.

Data Analysis & Interpretation: Introduction to Multivariate analysis- Multiple and partial correlation, Analysis of Variance (ANOVA)- One way and Two way ANOVA. Introduction to discriminant analysis and Factor Analysis.

**Suggested Readings:**

1. Business Research Methods, William G. Zikmund, Cengage Learning India
2. Business Research Methods, Cooper, D.R. & Schindler, TataMcGraw-Hill
SYLLABUS FOR
B.E. MBA integrated in Computer Science & Engineering (2012-13)
EIGHTH SEMESTER

Paper Title: ADVANCED DATABASE SYSTEMS

Paper Code: CSE801
L T P : 3 0 0

Max. Marks (Final Exam): 100
Max. Marks (Sessional Exam): 50
Time: 3 Hours
Total Lectures: 45

Note: Examiner will set eight questions covering four questions from each section. Candidates will be required to attempt five questions, selecting at least two from each section.

Objectives: This course offers a good understanding of advanced database concepts and technologies. It prepares the student to be in a position to use and design databases for a variety of applications.

SECTION – A

Introduction to Database Systems:
Database System Concepts and Architecture, Data Models, Data Independence, SQL: DDL, DML, DCL, Normalization: 1NF, 2NF, 3NF, BCNF, 4NF, 5NF.

Query Processing and Optimization:
Query Processing, Syntax Analyzer, Query Decomposition, Query Optimization, Heuristic Query Optimization, Cost Estimation, Cost Functions for Select, Join, Query Evaluation Plans.

Transaction Processing and Concurrency Control:

Object Oriented and Object Relational Databases:
Object Oriented Concepts, Object Oriented Data Model, Object Definition Language, Object Query Language, Object Relational Systems, SQL3, ORDBMS Design.

SECTION – B

Distributed Databases:

Backup and Recovery:
Types of Database Failures, Types of Database Recovery, Recovery Techniques: Deferred Update, Immediate Update, Shadow Paging, Checkpoints, Buffer Management.

Introduction to Data Warehousing and Data Mining:
Introduction to OLAP, OLTP, Data Warehouse, Data Marts, Data Mining, Data Mining Process.

Commercial Databases:
Commercial Database Products, Familiarity with IBM DB2 Universal Database, Oracle, Microsoft SQL Server, MySQL, their features.

Text Book:

References:
1. Raghu Ramakrishnan, Johannes Gehrke : Database Management Systems, Tata McGraw-
Paper Title: DIGITAL IMAGE PROCESSING & COMPUTER VISION

Paper Code: CSE812
L T P : 3 1 0
Max. Marks (Final Exam): 100       Time: 3 Hours
Max. Marks (Sessional Exam): 50       Total Lectures: 45

Note: Examiner shall set eight questions covering four questions from each section. Candidate will be required to attempt five questions, at least two from each section.

Objectives: To introduce the various image processing techniques and their applications in different domains. To get students acquainted with computer vision.

SECTION – A

Introduction to Image Processing:
Digital Image representation, Sampling & Quantization, Steps in image Processing, Image acquisition, color image representation, color models

Image Transformation & spatial Filtering:
Intensity transform functions, histogram processing, Spatial filtering, fourier transforms and its properties, Walsh transform, Hotelling transforms, Haar and slant transforms, Hadamard transforms, frequency domain filters, Homomorphic Filtering, Pseudo coloring, color transforms

Image Restoration:
Image degradation and restoration process, Noise Models, Noise Filters, degradation function, Inverse Filtering

SECTION – B

Image Compression:
Coding redundancy, Interpixel redundancy, Psychovisual redundancy, Huffman Coding, Arithmetic coding, Lossy compression techniques, JPEG Compression

Image Segmentation & Representation:
Point, Line and Edge Detection, Thresholding, Edge and Boundary linking, Hough transforms, Region Based Segmentation, Boundary representation, Boundary Descriptors, Regional Descriptors

Object Recognition:
Patterns and Patterns classes, Recognition based on Decision Theoretic methods

Text Book:

References:
Paper Title: DIGITAL IMAGE PROCESSING & COMPUTER VISION (Practical)

Paper Code: CSE852

L T P : 0 0 3

Note: Students are required to complete all the practical by implementing them in any of the programming language such as Java, C/C++, C#, MATLAB

1. Reading and displaying images in different formats using different color models.
2. Converting color images into monochrome images.
3. Understanding brightness, contrast and intensity concept of images
4. Images enhancements using grey level transformations
5. Image enhancements using spatial filters
6. Image enhancements in frequency domain
7. Homomorphic Filtering
8. Image Noise removal and inverse filtering of images
9. Image color enhancements using pseudo coloring techniques
10. Point, Line, Edge and Boundary Detections in images
11. Histogram Matching and specification on images
12. Boundary Linking techniques on images
13. Thresholding of Images
14. Magnification of Images
15. Image representation and Description techniques

Paper Title: Business Research

Paper Code: IBM-801

L T P : 3 1 0

Note: Examiner shall set eight questions, four from Part – A and four from Part – B of the syllabus. Candidate will be required to attempt any five questions selecting at least two from each part

Objectives: The main objective of this subject is to help the students to understand the nature, scope, complexities and process of defining a business research question. The learning focus is on developing business research skills to underpin the approach taken to a work integrated project.
PART-A
Research Design formulation, Exploratory, Descriptive and Casual Research, Exploratory Research Design- Secondary Data, Primary Data, Qualitative Research-Focus Group Interviews, Depth Interviews, Analysis of Qualitative Data, Survey and observation- Survey methods, Observation method, Casual Research Design- Experimentation, Validity in Experimentation, Extraneous variables, Statistical Designs-Randomized-Block Design, Latin Square Design, Factorial Design

Measurement and Scaling- Primary Scales of measurement, Comparative Scaling Techniques, Non comparative Scaling techniques-Likert, Semantic Differential Scale, Stapel Scale, Questionnaire Design-question content, structure and order

PART-B
Sampling Design: Meaning and need of Sampling, Probability and non-probability sampling design, simple random sampling, systematic sampling, stratified sampling, cluster sampling and convenience,sampling, judgement and quota sampling (non-probability), determination of sample size, Hypothesis Testing, Parametric and Non-Parametric Tests

Discriminant and Logit Analysis- Formulating the problem for Discriminant analysis, Multiple Discriminant Analysis, Logit model

Factor analysis, Cluster analysis and Multidimensional Scaling - Conducting Factor analysis, Cluster analysis and Multidimensional Scaling- Conjoint Analysis

Text Books:
2. Marketing Research-Text and Cases, Rajendra Nangundkar, TMH
3. Marketing Research –GC Beri, TMH
4. Marketing Research- Parshuram, Dhruv Grewal, R.Krishnan – Biztantra

Paper Title: JAVA TECHNOLOGIES (PRACTICAL)

Paper Code: CSE855
L T P : 0 0 3
Max. Marks(Final):75
Max.Marks(Sessional):75

Note: Students have to perform the following experiments

1. Implementation of classes, inheritance, overloading.
2. Implantation of packages and interfaces
3. Implantation of threads.
4. Implementation of Applets, mouse events, and keyboard events.
5. Connecting to Database using JDBC.
6. Deployment of Servlets, JSP and EJB.
Paper Title: Financial Management

Note: Examiner shall set eight questions, four from Part – A and four from Part – B of the syllabus. Candidate will be required to attempt any five questions selecting at least two from each part.

Objective: The objective of this course is to create basic understanding of corporate finance, Capital Budgeting decisions, working capital management, project management etc in the Engineering profession.

PART-A

Introduction to Financial Management: Meaning; Scope; Finance Function; Financial Goals; Agency Problem; Relationship of Finance with Accounts and Economics.

Sources of Finance: Features; Advantages and Limitations of Equity Shares; Preference Shares; Debentures; Term-Loans; Right Issue.

Cost of Capital: Meaning; Calculation of Cost of Debt Capital; Equity Capital; Preference Capital; Retained Earnings; Weighted Average Cost of Capital.

Capital Structure: Meaning; Determinants; Assumptions; Net Income and Operating Income Approach; Traditional Position; M-M Position; EBIT and EPS Analysis; Capital Structure and Taxation.

Leverage Analysis: Meaning; Types; Estimation of Financial; Operating and Combined Leverage; Relation of Financial Leverage with Risk and Return.

Management of Working Capital: Meaning of WC; Need of WC Management; Determinants of WC; Operating Cycle; Estimation of WC.

PART-B

Inventory Management: Meaning; Need to hold Inventory; Objective of Inventory Management; Inventory Investment Analysis; Inventory Control System.

Capital Budgeting: Meaning; Basic Principles of Costs and Benefits; Investment Criteria; Pay back Method; Accounting Rate of Return Method; Net Present Value Method; Benefit-Cost Ratio; Internal Rate of Return; Capital Rationing; Introduction to Basic Techniques of Risk Analysis in Capital Budgeting.

Dividend Decisions: Meaning and Types of Dividend; Issues in Dividend Policy; Traditional Model; Walter Model; Gordon Model; Miller and Modigliani Model; Bonus Shares and Stock Splits.

Suggested Readings:
1. Financial Management, Van Horne ,PHI
QUANTITATIVE TECHNIQUES FOR MANAGEMENT

Course : BE-MBA IX th Semester

Paper – Compulsory

Paper Code: IBM-901

Time: 3 Hours

Course Duration: 45 Lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50

External Assessment: 100

Part-A

Linear Programming- Equation formulation, Graphical solution of two-variable linear programming problems, Simplex algorithm, Transportation and Assignment problems

Game theory- Game models, zero sum games, dominance rule, 2 x n and m x 2 games, solution of m x n games

Queuing: Single channel single-phase queuing system, multichannel single-phase queuing system, single channel multiphase queuing system

Part-B

Markov Chains – Markov processes, Markov analysis, input transition probabilities, input conditions, output specific state probabilities, steady state probabilities, absorbing chains

Simple linear regression and multiple regression analysis (with two independent variables), specification of regression models and estimation of parameters, interpretation of results

Forecasting models- Moving- average forecast methods, Simple Exponential Smoothing, Holt’s method- Exponential Smoothing with trend, Winter’s Method- Exponential Smoothing with Seasonality

1. Business Forecasting : John.E.Hanke, Dean.W.Wichern, PHI
2. Statistics for Managers using Microsoft Excel : Levine, Stephan, Krehbiel, Brenson, PHI
BUSINESS RESEARCH

Course: BE-MBA IXth Semester

Paper – Compulsory

Paper Code: IBM-902

Time: 3 Hours

Course Duration: 45 Lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50

External Assessment: 100

Part-A


Measurement and Scaling - Primary Scales of measurement, Comparative Scaling Techniques, Non comparative Scaling techniques-Likert, Semantic Differential Scale, Stapel Scale, Questionnaire Design - question content, structure and order

Part-B

Sampling Design: Meaning and need of Sampling, Probability and non-probability sampling design, simple random sampling, systematic sampling, stratified sampling, cluster sampling and convenience sampling, judgement and quota sampling (non-probability), determination of sample size, Hypothesis Testing, Parametric and Non-Parametric Tests

Discriminant and Logit Analysis - Formulating the problem for Discriminant analysis, Multiple Discriminant Analysis, Logit model

Factor analysis, Cluster analysis and Multidimensional Scaling - Conducting Factor analysis, Cluster analysis and Multidimensional Scaling - Conjoint Analysis

2. Marketing Research-Text and Cases, Rajendra Nangundkar, TMH
3. Marketing Research – GC Beri, TMH
4. Marketing Research - Parshuram, Dhruv Grewal, R. Krishnan – Biztantra
SUPPLY CHAIN MANAGEMENT

Course : BE-MBA IX th Semester

Paper : Elective - Marketing

*Paper Code: IBM-903*  
*Time: 3 Hours*

Course Duration: 45 Lectures of one hour each.

**Note:** Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50  
External Assessment: 100

**Part - A**

Definition of Supply Chain Management and Logistics - Scope of Transportation, Relationship between transportation and other business functions, Transport Economics: Distance – volume-density, Freight Cost – Handling – Liability - market factors; Third party logistics (3 PL) & fourth party logistics service provider (4 PL), Logistics equipment; Reverse Logistics, Govt. rule & regulations related to Logistics; Documentation related to Transportation :- Bill of Lading, Freight Bill, Claims and F.O.B Terms of Sale, Legal Classification of carriers- Private, Contract carrier etc.

Inventory Control, Planning & Managing Inventories: Strategic role of stock, costs of holding stock, Economic Order Quantity (EOQ), uncertainty in demand and costs, models for known demand: price discount from suppliers, planned shortages and back-orders, models for uncertain lead time demand

Material Handling & Wastage Control; Packing & Packaging; Order Management; Competitive advantage through logistics and supply chain management; Responsive Supply Chain, RFID applications in Supply Chain.

**Part – B**

Network Design and Facility Location –Facility location analysis, Optimization models, Heuristic Modeling – Grid Technique. Information systems for Supply Chain Management- Contemporary Logistics Information Technologies, e-enabled logistics management and tracking systems.

Planning & Sourcing in Supply Chain: Planning demand and supply: Demand forecasting – Type and Time horizon of forecast and category of forecasting, aggregate planning; Strategic sourcing; Sourcing decision in Supply Chain- selection of source, technical upgradation of vendor, vendor performance evaluation, vendor rationalization.

**References:**
1. Designing & Managing the Supply Chain, Simchi-Levi, David, TMH
2. Inventory Control and Management, Donald Waters, Wiley
SERVICES MARKETING

Course: BE-MBA IX th Semester

Paper: Elective-Marketing

Paper Code: IBM- 904

Time: 3 Hours

Course Duration: 45 Lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50       External Assessment: 100

Part-A

Marketing of services - Introduction - Growth of the Service Sector - The Concept of Service - Characteristics of Services - Classification of Services - Designing the Service-Blueprinting, Using Technology, Developing Human Resources, Building Service Aspirations.


Strategic Marketing Management for Services - Matching Demand and Supply through Capacity Planning and Segmentation - Internal Marketing of a Service - External versus Internal Orientation of Service Strategy.

Part-B


Marketing of Services with special reference to (a) Financial Services (b) Health Services (c) Hospitality Services including Travel, Hotels and Tourism. (d) Professional Services (e) Public Utility Services (f) Communication Services (g) Educational Services

ADVERTISING AND SALES MANAGEMENT

Course: BE-MBA IX th Semester

Paper: Elective-Marketing

Paper Code: IBM-905

Time: 3

Hours

Course Duration: 45 Lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50  External Assessment: 100

Part-A

Advertising: As an element in Marketing Mix, its role and importance; Advertising as a means of communication, Setting advertising objectives, DAGMAR approach to setting objectives.
Preparing advertising plan, Developing message, writing copy, advertising appeals and per-testing and post-teaching copy

Media decisions, media strategy and scheduling decisions; Planning and managing advertising campaigns; Different types of advertising, public relations; Industrial advertising; advertising budget and relevant decisions; Advertising agencies; their role and importance; management problems of agencies; client-agency relations; advertising in India, problems and prospects.

Part-B

Sales Management: Size of the sales force, sales organization based on customer, geography, product and combinations and current trends – sales training programs and motivating the sales force – sales force compensation, sales incentives and sales force evaluation – controlling the sales effort – sales quotas, sales territories, sales audit, selecting channel members, setting distribution objectives and tasks – Target markets and channel design strategies.

Product, Pricing and Promotion issues in Channel Management and Physical Distribution - Motivating channel members – Evaluating channel member performance – Vertical marketing systems – Retail co-operatives, Franchise systems and corporate marketing systems.

E-commerce and e-retailing as a channel of distribution, Electronic intermediaries, Disintermediation and Re-intermediation
INDIAN FINANCIAL SYSTEM

Course : BE-MBA IX th Semester

Paper: Elective-Finance

Paper Code: IBM- 906

Time: 3

Hours

Course Duration: 45 Lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50

External Assessment: 100

Part-A

Commercial Banking-Evolution, Financial Services, Fiduciary Services, Off-balance Sheet Activities, Analysis of Assets and Liabilities of Scheduled Commercial Banks; Reserve Bank of India-Central Banking- Introduction to Central Banking, Instruments of Monetary Control, Public Debt, Secondary Debt Market, REPO's, Reserve Requirements, Selective Credit Controls, Advances to Priority Sector, Supervision System; Regional Rural Banks- Objectives, RBI Assistance, Evaluation of RRB's.

Cooperative Credit- Introduction, Role of RBI, Organizational Structure, National Bank for Agriculture and Rural Development (NABARD), Reforms in Cooperative Credit.

Non-banking Finance Companies - Introduction, Definition of Non-banking Finance Company, Financial Sector Reform, Liberalization Measures for NBFC's, Regulations for NBFC's Accepting Public Deposits, Limits on Acceptance of Deposits, Size of Non-banking Companies, Deposits, Distribution of Deposits, Comparison of NOF and Deposits, Capital Issues by Finance Companies, FCNR Deposits for NBFC's, Assets of NBFC's, Investment Norms for NBFC's, Deployment of Funds, Funds Mismatch of HP/Leasing Companies.

Part-B


MANAGEMENT OF FINANCIAL SERVICES

Course : BE-MBA IX th Semester

Paper: Elective-Finance

Paper Code: IBM- 907

Time: 3 Hours

Course Duration: 45 Lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50

External Assessment: 100

Part-A

Financial Services - Meaning, types and their importance, Securities Trading - Online Vs Offline Trading, Demat and Remat, Depository - Introduction, Concept, depository participants, functioning of depository systems, process of switching over to depository systems, benefits, depository systems in India, SEBI regulation.

Insurance Services- Introduction, Principles of insurance, Types of Insurance, Life Insurance Products- Traditional and ULIPs, Credit rating - the concept and objective of credit rating, various credit rating agencies in India and International credit rating agencies, factors affecting credit rating & procedural aspects.

Part-B

Leasing - concept and development of leasing, business, difference between leasing & hire purchase, types of leasing business, advantages to lessor and lessee.

Venture capital - concepts and characteristics of venture capital, venture capital in India, guidelines for venture capital.

Call money market, Treasury bill market, Commercial Bill market, Market for CPs and CDs, Discount market and market for financial guarantees, Factoring - Development of factoring types & importance, procedural aspects in factoring, financial aspects, prospects of factoring in India.
Plastic Money - Concept and different forms of plastic money - credit and debit cards, pros and cons. Credit process followed by credit card organizations. Factors affecting utilization of plastic money in India.

2. Nalini P T Financial Instruments and services PHI

CORPORATE TAX PLANNING

Course : BE-MBA IX th Semester

Paper: Elective-Finance

Paper Code: IBM- 908  Time: 3 Hours

Course Duration: 45 Lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50  External Assessment: 100

Part -A
Basic framework of direct and indirect taxes in India, Concept of Tax Planning, Meaning, importance and scope, Tax planning versus Tax avoidance and Tax evasion, Methods of Tax Planning, Areas of Tax Planning, Scale of business / Nature of business and its relation to Tax Planning.
Taxation of companies in India, Assessment of Business and other incomes of Joint Stock Companies , Tax planning and managerial considerations with reference to newly established Industrial Undertakings in certain specified areas like E.P.Z and E.O.U’s. Tax Planning with reference to amalgamations, Foreign collaborations and joint venture agreements
Tax Planning and Financial management – Tax planning with reference to capital structure, capital budgeting and management of working capital, Tax considerations in issue of bonus, shares and dividend policy.

Part-B
Tax Planning with regard to specific management decisions like Make of Buy , own on Lease repair , renewal, replace , closure or continuance , Maintenance of proper records of complying with requirement of tax laws, deductions of Tax at source, advance payment of tax, time for payment and filing of income tax returns, types of assessments and procedure, defaults and penalties.
Tax planning in respect of excise duty, custom duty and sales tax, maintenance of proper records for complying with the requirements of indirect tax laws, filing of returns under different indirect tax laws, details and penalties under indirect tax laws.
1. Singhania. V.K Direct Taxes :Planning and Maintenance (Tax Man publications)
2. Lakhotia.R.N, Corporate Tax Planning
3. Bhagwati Prasad, Corporate Taxation –A Hand Book (Tax Man)

E-COMMERCE

Course : BE-MBA IX th Semester

Paper: Elective-IT

*Paper Code: IBM- 909*
*Time: 3 Hours*

Course Duration: 45 Lectures of one hour each.

Part-A


Planning for a Ecommerce : Value chain analysis, SWOT analysis, studying trends and current technology, government incentives, hardware and software assessment for building a web store, intermediaries in Ecommerce.


Part-B

Security in ecommerce transactions: Public key infrastructure, process of getting a digital signature in India, types of digital signatures, role of intermediaries like Verisign.

Internet audience: study of internet audience, online consumer behavior, Online research: Click stream analysis, Search log analysis, emails, pop-ups, online focus group.

Online payment systems: On-Line Electronic Cash, Electronic Payment Schemes, Credit card secure electronic transaction, e-cheque, accumulating balance payment system, stored value payment system, digital wallets.
References

1. E-commerce Management, Text and cases, Sandeep Krishna Murthy, Cengage
3. Ecommerce, Strategy, Technology and Implementation, Gary.P.Schneider, Cengage
4. Web commerce Technology Handbook, Daniel Minoli, Emma Minoli, TMH

IT PROJECT MANAGEMENT

Course : BE-MBA IX th Semester

Paper: Elective-IT

Paper Code: IBM-910 Time: 3 Hours

Course Duration: 45 Lectures of one hour each.

Part-A

Software development process: waterfall model, prototyping, spiral model, software configuration management process, process management- capability maturity model

Software requirement analysis and specification: problem analysis, data flow diagram, entity-relationship modeling, decision tables, creating a requirement document

Planning a software project: cost estimation-COCOMO model, schedule and milestones, personnel plan, software quality assurance plans, configuration management plans, project monitoring plans, risk management

Part-B

Function-Oriented design: Modularity, Top-down and bottom-up strategies, structure charts, first-level factoring, design heuristics, Metrics- network metrics, stability metrics, information flow metrics

Object oriented design (OO): classes and objects, encapsulation, inheritance and polymorphism, OO design notation and specification, dynamic modeling, metrics- Weighted Methods per Class (WMC), Depth of Inheritance (DIT), Number of Children (NOC), Coupling between Classes (CBC)

Software testing: error, fault and failure, top-down and bottom-up approaches, test cases and test criteria, functional testing- equivalence class partitioning, cause-effect graphing, structural testing-control based criteria, data flow based criteria
Software delivery: models, managing IT project teams

References:

1. Software Engineering, Ian Sommerville, Addison-Wesley
2. Software Engineering Project Management, R. Thayer, Wiley

DECISION SUPPORT SYSTEMS

Course: BE-MBA IX th Semester

Paper: Elective-IT

Paper Code: IBM-911

Time: 3 Hours

Course Duration: 45 Lectures of one hour each.

Part-A

Distinction between Transaction Processing System (TPS), Management Information System (MIS), Expert System (ES) and Decision Support System (DSS)

Architectures of DSS system: components, classifications, backend and front end components of DSS, Web based DSS, Group Decision Support System (GDSS), technologies and infrastructure for group decision making, distributed computing

Modeling for DSS: the decision making modeling process, Intelligence, design and choice phases, design under certainty, risk and uncertainty, sensitivity analysis, what-if, goal-seek and scenario analysis with spreadsheets

DSS design to support operational, tactical and strategic decision making

DSS design methodology for Healthcare, Insurance, Manufacturing and Education sectors

Part-B

Enterprise Decision Support System (EDSS): Characteristics and capabilities of EDSS, integrating DSS and EDSS, Computerized systems like CRM, ERP, MRP and their design basics, EDSS and supply chain, Corporate Enterprise portals and their design, Electronic Document Management (EDM) systems
Importance of Knowledge Management Systems (KMS) and its integration with DSS, Design of Knowledge Management System for different sectors, Artificial Intelligence based DSS systems.

Reference

1. Decision Support Systems and Intelligent Systems , E.Turban, J.E.Aronson , Pearson

TRAINING AND DEVELOPMENT

Course : BE-MBA IX th Semester

Paper: Elective-HR

*Paper Code: IBM- 912*  
Time: 3

Hours

Course Duration: 45 Lectures of one hour each.

**Note:** Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50  
External Assessment: 100

**Part-A**

National Training Interventions : Training as an economic instrument, achievements and challenges, National initiatives : 1964 to the present day, the European scene, which way forward.

Attitudes Towards Education and training : Education, training and work, changes in attitudes to training and development, Philosophies of training. Learning and Training : What do we understand by learning, Reinforcement theories, cybernetic and information theories, cognitive theories and problem solving, experimental learning, Learning to learn and self-development, Mental process, other horizons.

The Learner and the Organization : The learner, the organization as a learning environment, the learning organization. Approaches to Training Interventions : Organization learning systems, Generalized approaches, Planned training interventions, the costs and benefits of training interventions.

**Part-B**

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The Training Function in Organizations: The training function, Management's responsibility for training, Creating and appropriate structure, The training of training staff, Ethical standards

Assessing Organizational Training Needs: The levels of organizational needs, types of organizational reviews, before starting the review, reasons for an organizational review, carrying out an organization-wide review.

Training Policy, Plans and Resources: Training policy, policy development, annual training plan, training resources, from policy to training plan and budget, Assessing Training Needs-the job and the individual: Job training analysis, Analytical techniques, Carrying out an individual training needs analysis, assessing performance.

Determining and evaluating training interventions: Training interventions, determination of training objectives, determination of the appropriate training strategy, planning and implementation of the training, evaluation of the programme.

ORGANIZATIONAL CHANGE AND DEVELOPMENT STRATEGIES

Course: BE-MBA IX th Semester

Paper: Elective-HR

Paper Code: IBM-913

Time: 3 Hours

Course Duration: 45 Lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50

External Assessment: 100

Part-A

Values, Assumption, And Beliefs in OD- Chronology of Events in Management and organization Thought, early Statement of OD values and assumptions, A Values Study.


OD Interventions :Thinking about OD Interventions, Classifying OD Interventions.

Part-B


Intergroup and Third-Party Peacemaking Interventions :Intergroup Team-Building Interventions, Third party Peacemaking Interventions ,organization Mirror Interventions, Partnering.


INDUSTRIAL PSYCHOLOGY

Course : BE-MBA IX th Semester

Paper: Elective-HR

Paper Code: IBM-914

Time: 3 Hours

Course Duration: 45 Lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.
Internal Assessment: 50        External Assessment: 100

**Part-A**

Nature and scope of Industrial Psychology: Psychology and management, contributions of Freud and post Freudian development of Psychology

Factory organization: industrial bureaucracy, formal and informal groups, status system, balancing of social power, union and employer’s organizations

Psychology of leadership, understanding and motivating employees, industrial morale and job satisfaction, counseling, Psychology of industrial conflict, stress management

**Part-B**

Personality: Idiographic approach, Nomothetic approach, psychoanalytical perspectives, levels of awareness, defence mechanism, projective tests, Rorschach test, Thematic Appreciation Test (TAT), Role playing or visualization, stereotyping, brand personality

Trait perspective: Allport’s trait categories, Catell’s 16 PF test, personality tests, personality questionnaire, Type perspective- four humours, Sheldon’s typology, Eysenck’s typology, Factor theory, Jung’s typology, Allport’s typology

Intelligence: models, Stanford-Binet intelligence scale, Wechsler scale, Emotional intelligence

**References:**

1. Psychology in Organizations, S. Alexander Haslam, Sage publications

**STRATEGIC MANAGEMENT**

Course: BE-MBA X th Semester

**Paper – Compulsory**

*Paper Code: IBM-1001*  
*Time: 3 Hours*

Course Duration: 45 Lectures of one hour each.

**Note:** Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.
Part -A
Definition, nature, scope, and importance of strategy; and strategic management (Business policy), Strategic decision-making. Process of strategic management and levels at which strategy operates, Role of strategists, Defining strategic intent: Vision, Mission, Business definition, Goals and Objectives.
Environmental Appraisal—Concept of environment, components of environment (Economic, legal, social, political and technological).
Environmental scanning techniques- ETOP, QUEST and SWOT (TOWS) PEST.
Internal Appraisal – The internal environment, organisational capabilities in various functional areas and Strategic Advantage Profile. Methods and techniques used for organisational appraisal (Value chain analysis, Financial and non financial analysis, historical analysis, Industry standards and benchmarking, Balanced scorecard and key factor rating). Identification of Critical Success Factors (CSF).

Part -B
Strategic Management of Technology and Innovation- Licensing new technology, imbibing new technology, searching for strategic partners in new business areas, Internal and external sources of technology , linking new technology and novel customer needs ,building competence through new product development, technological innovation and strategy

Recommended Text Books
GLOBAL MARKETING

Course : BE-MBA   Xth Semester

Paper: Elective-Marketing

*Paper Code: IBM-1002   *Time: 3

Course Duration: 45 Lectures of one hour each.

**Part-A**

Global Marketing: Development of Global Marketing, market characteristics, Industry conditions, marketing infrastructure, regulatory framework, basis for trade- absolute vs comparative advantage, protectionism and trade restrictions, tariffs, quotas, GATT

Selecting markets: list of selection criteria, market index for country selection, grouping global markets, consumer market, business market and government market, categorizing global marketing mindsets, global market entry strategies- exporting, local production, ownership

Pricing for global markets: transportation cost, tariffs, taxes, local production costs, channel costs, market and environmental factors affecting price, determining transfer prices, dealing with parallel imports or gray markets, sources of finance- commercial banks, government sponsored financing

**Part-B**

Developing new products for global markets: three strategic choices – extension, adaptation, invention, role of foreign subsidiaries in R&D, acquisitions as a route to new products, joint venture route to new products, concept test, test marketing

Developing a global distribution strategy: distribution density, channel length, channel alignment, distribution logistics, locating and selecting channel partners

Planning and controlling global marketing: selecting control metrics, resolving conflicts between headquarters and subsidiaries

**References:**

2. Global Marketing, Johny K.Johansson, TMH
CONSUMER BEHAVIOR
Course : BE-MBA  X th Semester

Paper: Elective-Marketing

Paper Code: IBM-1003

Time: 3

Hours

Course Duration: 45 Lectures of one hour each.

Part-A
Current trends in Consumer Behavior (CB), Consumer empowerment through the web, Information bank for understanding CB, consumer need arousal, need recognition, consumer Psychological set, consumer information search and processing, Brand evaluation, Purchase and post purchase behavior Consumer learning, Habit and Brand Loyalty, unplanned purchase behavior, strategic implications of low-involvement decision making, situational influences, use of situational variables in marketing strategy, consumer perception, perception interpretation, price perception, Attitude development for change, lifestyle and personality

Part-B
Group and culture influences, culture values, cross-culture values, subculture influences, reference group influences, House-hold decision making, group communication – word of mouth as diffusion process, Market segmentation and Micromarketing Marketing communication process – source effects in marketing communication, message effects, media effects, consumer decoding of marketing communication, Alternatives evaluation and selection- how consumers make choices, evaluation criteria, decision rules for Attribute based choices

Consumer Rights and Social responsibility

1. Consumer Behavior – Insights from Indian Market, Majumdar, PHI
2. Consumer Behavior – A Strategic Approach , Henry Assael , Biztantra (Dreamtech)

INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT

Course : BE-MBA  X th Semester

Paper: Elective-Finance

Paper Code: IBM-1004

Time: 3

Hours

Course Duration: 45 Lectures of one hour each.
**Note:** Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50  
External Assessment: 100

**Part-A**


Risk and Return: Concept of Risk, Components of Investment Risk, Measurement of Risk through Standard Deviation, Regression Equation, Covariance, Concept of Return, Expected Yield, Actual Yield, Holding Period Yield, Relationship between Risk and Return


**Part-B**


2. Investment Management - Lofthouse, Stephen , John Wiley & Sons Publications

INTERNATIONAL FINANCIAL MANAGEMENT
Course : BE-MBA X th Semester

Paper: Elective-Finance

Paper Code: IBM-1005  Time: 3
Hours

Course Duration: 45 Lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50  External Assessment: 100

Part-A
Global Financial markets and interest rates: domestic and offshore markets, Euromarkets, Interest rates in the global money markets, money market instruments
Foreign exchange market: types of transactions and settlement dates, exchange rate quotations and Arbitrage, exchange rate determination and forecasting
Forwards, Swaps and Interest parity: Swaps and deposit markets, interbank forward dealing, option forwards, Exchange Rate Agreements and Foreign Exchange Agreements (FXA), Forward currency markets in India

Part-B
Currency and Interest rate futures: futures contracts, markets and trading process, future prices expected spot prices and forward prices, option pricing models, Over the Counter (OTC) market prices
Hedging, Speculation and Management of Transaction exposure: Hedging with money market, currency options, currency futures, internal hedging strategies
Management of Interest Rate Exposure: Forward Rate Agreements (FRAs), Interest
STRATEGIC FINANCIAL MANAGEMENT

Course: BE-MBA  X th Semester

Paper: Elective-Finance

Paper Code: IBM- 1006  Time: 3

Course Duration: 45 Lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50  External Assessment: 100

Part-A
Options, Futures and Corporate finance: call options, put options, valuing options, option pricing formula, stocks and bonds as options, capital structure policy and options Warrants and convertibles: difference between warrants and call options, warrant pricing and Black-Scholes model, value of convertible bonds Derivatives and Hedging risk: forward contracts and futures contracts, interest-rate futures contracts, duration hedging

Part-B

References:
1. Mergers, Restructuring and Corporate Control, Weston, Chung, Hoag , PHI
2. Corporate Finance, Ross, Westerfield, Jaffe, TMH
ERP

Course: BE-MBA  X th Semester

Paper: Elective-IT

Paper Code: IBM- 1007

Time: 3 Hours

Course Duration: 45 Lectures of one hour each.

Part-A

ERP Package selection: Need assessment, Justifying ERP implementation, cost benefit analysis, ERP package evaluation and selection, make or buy decision

ERP systems development process: ERP implementation life cycle, planning, requirement analysis, reengineering vs customizing, transition strategies - big bang, phased, parallel, hybrid, implementation-hidden costs

ERP systems: Sales and Marketing - sales and distribution, sales forecasting, product pricing systems, billing systems ERP and Customer Relationship Management (CRM), Accounting and Finance - cash management process, capital budgeting process, financial accounting and management accounting Production and Materials management - MRP system, capacity planning process, manufacturing execution systems, Human Resources - compensation and benefits administration

Part-B

Managing an ERP project: Risks in ERP implementation, managing large scale ERP projects, project team selection, user training, technological challenges, operation and upgradeation issues

Role of consultants and vendors: maintenance of ERP system, future trends and directions in ERP, open source ERP systems

References

1. Enterprise Resource Planning, Mary Sumner, Pearson
2. Enterprise Resource Planning, Alexis Leon, TMH
DATA WAREHOUSING & DATA MINING

Course: BE-MBA  X th Semester

**Paper: Elective-IT**

**Paper Code:** IBM-1008   **Time:** 3 Hours

Course Duration: 45 Lectures of one hour each.

**Part-A**

Data Warehousing (DW): components of DW, DW and data marts, planning for DW, specifying business requirements, DW and Meta Data, dimensional modeling, slowly changing dimensions type1, 2 and 3, factless fact tables, aggregate fact tables, data extraction, transformation and loading (ETL), ETL tools, indexing the DW, DW and OLAP

Data mining: preprocessing data for data mining, descriptive data summarization, data cleaning, prediction modeling with simple linear regression and multiple regression, logistic regression

Classification data mining modeling: classification by decision tree induction, tree pruning, Bayesian classification, classification by back propagation in Neural networks

**Part-B**

Mining frequent patterns and associations: market basket analysis, Apriori Algorithm, web mining, web log analysis, text mining

Cluster analysis: interval scaled variables and binary variables, cluster analysis by partitioning, hierarchical methods, density based methods, clustering based on distance

Open source data mining software and proprietary software

**References:**

1. Data Mining –Concepts and Techniques, J.Han, Micheline Kamber, Elsevier
2. Data Mining –Methods and Models, Daniel .T.Larose, Wiley
3. Data Mining- Galit Shimuli, Wiley
STRATEGIC HUMAN RESOURCE MANAGEMENT

Course : BE-MBA X th Semester

Paper: Elective-HR

Paper Code: IBM-1009

Time: 3 Hours

Course Duration: 45 Lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50

External Assessment: 100

Part-A

Introduction to Strategic Human Resource Issues , Challenges of Career development, Diverse work force development, self development, Pay-for-performance systems, Types of Pay-for-performance plans- individual based, team based, plant wide and corporate level

Hofstede’s cultural orientation model , FIRO-B questionnaire , Johari Window questionnaire,HR metrics and importance, Factor analysis in HR Research, competency mapping models and framework

Part-B

Determining the mix of Host-country and expatriate employees, the challenges of expatriate assignments, selective training , career development and compensation of expatriate employees, developing a global HR system and pay system , international staffing managing diversity, off shoring, equal employment opportunities, repatriation – problems and solutions, HR strategies and orientation for Mergers

Managing employee separation, Downsizing and outplacement , cost and benefits of employee separation, types of early separation (voluntary and Involuntary) , features of early retirement policies, managing layoffs, alternatives to layoffs, the goals of outplacement.

3. Human Resource Research methods , Dipak Kumar Bhattacharyya , Oxford
MANPOWER PLANNING & PERFORMANCE APPRAISAL

Course : BE-MBA  X th Semester

Paper: Elective-HR

Paper Code: IBM- 1010

Time: 3 Hours

Course Duration: 45 Lectures of one hour each.

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part-A and two from Part-B.

Internal Assessment: 50          External Assessment: 100

Part-A

Manpower planning: setting up objectives, aligning manpower planning with strategic business goals, Role analysis, job analysis, job specification, job description

Recruitment and selection: recruitment and legislation, fair employment practices, recruitment, hiring procedure, forecasting human resource requirements, managing growth and replacement of top executives

Part-B

Performance appraisal: need for performance appraisal, parameters of performance appraisal, computerized performance appraisal systems, self appraisal questionnaire, 360 degree performance appraisal systems

Comparing performance appraisal and performance management, graphic rating scales, paired comparison method, forced distribution, critical incident, behavioral anchored rating scales, web-based performance appraisals, conducting appraisal interviews