PANJAB UNIVERSITY, CHANDIGARH-160014(INDIA)
(Estd. under the Panjab University Act VII of 1947-enacted by the Govt. of India)

FACULTY OF ENGINEERING & TECHNOLOGY

SYLLABI

AND THE

REGULATIONS

FOR

Bachelor of Engineering MBA(Electronics & Communication)
Third-Eighth Semesters
Examinations, 2012-2013

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SCHEME OF EXAMINATION FOR
BACHELOR OF ENGINEERING MBA (ELECTRONICS & COMMUNICATION) 2012-13
Scheme of Examination of B.E.

Third Semester

<table>
<thead>
<tr>
<th>Theory Paper Code</th>
<th>Paper Title</th>
<th>Hours/Week L+T</th>
<th>Credit Theory</th>
<th>Marks Uni. Exam</th>
<th>Int. Marks</th>
<th>Hours/Week</th>
<th>Credit Practical</th>
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* marks refer to mid semester evaluation and end semester evaluation

Fourth Semester

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* marks refer to mid semester evaluation and end semester evaluation
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*Summer Training will be evaluated as Satisfactory/Unsatisfactory.*

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* marks refer to mid semester evaluation and end semester evaluation
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* marks refer to mid semester evaluation and end semester evaluation

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#### OPTION -1

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#### Elective – I and Elective II (Any Two):
- EC808: Digital Image Processing
- EC809: Advanced Digital Communication
- EC810: Neural Networks & Fuzzy Logic
- EC811: Embedded System Design
- EC812: Solid State Devices Modeling and Simulation
- EC813: Analog & Mixed Signal Design
**OPTION - 2**

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* marks refer to mid semester evaluation and end semester evaluation

In 8<sup>th</sup> semester, student can exercise **Option 1 or Option 2** according to the following conditions:

A student may opt for one semester training in lieu of subject of 8<sup>th</sup> semester. The marks for six months training will be equal to the total marks of 8<sup>th</sup> semester study. A student can opt for six months semester training under following conditions:

a. The student got selected for the job in campus placement and the employer is willing to take that student for the training.

b. The student got offer of pursuing training from reputed government research organization/ govt. sponsored project/govt. research institution provided that student should not be paying any money to get trained. For pursuing this training student need the prior approval from the chairperson/coordinator of the respective department/ branch.

* marks refer to mid semester evaluation and end semester evaluation
## IX Semester

(Students to select 3 subjects from major subject and 2 subjects from minor subject in IX Semester)

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<td>Compulsory (Marketing) Strategic Management</td>
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<td>Elective (Marketing) Consumer Behavior</td>
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<td>Elective (Finance) Investment Analysis and Portfolio Management</td>
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<td>Elective (Finance) International Financial Management</td>
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<td>1006</td>
<td>Elective (Finance) Strategic Financial Management</td>
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<td>Elective (IT) Enterprise Resource Planning (ERP)</td>
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<td>Elective (IT) Data Warehousing &amp; Data Mining</td>
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<td>Elective (HR) Strategic Human Resource Management</td>
<td>3 0 0</td>
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<td>Elective (HR) Manpower Planning and Performance Appraisal</td>
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STUDENTS HAVE TO SELECT 2 SUBJECTS FROM THE MAJOR SUBJECT AND 2 FROM MINOR IN X SEMESTER.
THIRD SEMESTER

Paper Title: - Semiconductor Electronics (Theory)

Paper Code: EC 311

Max. Marks/ Credit: 50/3

Time: 3 hours

Course duration: 45 lectures of one hour duration each

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

PART A

Transistor characteristics: [10]
Junction transistor, transistor current components, current gain, transistor as an amplifier, common emitter, common base, common collector configurations, Input & output characteristics in CE, CB & CC configurations, photo transistor & its characteristics, Unijunction transistor & its characteristics.

Transistor at low frequencies: [07]
Graphical analysis of CE configuration two port devices and hybrid model, h-parameters, Comparison of amplifier configurations of circuits

Transistor biasing and Thermal stabilization: [07]
Concept of biasing & biasing of BJT circuits, Operating point, bias stability, stabilization against variation in Ico, Vbe, and β, thermal run away, thermal stability.

PART B

Field Effect Transistor: [10]
Junction Field Effect Transistors, JFET characteristics, pinch off voltage and equivalent circuit, MOSFETs - their modes of operation and characteristics, equivalent circuit, biasing of FETs.

Classification of amplifiers, Class A large signal amplifier, second and higher harmonic distortion, transformer coupled amplifiers, Efficiency of amplifiers, Push pull amplifiers (class A & class B).

Recommended Books:
1. Integrated Electronics, Millman & Halkias (Mc-Graw Hill)
2. Microelectronics Circuits, AS Sedra & KC Smith (OXFORD)
3. Electronics Devices & Circuit Theory, RL Boylestead & L Nashelsky (PHI)
4. Electronic Circuit Analysis & Design, Donald A. Neamen (TMH)

Paper Title: - Semiconductor Electronics (Practical)

Paper Code: EC361

Credit: 1

List of Experiments
1. To study the specifications sheet & draw the characteristics of transistor in CB or CE configuration.
2. To study the specification sheet & draw the characteristics of FET in CD or CC configuration.
3. To draw the frequency response of a single stage BJT amplifier.
4. To measure the voltage and current gain of a BJT amplifier.
5. To measure the distortion in the output of a push pull amplifier.
To simulate the following using P-spice
1. Frequency Response of a single state FET amplifier.
2. Voltage and current gain of BJT amplifier.
3. Distortion of a push pull power amplifier.

Paper Title: - Signals & Systems

Paper Code: EC 312                Max. Marks / Credit: 50/4                Time: 3 hours

Course duration: 45 lectures of one hour duration each

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

PART A

Signals & Systems: (7)
Classification of Signals, Transformations of independent variable, Elementary Signals, Continuous time and Discrete time systems, System Properties.

Linear Time Invariant Systems: (7)
Convolution sum and integral, Properties of LTI systems, Systems described by differential equations and difference equations.

Fourier series Representation: (5)
Response of LTI systems to complex exponentials, Fourier series representation of continuous time and discrete time periodic signals, Properties of continuous time Fourier series, Properties of discrete time Fourier series, Filtering.

The Continuous Time Fourier Transform: (4)

PART B

The Discrete time Fourier Transform: (5)

Sampling: (2)
The sampling Theorem, Reconstruction using Interpolation, Aliasing.

The Laplace Transform: (8)

The Z-Transform: (7)

Recommended Books:
2. Haykin, S., Van Veen, B.; "Signals and Systems";2e; Wiley; 2003
Paper Title: Filters & Transmission Lines (Theory)

Paper Code: EC 313
Max. Marks/ Credit: 50/3
Time: 3 hours

Course duration: 45 lectures of one hour duration each

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

PART A

Impedance Functions and Networks functions:
Concept of complex frequency, Transform Impedance and transform circuits, Network functions for the one port and two port, Calculation of network functions, Poles and Zeros for Network functions, Restrictions on Poles and Zeros, Locations for Driving Point and Transfer functions, Time domain behavior from Pole and Zero plot, Stability of Active networks.

Filter Synthesis:
Classification of filters, Characteristics, impedance (input & characteristic) and propagation constant of pure reactive network, Ladder Network, T-section, Π-section, Pass and stop bands, Constant -k low pass and high pass filters, m-derived T and Π-section, Design of k and m-derived filters, Band pass filters, band elimination filters, Composite filters.

PART B

Two Port Parameters:
Relationship of Two port variables, Short Circuit Admittance and Open circuit Impedance parameters, Transmission and hybrid parameters.

Sinusoidal Steady State Analysis:
Network Synthesis for two terminal network, Foster and Cauer forms.

Transmission Lines:
Line parameters, Inductance and capacitance of a line of two parallel conductors, inductance of coaxial line, Line of Cascaded T-section, Transmission line-general solution, Physical significance of the equations, the infinite line, wavelength, velocity of propagation, waveform distortion, distortionless line, telephone cable, Reflection on a line not terminated in Z0, Reflection constant, Line calculation, Input and transfer impedance, open and short circuited lines, Reflection factor and reflection loss, parameters of open wire line and coaxial line at high frequencies, constants for the line of zero dissipation, Voltage and currents on dissipationless line, standing wave nodes, standing wave ratio. Input impedance of dissipationless line, power loss in unmatched lines, single stub matching and smithchart.

Recommended Books
Paper Title: Filters & Transmission Lines (Practical)

Paper Code: EC363  Credit: 1

List of Experiments
1. To Design & implement a constant K low pass / high pass filter.
2. To Design & implement a band pass filter.
3. To Design & implement a m-derived low pass / high pass filter.
4. To Design & implement a composite low pass / high pass filter.
5. To Measure the characteristics and attenuation of a Transmission line.
6. To Measure the input impedance of a Transmission line.
7. To Measure phase displacement between the current and voltage at input of Transmission line.
8. To Study the Frequency characteristics and stationary waves of a Transmission line.
9. To Measure Signal Phase shift along the line.
10. Fault localization within the line.

Paper Title: Digital Electronics (Theory)

Paper Code: EC 314  Max. Marks/ Credit: 50/3  Time: 3 hours

Course duration: 45 lectures of one hour duration each

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

PART A

Introduction [10]
Representation of Logic, Logic Variables, Boolean Algebra, Boolean Expressions and minimization of Boolean expression using K-Map (up to five variables), Review of Logic Gates, Design & Implementation of Adder, Subtractor, Multiplexer, De-multiplexer, Encoder, Decoder, ROM, Digital Comparators, Code Converters

Flip-Flops [4]
A 1-bit memory cell, clocked & unlocked flip flop, S-R Flip-Flop, JK Flip-Flop, Race around Condition, Master Slave Flip-Flop, D & T type Flip-Flop, Excitation table of Flip-flops, Conversion of flip-flops

Counters & Shift Registers [8]
Ripple Counters, Design of Modulo-N Ripple counter, Presettable Counters, 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

PART B

Data Converters [6]
Sample & Hold switch, D/A converters: Weighted resistor type, R-2R Ladder type, Modified weighted resistor type; A/D Converters: Flash type, Successive Approximation type, Counter-Ramp type, Dual Slope Type; Specifications of ADC & DAC

Digital Logic families [8]
Characteristics of digital circuits: fan in, fan-out, power dissipation, propagation delay, Noise Margin, Transistor-transistor Logic (TTL), Types of TTL Gates (Schottky, Standard, low power, high speed), Tristate Logic & its applications, Emitter Coupled Logic (ECL), CMOS, Comparison of characteristics of TTL, ECL, and CMOS.

**Semiconductor Memories & Programmable Logic**

Memory Organization, ROM, PROM, EPROM, EEPROM, RAM, Static RAM, Dynamic RAM cell, Memory Cell, Reading & Writing Operation in RAM, PLA, PAL & FPGA

**Recommended Books**

2. Digital System Principles & Applications by R J Tocci (PHI)
4. Integrated Electronics by Millman & Halkias, TMH

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**Paper Title: Digital Electronics (Practical)**

**Paper Code: EC364**

**Credit: 1**

**List of Experiments**

1. To Study the data sheets of TTL and ECL gates
2. Implementation of Adder and Subtractor using Logic Gates.
3. Implementation of Binary Adder/Subtractor.
5. Design & implementation of Combinational circuits using Multiplexers
6. Design and implement a Universal shift register having shift-right, shift-left, SISO, PIPO capabilities.
8. Implementations of Ripple counter.
10. Implementation of Synchronous counters with unused states and/or avoiding Lock Out condition.
11. To convert 8 bit Digital data to Analog value using DAC
12. To convert Analog value into 8 bit Digital data using ADC
13. To Perform Arithmetic & Logic operations on two 4-bit binary numbers using an ALU.
14. To Transfer the Data between Three Registers through Tristate Circuit
15. To Understand Decoder/Driver and their applications with display. To display a count from 00 to 99 with a delay of N seconds.

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**Paper Title: ORGANIZATION BEHAVIOR**

**Paper Code: IBM301**

**Max. Marks/ Credit: 100/3**

**Time: 3hours.**

**Course duration:** 45 lectures of one hour duration each

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

**Part-A**

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.


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
2. Organization Behavior, Stephen ,R.Robbins , Pearson
3. Organization Behavior ,Fred Luthans , TMH
Paper Title: Object Oriented Programming (Theory)

Paper Code: EC 315  Max. Marks/ Credit: 50/3  Time: 3 hours

Course duration: 45 lectures of one hour duration each

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

PART A

Principles of Objected Oriented Programming
Advantages of OOP, comparison of OOP with Procedural Paradigm

C++ Constructs
Tokens, Expressions and control structures, various data types, and data structures, Variable declarations, Dynamic Initializations, Operators and Scope of Operators, Typecasting, Unformatted and formatted console I/O Operations

Functions
Classes and Objects: Prototyping, Referencing the variables in functions, Inline, static and friend functions. Memory allocation for classes and objects, Arrays of objects, pointers to member functions.

Constructors and Destructors
Characteristics and its various types, Dynamic Constructors, Applications, Order of Invocation, C++ garbage collection, dynamic memory allocation.

Polymorphism
Using function and Operator overloading, overloading using friend Functions, type conversions from basic data types to user defined and vice versa.

PART B

Inheritance
Derived classes, Types of Inheritance, Types of classes, Invocation of Constructors and Destructors in Inheritance, Aggregation, Composition, classification hierarchies, metaclass/abstract classes.

Pointers
Constant pointers, Use of this Pointer, Pointer to derived and base classes, virtual functions, Bindings, Pure virtual Functions and polymorphism

I/O Operations and Files
Classes for files, Operations on a file, file pointers

Generic Programming with Templates
Definition of class template, Function Templates, Overloading Template Functions, Class templates and member functions templates with parameters, Standard C++ classes, persistent objects, streams and files, namespaces, exception handling, generic classes, standard template library: Library organization and containers, standard containers, algorithm and Function objects, iterators and allocators, strings, streams, manipulators, user defined manipulators and vectors

Introduction to Object Oriented System, Analysis and Design
Recommended Books
1. Object Oriented Programming with C++ By Bala Guruswamy, TMH, Edition 3rd
3. The C++ Programming Language By Bjarne Stroutstrup, Edition 3rd
5. The Complete Reference to C++ By Schidt, TMH, Edition 4th

Paper Title: Object Oriented Programming (Practical)

Paper Code: EC 365 Credit: 1

List of Experiments
1. Implementation of 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
FOURTH SEMESTER

Paper Title: Communication Theory

Paper Code: EC413  Max. Marks/ Credit: 50/4  Time: 3 hours

Course duration: 45 lecturers of one hour duration each
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART A

Review of Fourier series & Fourier transform of Continuous time signals, Delta Function, power & energy spectral densities, Sampling Theorem

Random Signal Theory [8]

Noise & Interference [10]
Classification of Noise, Sources of noises, atmospheric shots, Thermal noise, Frequency domain representation of noise, superposition of noises, AWGN, Linear filtering of noise, Quadrature components of noise, Noise spectral density, Noise calculations, Noise Figures of devices & circuits, cascaded networks, Minimum Noise Figures of networks. Noise Temperature

PART B

Baseband Pulse Transmission [8]
Optimum Filters-Matched filters, Error rate due to noise, Inter symbol Interference, Nyquist Criterion for distortionless baseband transmission, Correlative level coding.

Basic Information Theory [14]
Concept Information, Entropies of Discrete Systems, Rate of transmission- Redundancy, Efficiency & Channel capacity, Source encoding including Huffman’s Technique, continuous Channel-Entropy maximization, Transmission rate of Channels, capacity of Noisy channels. Discussion of Shannon’s Coding theorem, Comparison of Analog & Digital Communication Systems with reference to the Ideal Channel Capacity Theorem.

Recommended Books
4. “An Introduction to Information Theory” F M Reza,
Paper Title:- Analog Electronic Circuits (Theory)

Paper Code: EC 414

Max. Marks/ Credit: 50/4

Time: 3 hours

Course duration: 45 lectures of one hour duration each

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

PART A

Response of transistor Amplifier [9]
Review Biasing, classification of amplifier, distortion in amplifiers, frequency & phase response of an amplifier, RC coupled amplifier, its low and high frequency responses, transistor model at high frequencies for CE and Emitter follower configuration, high frequency response of two cascaded CE transistor stages

Feedback and Stability [6]
Introduction to feedback, Basic-Feedback Concepts, Ideal Feedback Topologies, Voltage (Series-Shunt) Amplifiers, Current(Series-Shunt) Amplifiers, Transconductance(Series-Series) Amplifiers, Transresistance (Shunt-Shunt) Amplifiers,

Operational Amplifier [10]
Differential Amplifier, Block diagram representation of a typical Op-amp, Interpreting of a typical set of data sheets, ideal op-amp, equivalent circuit of op-amp, ideal voltage transfer curve, open loop op-amp configuration, the practical op-amp, input offset voltage, input bias current, input offset current, total output offset voltage, thermal drift, noise, common mode configuration, CMRR, Frequency Response, Frequency response of internally compensated Op-Amps, Frequency response of Non-compensated OP-Amps, Open loop voltage gain as a function of frequency, Closed loop frequency response, Slew rate

PART B

Op-amp Applications [10]
DC and AC Amplifiers, summing, Voltage–to-current converter, current to voltage converter, the Integrator, the Differentiator, Comparator, Zero-crossing detector, Voltage to frequency and frequency to voltage converters, Clippers and Clampers, Sample and Hold Circuit, Instrumentation Amplifier.

Active Filter, Oscillators & Tuned Amplifiers [10]

Recommended Books
1. Electronics Circuit Analysis and Design by Donald A. Neamen, Tata McGraw Hill
3. Integrated electronics by Millman & Halkias, TMH, Latest Edition

Paper Title:- Analog Electronic Circuits (Practical)

Paper Code: EC 464

Credit: 1
List of Experiments
1. To study the Pspice Simulation software
2. Design fabrication & testing of Differentiator Circuits using Op-Amp & simulate using P-spice
3. Design fabrication & testing of Integrator Circuits using Op-Amp & simulate using P-spice
4. Design fabrication & testing of adder/Subtractor Circuits using Op-Amp & simulate using P-spice
5. Design fabrication & testing of Clippers and Clampers Circuits using Op-Amp & simulate using P-spice
6. Design fabrication & testing of Universal Active filter & simulate using P-spice
7. To study the frequency response of OP-Amp & simulate using P-spice
8. To design Butter worth Low pass filter & simulate using P-spice
9. To design Butter worth High pass filter & simulate using P-spice
10. To design Butter worth Band pass filter & simulate using P-spice
11. To design Monostable & Free running Multivibrator using 555

Paper Title: Microprocessors (Theory)

Paper Code: EC 415  Max. Marks/ Credit: 50/4  Time: 3 hours

Course duration: 45 lectures of one hour duration each
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART A
Microprocessor Architecture Memory, Input and Output Devices, The 8085 MPU, Example of an 8085-Based Microcomputer, Memory Interfacing, The SDK-85 Memory System.

Interfacing I/O Devices: [6]

Programming the 8085: [8]
Introduction to 8085 Assembly Language Programming, 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: [5]

PART B
Counters and Time Delays: [4]
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. [3]

Interrupts: The 8085 Interrupt, 8085 Vectored interrupts. [3]

Interfacing Data Converters: [4]

General –Purpose Programmable Peripheral Devices: [8]
The 8255A Programmable Peripheral Interface, Illustration: Interfacing Keyboard and Seven-Segment Display, Illustration: Bi-directional Data Transfer between Two Microcomputers, The 8254 Programmable Interval Timer, The 8259A Programmable Interrupt Controller, Direct Memory Access (DMA) and the 8257 DMA Controller, serial communication, Programmable communications interface 8251

Recommended Books

Paper Title:- Microprocessors (Practical)

Paper Code: EC 465 Credit: 1

List of Experiments
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.

Paper Title:- Communication Engineering

Paper Code: EC 416 Max. Marks/Credit: 50/4 Time: 3 hours

Course duration: 45 lectures of one hour duration each
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each part.

PART A

Amplitude Modulation Systems

Angle Modulation
Principles and generation of FM and PM signals, Reactance Modulator method, Armstrong Method, Detection of FM and PM signals, Slope Detectors, Foster Discriminator, Ratio detector, PLL detector, PLL and its characteristics, Pre-emphasis and De-emphasis, Noise consideration in FM and PM system, Block diagrams of FM Transmitter & FM receiver, Nonlinear effects in FM systems.

PART B

Pulse Modulation & Demodulation

**Baseband Pulse Transmission**


**Recommended Books**

1. Communication Systems by Simon Haykin, Wiley India Ltd.

**Paper Title:** Communication Engineering (Practical)

**Paper Code:** EC 466  
**Credit:** 1

**List of experiments**

1. To measure the modulation index of AM signals using the trapezoidal method
2. To study DSB/ SC AM signal and its demodulation using product Detector Circuit.
3. To study the voltages and waveforms of various stages of super-heterodyne receiver
4. To measure the sensitivity and selectivity of a super heterodyne radio receiver
5. To study the voltages and waveforms of various stages of FM Receiver
6. To study the pulse code modulation and de-modulation circuit
7. To study the Time division multiplexing and de-multiplexing circuits.
8. To study delta modulation and demodulation circuits.
9. To study sigma delta modulation and demodulation circuits.
11. Study of modulation techniques on MATLAB

**Paper Title:** Electromagnetic Theory (Theory)

**Paper Code:** EC 417  
**Max. Marks/Credit:** 50/4  
**Time:** 3 hours

**Course duration:** 45 lectures of one hour duration each

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

**PART A**

**Maxwell’s equation:**

Maxwell’s equations in their integral and differential forms, Maxwell’s equations in free space and in harmonically varying fields, Physical Interpretation and Boundary Conditions.
Plane waves in Dielectric and Conducting Media:  [16]
Conductors and Dielectrics, Wave equations in conducting and dielectric media its solution, Skin effect, relaxation time, impedance of the conducting medium. Reflection and transmission of the wave at a boundary, Poyntling Vector: application to energy radiation, Velocities of propagation: group velocity, phase velocity, wave polarization.

PART B

Guided Waves:  [9]

Wave Guides:  [12]
Rectangular and Circular waveguides: T.M. & T.E. Modes, Wave impedance and characteristic impedances, Attenuation factor and Q of waveguides.

Recommended Books:
3. Antennas and Wave Propagation by G S N Raju, Pearson publications, Edition 1ST

Paper Title:- IT FOR MANAGERS (Theory)

Paper Code: IBM401 Max. Marks/ Credit:50/3 Time: 3 hours

Course duration: 45 lectures of one hour duration each
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

Part A

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.

References:
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: **MARKETING MANAGEMENT**

**Paper Code:** IBM501  
**Max Marks/credit:** 50/3  
**Time:** 3Hrs

**Course duration:** 45 lectures of one hour duration each  
**Note for paper setter:** Total of *Eight* questions may be set covering the whole syllabus taking *four* from Part A & *four* from Part B. Candidates will be required to **attempt any five questions taking at least two from each Part.**

**Part A**

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

*Marketing Environment:* 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:* 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:**
1. Principles of Marketing, Philip Kotler, Pearson
2. Marketing Management, R. Saxena, TMH

Paper Title: HUMAN RESOURCE MANAGEMENT

Paper Code: IBM502 Max Marks/credit: 50/3 Time: 3Hrs

Course duration: 45 lectures of one hour duration each
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

Part-A


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.

Industrial relation and collective bargaining: Trade unions - Collective bargaining - future of trade
unionism. Discipline administration - grievances handling – managing dismissals and separation.

References:

Paper Title: Microcontrollers and Interfacing (Theory)

Paper Code: EC 507  Max Marks/credit: 50/4  Time: 3 hours

Course duration: 45 lectures of one hour duration each
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from
Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two
from each Part.

PART A
The 8051 Architecture: Overview of Microprocessor and Microcontroller, 8051 Architecture, Pin diagram,
I/O port structure, Memory Organization, Specific Function Registers, Memory, Reset operation.
Instruction Set Summary: Addressing modes, Instruction types. Timer Operation: Timer mode register,
Timer Control Register, Timer modes and overflow flag, Clocking sources, Starting Stopping, and controlling
the timers, Initializing and accessing timer registers, short intervals and long intervals, Baud rate generation,
Serial Port Operation: Serial port control register, Modes of operation, Initializing and accessing serial port
registers, Multiprocessor communications, Serial port baud rates

PART B
Interrupts: Interrupt Organization, Processing Interrupts, Program Design using Interrupts, Serial port
Interrupts, External Interrupts, Interrupt Timings, 8051 Assembly Language Programming: Assembler
operation, Assembly language program format, Assembler -time expression evaluation, Assembler
directives, Assembler controls, Linker operation, Macros, Program structure and design, Real World
Interfacing Interfacing of 8051 to LCD, ADC, DAC, Sensors, Stepper Motor, Keyboard. Interfacing to External
Memory, Interfacing to the 8255.

Recommended Books
   Asia.
   Penram International.
Paper Title: Microcontrollers and Interfacing (Practical)

Paper Code: EC 557                  Credit: 1

List of Experiments
1. Write programs for Data Moving Instructions, Byte Level and Bit Level Logical Operations, Rotate and Swap operations, Arithmetic Operations, Jump and Call Instructions, Calls and Subroutines, Interrupts and returns as follows:
2. Write a program to compute sum of N natural numbers.
3. Write a program to find the smallest element of an array of N integers.
4. Write a program to perform BINARY SEARCH on an array that is sorted in ascending order.
5. Write a program to compute the sum of odd elements of an array of 8-bit integers.
6. Compute the address of the elements of 5 x 5 matrix
7. Multiply two 2 x 2 matrices. Try to make it generalized.
8. Write programs for Timer Interrupts, Serial port Interrupts.
9. Write programs for Interfacing of 8051 to LCD, ADC, DAC, Sensors, Stepper Motor, keyboard, Interfacing to External Memory, Interfacing to the 8255.

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Paper Title: Antennas & Wave Propagation (Theory)

Paper Code: EC 509                  Max Marks/credit: 50/3                  Time: 3 hours

Course duration: 45 lectures of one hour duration each
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART A

Antenna Radiation
Antenna Parameters: Antenna impedance, Directional patterns, Effective length, Radiation Intensity, Directivity, Power gain, Efficiency, Effective area, Equivalent circuit, Front to back ratio, polarization and antenna temperature, Radiation field, Radiation power, Radiation resistance, Directivity and gain of an alternating current element, half wave dipole and quarter wave monopole, Effect of earth on patterns.

Antenna Arrays:
Multiplication of patterns, one dimensional broadside and endfire arrays, Feed network for arrays: series, shunt, delta matching, Impedance matching: Folded dipole, BALUNS and stubs, Yagi Uda array, log-periodic arrays, Dolph-Techebysheff arrays.

PART B

Practical Antennas:
Top loading and tuning, rhombic antennas, ferrite rod, whip antennas, Receiving antennas, frequency independent antennas.

Wave Propagation:
Modes of Propagation: Surface Wave Propagation, Sky Wave (Ionospheric) Propagation- Virtual height, Maximum usable Frequency, Skip Distance, Optimum working frequency, Space Wave (Tropospheric) Propagation- line of sight distance.
Recommended Books

1. Antennas and Wave Propagation by G S N Raju, Pearson publications
2. Antennas and Radio Wave Propagation by K D Prasad Satya Prakashan
4. Antenna and Radio Wave Propagation by Krauss, TMH
5. Antenna and Radio Wave Propagation by Ballanis, John Wiley & Sons

Paper Title: Digital System Design (Theory)

Paper Code: EC 510  
Max Marks/Credits: 50/3  
Time: 3 hours

Course Duration: 45 lectures of one hour each.

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

PART A

Combinational Circuits: [20]

Error Correction and Detection: Error detection and correction techniques, Single error detection, Single error correction with double error

Fault detection and Location in combinational circuits: Different methods of detecting and locating Faults in combinational circuits.

PART B

Sequential Circuits [25]
Synchronous circuits: Concept of state diagram and state table, state assignment, Analysis and synthesis of sequential circuits, designs of Next state decoder and output decoder, state reduction, Machine minimization of completely and incompletely specified machines.


Fault detection and Location in sequential circuits.

Recommended Books

1. Switching and Finite Automata Theory by Kohavi, TMH.
2. Switching Theory & Logic Design by Rao, Pearson Ed.
3. Digital circuits and Logic Design By Lee, PHI.
5. Switching circuits for Engineers, Marcus, PHI
6. Introduction to Digital systems, James Palmier, David Perlman
Paper Title: Digital System Design (Practical)

Paper Code: EC 560 Credit: 1

List of Experiments
1. To Design and test the minimized circuit of Full Adder.
2. To Design and test the minimized circuit of BCD to Binary Converter
3. Implement decade counter using minimum number of gates
4. To test the minimized circuit of Decimal to BCD Encoder
5. Design and test hexadecimal to binary Encoder
6. Implement and test BCD to 7-Segment decoder
7. Design a sequence detector to detect a given sequence
8. Design and test twisted type ring counter
9. Implement the minimized circuit of Modulo-6 counter
10. To design, implement and test a 16:4 multiplexer using logic gates.
11. To design, implement and test a 4:16 demultiplexer using logic gates.
12. Design & test Johnson Counter.

Paper title: Computer Networks (Theory)

Paper Code: EC511 Max Marks/credit: 50/4 Time: 3 hours

Course duration: 45 lectures of one hour duration each

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

PART A

Introduction: [5]

Physical Layer: [5]
Data Communication concepts, Wired and Wireless transmission media, Transmission Impairments and Performance, Parallel and Serial Transmission, Switching, Circuit Switching, Packet Switching, and Virtual Circuit Switching, Introduction to PSTN.

Data Link Layer [6]
Data link layer Design Issues, Framing, Error Detection and Correction, Flow Control, Sliding Window Protocols, HDLC, SLIP, and PPP.

Medium Access Control Sublayer [6]
Channel Allocation, ALOHA, Slotted ALOHA, CSMA, CSMA/CD, IEEE LAN Standards: Ethernet (802.3), Gigabit Ethernet, Wireless LAN (802.11), Broadband Wireless (802.16), Bluetooth.

PART B

Network Layer: [12]
Network layer Design Issues, IPv4 and IPv6 Structure and addresses, Routing algorithms– Shortest path, Flooding, Distance Vector Routing and Link State Routing; General principles of Congestion Control,
Congestion Control in Datagram and Virtual Circuit Subnets, Brief idea of Quality of Service, Internetworking, IP protocol, IP Addresses, Internet Control Protocols, Subnetting and Supernetting, ARP, NAT, DHCP.

**Transport Layer:**
The Transport Service, Elements of Transport Protocols, TCP & UDP Protocols

**Application Layer:**
Domain Name System, SMTP, FTP, TELNET, HTTP, WWW, SNMP, Multimedia, and Cryptography.

**Recommended Books**
SIXTH SEMESTER

Paper title: Advanced Microprocessors (Theory)

Paper Code: EC 607

Max Marks/credit: 50/4

Time: 3 hours

Course duration: 45 lectures of one hour duration each
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART A

8086 Architecture: [4]
CPU Architecture, Internal operation, addressing modes, instructions formats, Instruction execution timing.

Assembly Language Programming: [7]
Assembler Instruction formats, Data Transfer, Arithmetic, Branch, loop, machine control, logical, Shift and rotate instructions, Directives and operators.

Modular Programming: [4]
Linking & relocation, stacks, procedures, Interrupt and routines.

Byte And String Manipulation: [4]
String instruction, prefix, text editor, number format conversion.

I/O Programming: [3]
Fundamental I/O consideration programmed I/O, Interrupt I/O, Block Transfer and DMA.

PART B

System Bus Structure: [5]
Minimum mode, Maximum mode system bus timing and bus standard.

Numeric Data Processor: [8]
8087, NOP data types, Processor architecture

Intel 386 And 486 Microprocessors: [10]
Intel 386 Microprocessor, Intel 486 Microprocessor, 486DX Architecture, Register Organisation of 486 Microprocessor, memory organization, Virtual Memory, Memory Management Unit(MMU), Interrupts and Exceptions, Addressing Modes of 80486.

Recommended Books
2. Intel’s Microcontroller Handbook

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Paper Title: Advanced Microprocessors (Practical)

Paper Code: EC 657

Credit: 1

List of Experiments

1. Write a program to load register A, B, C and D with same constant (e.g.A1). Try to optimize your program in such a way that you use the smallest number of program bytes. Test your program in single step mode.
2. Assume that 4 bytes of data restored at consecutive locations of the data memory starting at location X. Write a program that loads register E with (X) i.e. With data contained at memory location X, D with (X+1), C with (X+2) and B with (X+3).  
   (a) Use direct addressing mode (LDA)  
   (b) Use register indirect addressing mode (M)  
   Test your program in single step mode.

3. (a) Write a program which tests the zero condition of data byte specified at data memory location X. If it is zero, a 00 should be stored at location X+1, otherwise FF.  
   (b) Write a program which tests the all–one–condition of data byte specified at date memory location X. If all the bytes are 1, store 01 at location X+1, otherwise 00.

4. Four bytes of data are specified at consecutive data memory locations starting X. Write a program which increments the value of 4 bytes by 1.

5. Two unsigned binary numbers are stored at consecutive data memory locations, X+1. Write a program for computing (X+1)-(X). The magnitude of the result should be stored at Y and the sign 00 if positive and 01 if negative at Y+1.

6. (a) A double precision number, i.e. a 16 bit unsigned number, is stored X and X+1, with low order byte at X. Another double precision number is stored at Y and Y+1. Add the two numbers and store the result a W and W+1.  
   (b) Same as (a). Subtract the two numbers and store the result at W and W+1.

7. A code word is stored at memory location X. Write a program for testing whether the code word belongs to 2/5 code, and set the location Y to FF if yes 00 if no. The code word is valid if three MSBs are zero and if the number if 1’s in the remaining 5 bits is 2 (2/5 Code).

8. A counter is defined as register (e.g. B) which gets decremented till zero. Define such a counter as subroutine. Write a program, which consist of two counters, You must implement the following steps  
   1. Set initial value of counter to 1.  
   2. Call counter subroutine.  
   3. Set initial value of counter to 2.  
   4. Call counter subroutine.  
   5. Go back to step 1.

9. (a) N binary numbers are stored at consecutive data memory locations, starting at x, where N is defined at data member location “NUMBER”. Find the largest number and display it in the data field.  
   (b) N binary numbers are started consecutive data member locations starting at X. Rearrange the numbers in ascending order.

10. A binary number is stored at data member locations X. Multiply the number by 10 and display the result in the address field (Hint: bx10=bx2 +bx8, a multiplication by 2 corresponds to a shift left on a bit).

11. An 8 bit binary number is stored at data memory locations. Y. Convert the decimal (BCD) and display the result in the address field.

12. Given 2 digit decimal number at data memory location X and X+1. Find the product using binary multiplications and display the result in address field.
13. Write a program for moving a data block starting address X to address Y. The addresses X, Y, as well as the block length are specified at some suitable data memory locations.

14. Write a program for moving a data block starting address X to address Y. The addresses X, Y as well as the block length are specified at some suitable data memory locations.

15. A two digit BCD number is stored at memory location X. Convert the number into binary and display the result in data field.

16. Divide a 16 bit number by a 8 bit number and display the result in data field.

17. Write a program for display of decimal numbers 00-99 in sequence with a delay of 15 seconds between any two consecutive numbers.

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Paper Title: Microwave Engineering (Theory)

Paper Code: EC608  Max Marks/Credit: 50/4  Time: 3 hours

Course duration: 45 lectures of one hour duration each

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

PART A

Waveguide Components: [12]
Transitions, Discontinuities, Matched loads, Shorts, Flanges, Bends & Twists, Attenuator & phase shifters, Microwave Hybrid Circuits: Waveguide Tees, Magic (Hybrid) Tees, Scattering matrix of tees, Hybrid Rings (Rat-Race Circuits), Directional Couplers: Two Hole Directional Couplers, Scattering matrix of a directional coupler, Hybrid Couplers, Multi-hole couplers. Propagation in ferrites, Faraday rotation, Microwave Circulators: 3 port circulators and Isolators, YIG filter rectangular, Microwave cavities: Rectangular, Cylindrical Cavity Resonators, Q-factor of cavity resonator, aperture coupled cavity.

Measurements: [4]
Slotted waveguide, Swept Frequency Technique Detectors, Power & Impedance measurement.

Solid State Sources – I: [8]
Microwave BJTs, Heterojunction Bipolar Transistors (HBTs) and Tunnel Diodes, Metal-Semiconductor Field Effect Transistors (MESFET), High Electron Mobility Transistors (HEMT), Transferred Electron Devices (TEDs): GUNN Diode, LSA Diodes.

PART B

Solid State Sources – II: [4]

Microwave Tubes: [12]
Microwave Linear Beam Tubes: Klystron, Multicavity Klystron, Reflex Klystron, Helix Traveling-Wave Tubes (TWT), Coupled Cavity Travelling-Wave Tubes, Microwave Crossed-Field Tubes: Cylindrical Magnetron.

Microwave Transmission Lines: [5]
Recommended Books
3. Microwave Engineering---Special topics--- R. Chatterjee, East-West Press
5. Elements of Microwave Engineering--- R. Chatterjee, East-West Press

List of Experiments
4. Measurement of SWR.
5. Reflex klystron mode curves.
6. Antenna radiation pattern.
7. Verification of Diode law.
8. Gunn Oscillator characteristics.
9. Directivity & Coupling of a directional coupler.
10. To verify the waveguide law.

PART A
Signal Space Analysis:
Geometric Representation of Signals, Gram-Schmidt Orthogonalization Procedure. [4]
Digital modulation techniques:
PSK, FSK, MSK, QAM. Error calculations for PSK, FSK, MSK, QAM, Shannon's limit, Signal to Noise Ratio Calculations in PCM and DM systems. [8]
Information theory and coding:
Entropy, Capacity of a Gaussian Channel. Block codes, Convolution coding and decoding, Soft and Hard decision decoding, State & Trellis diagrams, Viterbi Algorithm, Trellis decoded modulation. [10]

PART B
Multiplexing and Multiple Access: [8]
Allocation of communication Resources, FDM/FDMA, TDM/TDMA, CDMA, SDMA, Multiple Access Communications and Architecture, Access Algorithms.

Spread Spectrum Techniques: [8]

Signal design for band-limited channels for No Inter Symbol Interference: [7]
Pulse shaping to Reduce ISI, types of error-performance degradation, demodulation/detection of shaped pulses.

Recommended Books
1. Digital Communications by Bernard Sklar, PHI

Paper title: Digital Communication (Practical)

Paper Code: EC 659 Credit: 1

List of Experiments
1. Design and practical implementation of ASK systems
2. Design and practical implementation of PSK systems
3. Design and practical implementation of QPSK systems
4. Design and practical implementation of FSK systems
5. To study the application of CDMA in voice communications
6. To practically compare the noise in PCM and DM systems
7. To practically study Frequency Division Multiplexing.
8. To practically study Time Division Multiplexing.
9. Implementation of Viterbi algorithm using C-language

Paper Title: Computer Architecture & Organization (Theory)

Paper code: EC 610 Max Marks/credit: 50/3 Time: 3 hours

Course duration: 45 lectures of one hour duration each
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART A

Register Transfer and Micro-Operations [6]
Register Transfer Language, Inter Register Transfer Arithmetic, Complements, fixed and floating point Representation, Micro-Operations, Shift Micro-Operations and Control Operations.

Basic Computer Origination and design [6]
Instruction Codes, Computer Instructions, Timing and Control, Execution of Instructions, Input, Output and interrupt, Design of Computer.

**Computer Software**

**Control Processor Organization**
Processor Bus Organization, ALU stack Organization, General Register Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control, Microprocessor Organization, Pipelining, Parallel Processing.

**PART B**

**Micro program Control Organization**
Control Memory, Address Sequencing, Micro program Sequences, Microinstruction Formats, and Software Aids.

**Arithmetic Processor Design**
Comparison and Subtraction of unsigned Binary Numbers, Addition, Subtraction, Multiplication, Division Algorithm, Processor configuration and control

**Input-Output & Memory Organization**
Input-Output interface, Asynchronous Data Transfer, DMA, Priority Interrupt, I/O Processor, Virtual Memory, Cache Memory, Associative memory, Memory Management Hardware.

**Recommended Books**
1. M. Morris Mano, Computer system & Architecture, Pearson Education
3. M. Morris and Charles R. Kinre, Logic and computer design Fundamentals, Pearson Education

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**Paper Title: MANAGERIAL ECONOMICS**

**Paper Code: IBM601  Max Marks/credit: 50/3  Time of examination: 3hrs.**

Course Duration: 45 lectures of one hour each.

Note for the paper setter: Total of 8 questions may be set covering the whole syllabus. Candidate will be required to attempt any 5 questions selecting at least two from each part.

**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. Managerial Economics, Mote, Paul Gupta, Vikas Publisher, New Delhi
3. Microeconomics, Robert. Pindyck, Daniel Rubinfeld, Pearson

**Paper Title:** CORPORATE LEGAL ENVIRONMENT

**Paper Code:** IBM602 Max Marks/credit: **50/3** Time of examination: **3hrs.**

Course Duration: 45 lectures of one hour each.

Note for the paper setter: Total of 8 questions may be set covering the whole syllabus. Candidate will be required to attempt any 5 questions selecting at least two from each part.

**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
SEVENTH SEMESTER

Paper Title: Optical Communication (Theory)

Paper code: EC 708  Max. Marks: 100  Time: 3 hours

Course duration: 45 lectures of one hour duration each
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART A

Overview of Optical Fibre Communication: [03]
Elements of basic communication system, communication system architecture, advantages of optical communication, Definition of dB and dBm.

Optical Fibre Wave Guides: [06]
Ray Theory of Transmission: Total Internal reflection, Acceptance Angle, Numerical Aperture, Electromagnetic mode theory for optical communication of both types of fibers viz step index fiber and graded index fibres.

Signal Degradation in Optical Fibres: [10]
Attenuation, Material absorption losses, linear and non linear scattering losses, fiber bend loss, dispersion viz intermodal dispersion and intramodal dispersion, overall fiber dispersion and polarization mode dispersion, introduction to nonlinear effects: Self phase modulation, cross phase modulation, Stimulated Brillion and Raman scattering, Four Wave Mixing.

PART B

Optical Sources and Detectors: [10]
Sources: Basic principle of surface emitter LED and edge emitter LED - material used, structure, internal quantum efficiency and characteristics, LASER Diode - material used, structure, internal quantum efficiency and characteristics, working Principle and characteristics of Distributed feedback (DFB) laser.
Detectors: PIN photodiode - material used, working principle & characteristics, Avalanche Photodiode: - material used, working principle and characteristics.

Digital and Analog Transmission System: [12]
Overview of Analog Links, Carrier to Noise Ratio, Multichannel Amplitude &Frequency Modulation. Point to point Digital links, link power budget, Rise time budget, Introduction to Principle of WDM, Basic Application and types of Optical Amplifiers, Semiconductor Optical Amplifier, Erbium doped fiber amplifiers, Amplifier Noise.

Optical Fiber Measurements: [04]
Optical Power Meter, optical attenuator, Attenuation Measurements: Cutback technique, Insertion losses Method, Optical Time domain Reflectometer (OTDR), OTDR Trace, Eye Patterns.

Recommended Books
2. Optical Fiber Communication Principles & Practice by John M.Senior, PHI Publication
5. G.P Agrawal, "Fiber Optic Communication" Wiley Publisher
Paper Title: Optical Communication (Practical)

Paper code: EC 758  
Max. Marks: 50

List of Experiments

1. To study the propagation loss and bending loss in optical fiber.
2. To set up a fiber optic analog link.
3. To set up a digital fiber optic link.
4. Study of intensity modulation technique using analog and digital input signal.
5. To study the frequency modulation and demonstrate voice transmission through optic fiber using FM.
6. Measurement of optical power and propagation loss using optical power meter.
7. To determine the bit rate supported by the fiber optic link.
8. To study the characteristics of PIN diode.
9. To demonstrate the concept of WDM system.

Paper Title: Digital Signal Processing

Paper code: EC 709  
Max. Marks: 100  
Time: 3 hours

Course duration: 45 lectures of one hour duration each

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

PART A

Introduction:  (6)

Review of Transforms:  (6)

Frequency Domain Representation of Signals & Systems:  (11)
Discrete Fourier Transform and its properties, Divide and Conquer approach to computation of DFT, Filtering of long data sequences, Fast Fourier Transform, Decimation in time and Decimation in frequency algorithms, Discrete Cosine Transform, Wavelet Transform.

PART B

Digital Filters:  (11)
Ideal Filter vs Practical Filters, General Specifications and Design Steps, Comparison of FIR & IIR Filters, Design of FIR Filters using Window technique, Frequency sampling technique, Design of IIR Filters using
Impulse Invariance technique, Bilinear Transformation, Design of IIR Filters using Butterworth, Chebyshev and Elliptic filter, Digital frequency transformation.

**Implementation of Discrete Time Systems:**
(8)
Block diagrams and signal flow graphs for FIR and IIR systems, Direct form, Cascade form, Frequency Sampling Structures, and Lattice structures for FIR systems, Direct form, Cascade form, Parallel form, and Lattice and Lattice-Ladder Structures for IIR systems, Representation fixed point and floating point numbers, Finite word length effects, Arithmetic operations.

**Multirate Signal Processing:**
(5)
Basic Sampling rate alteration devices, Multirate structures, Multistage design, Polyphase decomposition, Introduction to digital filter banks.

**Recommended Books**

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**Paper Title:** Digital Signal Processing (Practical)

**Paper code:** EC 759
Max. Marks: 50

**List of Experiments:**
1. Introduction to MATLAB.
2. Generating & Plotting Discrete time signals.
3. Study the effect of noise on signals in MATLAB.
4. Inverse Z Transform.
5. Convolution of Causal & Non Causal sequences in MATLAB.
6. Auto & Cross-Correlation in MATLAB.
8. System Response to Arbitrary Inputs.
9. DFT & IDFT of two sequences.
10. FFT of two Sequences.
11. Circular Convolution.
13. FIR Filter Design using Window Method in MATLAB.
14. IIR Filter Design using Bilinear Transformation in MATLAB.
15. IIR Filter Design using Impulse Invariance in MATLAB.
16. Butterworth and Chebyshev Digital IIR Filters in MATLAB.
17. Implementation of Filter Structures.
18. Interpolation and Decimation of sequences.
20. Study of DSP kits.
Paper Title: Wireless Communication (Theory)

Paper code: EC 710  Max. Marks: 100  Time: 3 hours

Course duration: 45 lectures of one hour duration each
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART A

Introduction [12]
Evolution of Mobile Communication Systems, Paging systems, cordless telephone systems, cellular telephone systems, comparison of common wireless communication systems, 2G cellular networks, 2.5 G wireless network, HSCSD, GPRS, EDGE technology, 3G wireless network, UMTS, 3G CDMA2000, 3G TD-SCDMA, Wireless Local Loop, Blue tooth and Personal Area Networks.

System Design Fundamentals [9]
Frequency reuse, Channel alignment strategies, handoff strategies, interference and system capacity, improving coverage and capacity in cellular systems, parameters for mobile multipath channel, Small scale fading.

PART B

Modulation Techniques [10]
Amplitude modulation, Angle Modulation, Digital Modulation, Linear modulation techniques, Constant envelope modulation, spread spectrum modulation techniques, Equalization, Equalizers in communication receiver, Diversity techniques, RAKE receiver, Fundamentals of channel coding

Multiple Access Techniques [3]
FDMA, TDMA, CDMA, SDMA

Wireless Networking [4]
Difference between wireless and fixed telephone networks, development of wireless networks, ISDN

Wireless Systems [7]
GSM, GSM Architecture, CDMA digital cellular standard, IS-95 system.

Recommended Books
1. Wireless Communications Principles and practice by Theodore S. Rappaport, Prentice Hall India
2. Modern Wireless Communications by Simon Haykin, Michael Moher, PHI
3. Wireless Communication and Networking By Jon W Mark, PHI

Paper Title: Wireless Communication (Practical)

Paper code: EC 760  Max. Marks: 50

Note: Students are required to perform experiments from any six blocks by selecting at least two from each sub-block.

List of Practicals
1. Equipment orientation
   a. Familiarisation with spectrum analyser, simulation softwares, various kits to be used in the laboratory.
   b. Review of working of function generator, CRO, multimeter & other instruments.

2. Simulation and implementation of baseband digital signals
   a. Types of baseband signals: unipolar, polar, bipolar, RZ, NRZ, etc.
   b. Distortion and noise. Eye diagram.

3. Simulation and implementation of modulated digital signals
   a. PSK, ASK and FSK modulations.
   b. Demodulation with envelope detection and synchronous.
   c. PSK differential modulation.
   d. Quadrature modulations (QASK and QPSK).
   e. QAM modulation.

4. Global System for Mobiles (GSM)
   c. AT Commands
   d. Working of GSM mobile station.

5. Multiple Access
   a. Time division multiple Access
   b. Frequency division multiple access

6. Spread Spectrum communication systems
   a. Pseudo-noise coders
   b. Direct sequence spread spectrum communication systems
   c. Frequency hopped spread spectrum communication systems
   d. CDMA wireless computer communication systems

7. Channel Characteristics
   a. Multipath channel propagation characteristics
   a. Bit-error rate measurement

8. Wireless Networks
   a. Bluetooth wireless network.
   b. Wi-Fi
   c. Wi-Max

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Paper Title: ACCOUNTING FOR MANAGERS

Paper code: IBM701         Max. Marks: 100         Time: 3 hours

Course duration: 45 lectures of one hour duration each

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

Part-A

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.

References:
1. Managerial Accounting, Hilton, Ramesh , Jaidev , TMH

Paper Title:- STATISTICS & BUSINESS RESEARCH METHODOLOGY

Paper code:IBM702 Max. Marks: 100 Time: 3 hours

Course duration: 45 lectures of one hour duration each
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

Part A

Introduction to Descriptive Statistics: Types of Data , Measures of Central Tendency; Measures of Dispersion- Range, Quartile Deviation, Mean Deviation, and Standard Deviation, Skewness & Kurtosis.

Probability : Basic probability concepts , Joint probability, Conditional probability, Bayes Theorem, Random Variables and Discrete Probability distributions : Poisson, Binomial and Normal , Normally distributed variables , areas under the standard normal curve

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.

References:
1. Business Research Methods, William G. Zikmund, Cengage Learning India
2. Business Research Methods, Cooper, D.R. & Schindler, TataMcGraw-Hill
EIGHTH SEMESTER

Paper Title: Digital Image Processing (Theory)

Paper code: EC 808 Max. Marks: 100 Time: 3 hours

Course duration: 45 lectures of one hour duration each

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

PART A

Introduction [4]

Image Perception [8]
Structure of the human eye, light, luminance, brightness, contrast, image model, sampling and quantization-uniform and non uniform, basic relationships between pixels, Imaging geometry, Camera model, Perspective Transformation, stereo imaging.

Image Enhancement [10]
Spatial domain methods, Enhancement by point processing, histogram processing, image subtraction, image averaging, spatial filtering, smoothing filters, sharpening filters, Enhancement in the frequency domain, Color image processing.

PART B


Image Compression [12]

Recommended Books
1. Digital Image processing by R.C. Gonzalez and R.F. Woods (Pearson Education)
4. Digital Image Processing and Analysis, by B. Chandra and D. Dutta Majumder
5. Algorithms for Image Processing and Computer Vision by James R. Parker
7. Digital Image Processing using MATLAB by Woods & Gonzalez (Pearson Education)
Paper Title: Digital Image Processing (Practical)  
Paper code: EC 858  
Max. Marks: 50

List of Experiments (Based on MATLAB)  
1. Intensity transformation  
2. Histogram Processing.  
3. Spatial Filtering.  
5. Image Restoration.  
6. Image Denoising  
7. Color Image Processing  
8. Wavelet Transform  
9. Image Compression

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Paper Title: Advanced Digital Communication (Theory)  
Paper code: EC 809  
Max. Marks: 100  
Time: 3 hours

Course duration: 45 lectures of one hour duration each  
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART A


Matched, correlation and optimum filters and symbol error rate.  
Access Technologies: Digital Subscriber line, Fiber, Cable, Broadband fixed wireless access.

PART B

Digital CW modulation, BPSK, DPSK, QPSK, M’ary PSK, QASK, BFSK, Doubinary encoding, QPR coherent and non-coherent systems, error probabilities in PSK, DPSK, FSK, QPSK, 16 QAM, MSK, QPR and bit.

Spread Spectrum techniques: DS, CDMA, FH, PN sequence, Power requirement, PN- sequence code, and Walsh’s code.

ISDN: ISDN structure, Basic & Primary rate access, ISDN services.  
Signalling: In-Channel & common channel signalling, SS7.

Recommended Books  

Paper Title: Advanced Digital Communication (Practical)

Paper code: EC 859

List of Experiments: based on Theory

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Paper Title: Neural Networks and Fuzzy Logic (Theory)

Paper code: EC 810

Max. Marks: 100

Time: 3 hours

Course duration: 45 lectures of one hour duration each

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

PART A

Fundamentals of Neural Networks [7]

Supervised Learning [10]
Learning and memory, Representation of perceptron, Linear separability, Perceptron Learning, Training of single layer and multi-layer, back propagation training algorithm, Applications of backpropogation, Universal function approximation.

Attractors Neural Networks [8]
Introduction, Associative memory, Hopfield networks, Content addressable memory, Bidirectional associative memories.

PART B

ART Networks [7]
Vector quantization & simplified ART architecture, Architectures & algorithms of ART1 & ART2 networks, Applications.

Self-organizing Feature Map [6]
Introduction, Competitive learning, Maxican Hat networks, SOFM algorithm, Applications.

Fuzzy Logic [7]
Basic concepts of Fuzzy Logic, Fuzzy vs Crisp set, Fuzzy uncertainty & Linguistic variables, membership functions, operations on fuzzy sets, fuzzy rules for approximate reasoning, variable inference techniques, defuzzification techniques, Applications of fuzzy logic, Fuzzy system design.

Recommended Books

1. Neural Networks – A Classroom Approach by Satish Kumar, TMH.
2. Neural Networks, fuzzy Logic, and Genetic Algorithms by Rajasekaran & Vijayalakshmi Pai, PHI.  
5. Fuzzy Logic with engineering applications by Ross, Mc-Graw Hill

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Paper Title: Neural Networks and Fuzzy Logic (Practical)  
Paper code: EC 860  
List of Experiments: based on Theory

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Paper title: Embedded System Design (Theory)  
Paper Code: EC811 Max. Marks: 100 Time: 3 hours

Course duration: 45 lectures of one hour duration each  
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART A  
Introduction Review of Embedded Hardware \[10\]  
Memory, Microprocessors, Buses, Direct Memory Access, Interrupts, Built ins on the Microprocessor, Conventions used on Schematic, Microprocessor Architecture, Interrupt Basic, Shared Data Problems, Interrupt Latency.

PIC Micro controller & Interfacing \[14\]  
Introduction, CPU Architecture, Register file structure, Instruction Set, Programs, Timers and Interrupts - Interrupt Service Routine - features of Interrupts - Interrupt vector & Priority, Timing Generation & Measurements, Compare mode, Capture mode, Event counter, PWM, Frequency Measurement - Interfacing Methods, I/O Interface, SPI, LCD interfacing, Seven segment interfacing, I^2C Bus, DAC, Serial EEPROM, ADC, UART.

PART B  
Software Development & Tools: \[9\]  

Introduction to Real Time Operating Systems: \[5\]  
Task And Task States, Tasks and Data, Semaphores and shared data

Operating System Services: \[7\]  
Message queues, Mailboxes and Pipes, Timer Function, Events, Memory Management, Interrupt Routines in an RTOS Environment, Basic Design Using RTOS.

Recommended Books  
Paper Title: Embedded System Design (Practical)

Paper code: EC 861

List of Experiments: based on Theory

Paper Title: Solid State Devices Modeling and Simulation (Theory)

Paper Code: EC812
Max. Marks: 100
Time: 3 hours

Course duration: 45 lectures of one hour duration each
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

PART -A


PART-B

Junction field effect transistor: - JFET concepts, device characteristics, nonideal effects, equivalent circuit and frequency limitation, Metal oxide Semiconductor field effect transistors: - Metal semiconductor ohmic contacts, MOS structure and operation, capacitance -voltage characteristics, small signal equivalent circuits, nonideal effects. Hetrojunctions: - hetrojunction materials, energy-band diagrams, current-voltage characteristics. Optical Devices: - Optical absorption, solar cell, Light Emitting device.

References:


Paper Title: Solid State Devices Modeling and Simulation (Practical)

Paper code: EC 862

List of Experiments: based on Theory
Title: Analog and Mixed Signal Design (Theory)

Paper code: EC 813  
Max. Marks: 100  
Time: 3 hours

Course duration: 45 lectures of one hour duration each

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


PART- B


Reference Books:

Paper Title: Analog and Mixed Signal Design (Practical)

Paper code: EC 863

List of Experiments: based on Theory

Paper Title: BUSINESS RESEARCH

Paper code: IBM801  
Max. Marks: 100  
Time: 3 hours

Course duration: 45 lectures of one hour duration each
Note for paper setter: Total of Eight questions may be set covering the whole syllabus taking four from Part A & four from Part B. Candidates will be required to attempt any five questions taking at least two from each Part.

Part-A

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

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: FINANCIAL MANAGEMENT

Paper code: IBM802 Max. Marks: 100 Time: 3 hours

Course duration: 45 lectures of one hour duration each

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

References:
1. Financial Management, Van Horne, PHI
BE-MBA IX th Semester

STUDENTS HAVE TO SELECT 2 SUBJECTS FROM THE MAJOR SUBJECT AND 2 FROM MINOR IN IX SEMESTER.

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 IX th 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**

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

6. Marketing Research-Text and Cases, Rajendra Nangundkar , TMH
7. Marketing Research –GC Beri, TMH
8. 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 up-gradation 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**

Delivering Quality Services - Causes of Service-Quality Gaps: The Customer Expectations versus Perceived Service Gap, Factors and Techniques to Resolve this Gap

Quality Standards, Factors and Solutions – Quality standards in Service delivery, External Communication to the Customer; the Promise versus Delivery Gap - Developing Appropriate and Effective Communication about Service Quality.

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. Singania, 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

Ecommerce terminology: Blogs, Message boards, Newsgroups, Banner Advertising, Spiders / crawlers/ robots, hacking, SSL / SET protocols, Escrow, Podcast, webcast, web beacons, spyware, Adware, RSS feed, Spam, Web agents, cookies, search engine, worms

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

Characteristics of E-Business markets: Various business models, Business model design, pricing and distribution of digital products, bundling, building customer traffic, subscription vs paid model, bricks and clicks business model, call centre integration in ecommerce, affiliate marketing, viral marketing

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
2. E-business organizational and technical foundation, Michael P.Papazoglou, Pieter M.A Wiley
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
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**

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 IXth Semester

**Paper: Elective-HR**
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

BE-MBA X th Semester

STUDENTS HAVE TO SELECT 2 SUBJECTS FROM THE MAJOR SUBJECT AND 2 FROM MINOR IN X SEMESTER.
STRATEGIC MANAGEMENT

Course : BE-MBA X th Semester

Paper – Compulsory

Paper Code: IBM-1001

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, 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

Corporate level strategies—Stability, Expansion, Retrenchment and Combination strategies.

Corporate restructuring, Concept of Synergy, Business level strategies—Porter’s framework of competitive strategies, Conditions, risks and benefits of Cost leadership, Differentiation and Focus Strategies. Location and timing tactics. Concept, Importance, Building and use of Core Competence.


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 Hours*

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 J.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.
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 Xth 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 Xth Semester

Paper: Elective-Finance

*Paper Code: IBM-1006*     *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**

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**
International Corporate Finance: Foreign exchange markets and exchange rates, law of one price and purchasing-power parity, interest rates and exchange rates, interest rate parity, international bond marketing

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 up gradation 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 Xth 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 workforce 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, offshoring, 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