

**SCHEME OF EXAMINATION  
&  
DETAILED SYLLABUS**

**MASTER OF SCIENCE(Information Technology)**

**2015**

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**COMPUTER SCIENCE &APPLICATION  
DEPARTMENT**

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Bhopal-Chiklod Road, Near Bangrasia Chouraha,  
Vill-Mendua, Distt-Raisen(Madhya Pradesh), Ph:07480-295707  
e-mail-info@aisectuniversity.ac.in website: www.aisectuniversity.ac.in

**Department of Computer Science & Application**  
**MASTER OF SCIENCE IN INFORMATION TECHNOLOGY (MSC-IT))**  
**New Proposed Scheme of Examination**  
**Courses Offered**

<b>Subject Code</b>	<b>Name of the course</b>	<b>Credits</b>
IMIT101	Fundamentals of Computers & Information Technology	5(4-1-0)
IMIT102	Windows & MS Office	6(3-1-2)
IMIT103	Programming Methodology & Programming in C	6(3-1-2)
IMIT104	Computer Networks & Internet	5(4-1-0)
IMIT105	Digital Electronics & Logic Design	5(4-1-0)
<b>Total</b>		
IMIT201	Objects Oriented Programming with C++	6(3-1-2)
IMIT202	DBMS & SQL (With MS Access / MS SQL Server)	6(3-1-2)
IMIT203	A. Computerized Accounting with Tally B. Introduction to Internet & Web Technology	6(3-1-2)
IMIT204	Programming with VB.Net	6(3-1-2)
IMIT205	Data Structure with C++	6(3-1-2)
IMIT206	Minor Project	2(0-0-2)
SCIT 201	Web Development	3(1-0-2)
SSBI 201	Geography Information & Remote Sense	3(1-0-2)
SGMT 201	Entrepreneurship Development	3(1-0-2)
SCOM 201	Research Methodology	3(1-0-2)
SHAR 201	Tailoring & Designing	3(1-0-2)
<b>Total</b>		
IMIT301	Operating Systems	5(4-1-0)
IMIT302	Java Programming	6(3-1-2)
IMIT303	Software Engineering	5(4-1-0)
IMIT304	A. Computer Architecture B. Microprocessor & Assembly Language Programming	5(4-1-0)
IMIT305	A. Compiler Design B. Artificial Intelligence and Expert System	5(4-1-0)
SCIT 301	Web Development	3(1-0-2)
SSBI 301	Geography Information & Remote Sense	3(1-0-2)
SGMT 301	Entrepreneurship Development	3(1-0-2)
SCOM 301	Research Methodology	3(1-0-2)
SHAR 301	Tailoring & Designing	3(1-0-2)
<b>Total</b>		
IMIT401	Computer Graphics	5(4-1-0)
IMIT402	Data warehousing & Mining	5(4-1-0)
IMIT403	Advanced Java Programming	6(3-1-2)
IMIT404	Discrete Mathematics	5(4-1-0)
IMIT405	Major Project	4(0-0-4)
<b>Total</b>		



## **Department of Computer Science & Applications**

### **M.Sc. (Information Technology)**

#### **PROGRAM OBJECTIVES**

The OBJECTIVE of the course is to develop skilled manpower in the various areas of information technology like:

1. To prepare graduates who will be successful professionals in industry, government, academia, research, entrepreneurial pursuit and consulting firms
2. To prepare graduates who will contribute to society as broadly educated, expressive, ethical and responsible citizens with proven expertise
3. To prepare graduates who will achieve peer-recognition; as an individual or in a team; through demonstration of good analytical, design and implementation skills
4. To prepare graduates who will thrive to pursue life-long learning to fulfill their goals

#### **PROGRAM OUTCOMES**

M.Sc. programme has been designed to prepare graduates for attaining the following program outcomes:

1. An ability to apply knowledge of mathematics, computer science and management in practice
2. An ability to identify, critically analyze, formulate and develop computer applications
3. An ability to select modern computing tools and techniques and use them with dexterity
4. An ability to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability
5. An ability to devise and conduct experiments, interpret data and provide well informed conclusions

6. An ability to understand the impact of system solutions in a contemporary, global, economical, environmental, and societal context for sustainable development
7. An ability to function professionally with ethical responsibility as an individual as well as in multidisciplinary teams with positive attitude
8. An ability to communicate effectively
9. An ability to appreciate the importance of goal setting and to recognize the need for life-long learning

COURSE STRUCTURE OF MSCIT I SEMESTER													
Subject Details			Main Examinations				Sessionals ***		Credit Distribution			Allotted Credits	
Subject Code	Subject Name	Total Marks	Major		Minor		Max Marks	Min Marks	L	T	P	Subject wise Distribution	
			Max Marks	Min Marks	Max Marks	Min Marks							
<b>Theory Group</b>													
IMIT101	Fundamentals of Computers & Information Technology	100	50	17	20	7	30	12	3	2	-	5	
IMIT102	Windows & MS Office	100	50	17	20	7	30	12	3	2	-	5	
IMIT103	Programming Methodology & Programming in C	100	50	17	20	7	30	12	3	2	-	5	
IMIT104	Computer Networks & Internet	100	50	17	20	7	30	12	3	2	-	5	
IMEC101	Digital Electronics & Logic Design	100	50	17	20	7	30	12	3	2	-	5	
<b>Practical Group</b>			<b>Term End Practical Exam</b>				<b>Lab Performance</b>						
IMIT102	Windows & MS Office	50	25		8		25	8	-	-	1	1	
IMIT103	Programming Methodology & Programming in C	50	25		8		25	8	-	-	1	1	
<b>Grand Total</b>		600											<b>27</b>

Minimum Passing Marks are equivalent to Grade D

L- Lectures T- Tutorials P- Practicals

\*\*\*Sessional Weightage -Attendance 50%, Four Class Test/Assignments 50%

**COURSE STRUCTURE OF MSCIT II SEMESTER**

COURSE STRUCTURE OF MSCIT II SEMESTER												
Subject Details			Main Examinations				Sessionals ***		Credit Distribution			Allotted Credits
Subject Code	Subject Name	Total Marks	Major		Minor		Max Marks	Min Marks	L	T	P	Subject wise Distribution
			Max Marks	Min Marks	Max Marks	Min Marks						
<b>Theory Group</b>												
IMIT201	Objects Oriented Programming with C++	100	50	17	20	7	30	12	3	2	-	5
IMIT202	DBMS & SQL (With MS Access / MS SQL Server)	100	50	17	20	7	30	12	3	2	-	5
IMIT203	A. Computerized Accounting with Tally	100	50	17	20	7	30	12	3	2	-	5
	B.Introduction to Internet & Web Technology											
IMIT204	Programming with VB.Net	100	50	17	20	7	30	12	3	2	-	5
IMIT205	Data Structure with C++	100	50	17	20	7	30	12	3	2	-	5
*	Elective I(s)	50	25	8	10	4	15	5	1	-	-	1
<b>Practical Group</b>			<b>Term End Practical Exam</b>				<b>Lab Performance</b>					
IMIT201	Objects Oriented Programming with C++	50	25		8		25	8	-	-	1	1
IMIT202	DBMS & SQL (With MS Access / MS SQL Server)	50	25		8		25	8	-	-	1	1
IMIT203	A. Computerized Accounting with Tally	50	25		8		25	8	-	-	1	1
	B.Introduction to Internet & Web Technology											
IMIT204	Programming with VB.Net	50	25		8		25	8	-	-	1	1
IMIT205	Data Structure with C++	50	25		8		25	8	-	-	1	1
IMIT206	Minor Project	100	100		33		100	33	-	-	4	4
*	Elective I(s)	100	50		17		50	17	-	-	2	2

<b>Grand Total</b>	1000												<b>37</b>
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Minimum Passing Marks are equivalent to Grade D

L- Lectures T- Tutorials P- Practicals

\*Elective I (Skill) – Choose any one from the following list is attached

\*\*\*Sessional Weightage- Attendance 50%, Four Class Test/Assignments 50%

<b>COURSE STRUCTURE OF MSCIT III SEMESTER</b>													
<b>Subject Details</b>			<b>Main Examinations</b>				<b>Sessionals ***</b>		<b>Credit Distribution</b>			<b>Allotted Credits</b>	
<b>Subject Code</b>	<b>Subject Name</b>	<b>Total Marks</b>	<b>Major</b>		<b>Minor</b>		<b>Max Marks</b>	<b>Min Marks</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Subject wise Distribution</b>	
			<b>Max Marks</b>	<b>Min Marks</b>	<b>Max Marks</b>	<b>Min Marks</b>							
<b>Theory Group</b>													
IMIT301	Operating Systems	100	50	17	20	7	30	12	3	2	-	5	
IMIT302	Java Programming	100	50	17	20	7	30	12	3	2	-	5	
IMIT303	Software Engineering	100	50	17	20	7	30	12	3	2	-	5	
IMIT304	A. Computer Architecture	100	50	17	20	7	30	12	3	2	-	5	
	B. Microprocessor & Assembly Language Programming												
IMIT305	Compiler Design	100	50	17	20	7	30	12	3	2	-	5	
*	Elective I (S)	50	25	8	10	4	15	5	1	-	-	1	
<b>Practical Group</b>			<b>Term End Practical Exam</b>				<b>Lab Performance</b>						
IMIT302	Java Programming	50	25		8		25	8	-	-	1	1	
*	Elective I (S)	100	50		17		50	17	-	-	2	2	
<b>Grand Total</b>		700										<b>29</b>	

Minimum Passing Marks are equivalent to Grade D

L- Lectures T- Tutorials P- Practicals

**\*Elective I (Skill) – Choose any one from the following list is attached.**

**\*\*\*Sessional Weightage- Attendance 50%, Four Class Test/Assignments 50%**

<b>COURSE STRUCTURE OF MSCIT IV SEMESTER</b>												
<b>Subject Details</b>			<b>Main Examinations</b>				<b>Sessionals ***</b>		<b>Credit Distribution</b>			<b>Allotted Credits</b>
<b>Subject Code</b>	<b>Subject Name</b>	<b>Total Marks</b>	<b>Major</b>		<b>Minor</b>		<b>Max Marks</b>	<b>Min Marks</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Subject wise Distribution</b>
			<b>Max Marks</b>	<b>Min Marks</b>	<b>Max Marks</b>	<b>Min Marks</b>						
<b>Theory Group</b>												
IMIT401	Computer Graphics	100	50	17	20	7	30	12	3	2	-	5
IMIT402	Data warehousing & Mining	100	50	17	20	7	30	12	3	2	-	5
IMIT403	Advanced Java Programming	100	50	17	20	7	30	12	3	2	-	5
IMMA401	Discrete Mathematics	100	50	17	20	7	30	12	3	2	-	5
<b>Practical Group</b>			<b>Term End Practical Exam</b>				<b>Lab Performance</b>					
IMIT403	Advanced Java Programming	50	25		8		25	8	-	-	1	1
IMIT404	Major Project	200	100		33		100	33	-	-	4	4
<b>Grand Total</b>		650										<b>25</b>

**Minimum Passing Marks are equivalent to Grade D**

**L- Lectures T- Tutorials P- Practicals**

**\*\*\*Sessional Weightage- Attendance 50%, Four Class Test/Assignments 50%**

## AISECT UNIVERSITY, Bhopal, (M.P.)

### Scheme of Examination

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT101	Fundamentals of Computers & Information Technology	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able

1. To understand the basic knowledge of computer
- 2 To understand the assembly-level programming
3. To understand the input output devices, storage media, memory .
4. To understand the concept of MIS, Networking devices.

### Syllabus

THEORY

#### UNIT-I

**Know the Computer** -, Introduction, What does computer stand for?, Strengths of computers, Limitations of computers, Fundamental uses of computers, Development of computers, Types of Computers, Generations of Computers

**Personal Computer** - Introduction, Personal computer, Uses of personal computers, Components of personal computers, Evolution of PCs, Developments of processors, Architecture of Pentium IV, Configuration of PC

**Boolean Algebra and Logic Gates** - Introduction, Boolean Algebra, Binary Valued Quantities, And Operator, OR Operator, NOT Operator, Basic Postulates of Boolean Algebra, Theorems of Boolean Algebra, De Morgan's Theorems, Reducing Boolean Expression by their Simplifications, Proving the Equations of Boolean Expressions By Truth Table, Principle of Duality, Standard Forms, Basic Logic Gates, Use of Logic Gates in Circuits, Karnaugh Maps

**Number System** - Introduction, Digital and Analog Operations, Binary Data, Binary Number System, Decimal Number System, Octal Number System, Hexadecimal Number System, Fractional Conversion, Coding System



**Data Representation and Binary Arithmetic** - Introduction, Bits, Nibbles, Bytes and Words, Data Representation, Coding system, Binary Arithmetic, Binary Addition, Binary Subtraction, Binary Multiplication, Binary Division, Character Representation, Checking the Result of Binary Arithmetic

## UNIT-II

**Input Devices** - Introduction, Input Device, Typing Input Devices, Pointing Input Devices, Scanning Input Devices, Audio Visual Input Devices

**Output Devices** - Introduction, Output Devices, Soft Copy Vs Hard Copy Output, Monitor, Printers, Plotter, Electrostatic Technique, Special Purpose Output Equipments

**Central Processing Unit** - Introduction, What is Central Processing Unit, Arithmetic And Logic Unit, Control Unit, Registers, Instruction set, Processor Speed

**Storage Devices** - Introduction, Storage and its needs, Brain Vs Memory, Storage Evaluation Units, Data Access Methods, Primary Storage, Secondary Storage, Hard Disk Operations, Floppy Disk Drives, Winchester Disk, Optical Disk, VCD, CD-R, CD-RW, DVD, Zip Drive, Flash Drives, Blue Ray Disk, Memory Card, Driving Naming Conventions In a PC

**Basics of Software-** Introduction, What Does Software Stand For? Needs of software, Types of software, Open Source Software, Integrated Development Environment

**Operating System** - Introduction, Operating System, Why an Operating System, Functions of Operating System, The Booting Process, Types of Reboot, Booting From Different Operating System, Types of Operating System, Some Prominent Operating Systems

## UNIT-III

**Disk Operating System** - Introduction, What is DOS?, Functions of DOS, Versions of DOS, DOS Commands, Important Internal Commands of DOS, Important External Commands of dos, Executable Vs Non-Executable Files In Dos

Programming Languages, Introduction, Data, information And Knowledge, Characteristics of Information, Comparison between human language and, Computer Language, What is a program?, What is a Programming language?, Programming development cycle, Algorithm, Program Flowcharts, Pseudo code, Programming approaches, Programming Paradigms, Types of Programming Language, Third Generation Language, Fourth Generation Language

## UNIT-IV

**Computer Virus** - Introduction, Virus, History, Mechanism of virus, How A Virus Spreads, How is virus named, A few Prominent Viruses, Types of Computer Virus, Related Concepts :, Anti Virus Programs, Norton Anti - Virus (NAV), Execution of Norton Anti-Virus

**Communication and IT** - Introduction, Computer Network, Communication Process, Communication Types, Transmission Media, Wireless Media, Communication Channels/Media, Modem, Characteristics of a Modem, Types of Modem

**Networks** - Introduction, Internet Vs Intranet, Types of Network, Topology, Types of Connectivity, Network Devices

**Internet** - Introduction, What is Internet actually?, Growth of Internet, Owner of the Internet, Internet Service Provider, Anatomy of Internet, ARPANET and Internet history of the World Wide Web, Services Available on Internet (Internet Tools), Basic internet terminologies, net etiquette, Application of internet

## UNIT-V

**Management Information System** - Introduction, Information System, Management Information System (MIS), Fields of Information System, Elements Of MIS, Objectives Of MIS, Characteristics of

MIS, Impact Of MIS, Designing An MIS, Placement Of MIS, Views Of MIS, Pitfalls In Designing an MIS, Advantages of MIS, Disadvantages of MIS

**Applications of Computers and Information Technology** - Introduction, Business And Computer, E-Mail, E-Commerce, Project management, Computers in Personnel Administration, Accounting, Computers in Cost and Budget Control, Marketing, Manufacturing, Materials management, Banking, Insurance And Stock broking, Purchasing, Computers in warehousing

Out Comes – After study this student will be able to know about terms and concepts of Fundamentals of Computers & Information Technology (hardware, software, networking, security, Internet/Web, and applications).

***Texts & Reference Books :***

- **Introduction to Computers and Information Technology** by Anurag Seetha, Ram Prasad & Sons, .Bhopal.
  - **Computers Today** by S.K.Basandra, Galgotia Publications.
  - **Fundamentals Of Information Technology** by Alexis Leon & Mathews Leon, Vikas Publishing House, New Delhi.
  - **DOS Quick Reference** by Rajeev Mathur, Galgotia Publications.
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**Chairman**  
**(Board of studies)**

**Dean (Faculty)**

**(Registrar)**

## AISECT UNIVERSITY, Bhopal, (M.P.)

### Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT102	Windows & MS Office	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective – Student will be able

1. To understand the basic knowledge of MS Windows.
2. To understand the Office Packages.
3. To understand the MS Excel.

To understand the MS PowerPoint & Outlook Express **Syllabus**

### THEORY

#### UNIT-I

**Know the Windows XP** , Introduction, What is Windows XP ?, Evolution of Windows Operating System, Features of Windows XP, What's New in Windows XP, Windows and Its Elements.

**Accessories And Other Tools** , Introduction, The Calculator , Using THE Calculator, The Character Map, Using Outlook Express, The Address Book, The Paint, The Notepad, The WordPad, The NetMeeting, The Internet Explorer, The Windows Media Player, The MS-DOS , The Control Panel , The Windows Picture and Fax Viewer, The HyperTerminal, The Windows Messenger, Using Windows Movie Maker.

**Managing Files and Folders**, Introduction, Viewing files and folders, Arranging files and folders, Creating a new folder, Creating a file using short-cut.

**Customizing Your Computer** , Introduction, customizing Your Desktop, Changing the Start menu style, Setting a screen saver, Reversing your mouse buttons, Changing the appearance of your mouse pointer, Adding a new font to your computer, Logging off from the computer, Adding or Removing Programs, Hiding and displaying quick launch bar.

**Microsoft Office XP Suite With Other Office Suites** , Introduction, Different office suites, Microsoft Office XP Suite, What's Special About Office XP, Voice Dictation and Voice Commands, Smart Tags , The Office Task Panes , The Ask a Question Box, Document Recovery, Product Activation.

## UNIT-II

**Common Elements Of The Suite** , Introduction, Different Integrated Items in Office Suite, Menu Bars and Toolbars, Shared Tools, Objects, Linking, Embedding, Office Assistant and Online Help.

**Office Task Panes** , Introduction, The Task Pane, Displaying And Hiding a Task Pane, Types of Task pane, Additional Task Panes, Insert ClipArt Task Pane, Styles and Formatting Task Pane, Mail Merge Task Pane, Exercise.

**Word Processing and MS-Word** , Introduction, Features of Word Processor, MS-WORD—a powerful word processor, Starting MS-Word, Chief Elements Of MS-Word Window, Displaying and Hiding the Toolbar, File operations in MS-WORD, Using Help Online, Customizing Office Assistant.

**Text Formatting** , Introduction, Typing the text, Selecting Text with a mouse, Deleting Text, Restoring the deleted text, Typing over the existing text, Undoing/Cancelling the last action, Redoing/Repeating the last action, Formatting font, Advanced text formatting, Customizing Spelling Check, Using the thesaurus.

**Document Formatting** , Introduction , Using page border, Bullets and numbering, Setting and removing tab stops, Making word count, Using Autotext, Using autocorrect, Headers and Footers, Setting up columns in the document, Removing columns from the document, Inserting page numbering, Formatting the page numbering, manual and automatic page breaks, Setting margins, Inserting date and time, Using Goto, Cursor movement with key-board.

**Tables And Graphics**, Introduction, creating tables, calculating numeric data in a table , Deleting columns and rows, Formatting a table, Aligning text in the table, Formatting text in the table, Applying borders and shadings, Add a border to a table, Automatically format a table , Using Drawing, Creating a Shape, Using Word Art, Using Auto shapes, Insert a clip from the Clip Organizer, Inserting a text box, What is Drawing Canvas?, Using auto shapes.

**Mail Merge, Views, Template and Wizard** , Introduction, Mail merge , Views, Overview of templates, Creating a document template, Create a Web page based on a template, Modify a document template, RULER, ZOOM, PROTECTING YOUR DOCUMENT, INSERTING A FILE INTO ANOTHER , overview of wizard , Inserting Hyperlinks to a Web Page or a Word Document , EXERCISE.

## UNIT-III

**Spreadsheet and MS-Excel** , Introduction , Starting MS-Excel , Spreadsheet and its Elements , Application Window , Document Window, Cell , Standard Toolbar, Formatting Toolbar, Workbook , Worksheet, Handling Files.

**Worksheet Formatting** , Introduction, Entering Text Data, Entering Formula , Editing the Cell Content, Formatting the Cell , Formatting Font, Setting Border Around Cell, Highlighting gridlines, Using Format Painter, Finding and Replacing the Text, Using Spelling and Grammar.

**Function and Operator**, Introduction, Entering Functions, Editing Functions, Using Mathematical Functions, Using Statistical Functions, Using Date & Time Functions, Changing the default date format, Text Function, Logical Functions, Financial Function, Operators, AutoSum, Function Wizard.

**Chart and Web Object** , Introduction, Types of Charts, Creating a Quick Chart Sheet , Parts of a Chart, Types of Charts, Creating A Chart using wizard, Using Pivot Table , Object Linking and Embedding (OLE), Linking Cells, Linking Formula, Hyper Links, Previewing charts, printing charts, Exercise.

**Presentation Package And MS-PowerPoint** , Introduction, Chief Elements of Presentation, Starting PowerPoint, Creating A Presentation, Creating A Presentation with Auto Content Wizard, Create a presentation using a design template, Creating a blank presentation, PowerPoint window and its Elements, Using Help Online, Customizing Office Assistant .

**Text Formatting in Slides** , Introduction , Adding text to slides, Editing text on a slide, Using Format Painter, Setting Paragraph Indents, Line Spacing in a Paragraph, Setting and Removing Tab Stops , Checking Spelling of the text , Finding and replacing the text, Moving slides.

## UNIT-IV

**Table, Chart and other Drawing Objects**, Introduction, Creating a table, Creating an embedded Word table, Adding Columns and Rows, Deleting Columns and Rows, Changing Table Borders, Using Auto shapes, Chart, Inserting a clip to your slide, Using Word Art, Inserting A Word Art, Working With Drawing Toolbar, Creating A Shape.

, **Slides, Views, Notes, Handouts** , Introduction, PowerPoint Views, Notes Pages, Using Handouts, Inserting Header and Footer in the, Slide , Transition , Custom Show, Assigning Custom Animation , Adding a motion path, Animating a chart, Publish a presentation or HTML file , to the Web, Preview a presentation as a Web page, Showing Slides , Printing Slides .

## UNIT-V

**Outlook Express** , introduction, WHAT IS outlook express?, Features of Outlook Express, starting outlook express, Concepts of CC and BCC, Email address, Reading a received message , composing message, Replying And Forwarding Messages, attaching files, Creating signature in outlook express, Formatting message text, What is mime?, applying stationery, Inserting a hyperlink or HTML page into a message, Flagging an e-mail or news message, Importing messages from other e-mail programs, What are newsgroups?, Adding a newsgroup account, Switching between e-mail and news reading, Identities (Multiple Users on A Single Computer), Adding a new identity, Managing contacts with outlook, creating addresses, Importing an address book from another program, Using keyboard shortcuts in Outlook Express

Out Comes – After studying this student will be able to know about terms and concepts of Microsoft suite completely.(like MS-word,power-point-exel sheets,outlook express)

### Practicals:

1. Introduction of Microsoft windows.
2. Creation of file and folder in MS Windows.
3. Introduction of MS Word.
4. Inserting Number, Bullets, Footer and Header.
5. Creating text, document and table in MS Word.
6. Write steps for mail merge.
7. Introduction of Microsoft excel.
8. Write steps to inserting formula in MS Excel.
9. Creating text, row and Column in MS Excel.
10. Introduction of Microsoft Power Point.
11. Write steps how to using graphics in power point.
12. Introduction and theory of Microsoft Outlook.

### Text & Reference Books:

- Windows XP Complete Reference. BPB Publications
  - MS Office XP complete BPB publication
  - MS Windows XP Home edition complete, BPB Publications
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**Chairman**  
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**AISECT UNIVERSITY, Bhopal, (M.P.)**  
**Scheme of Examination**

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT103	Programming Methodology & Programming in C	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective – Student will be able

1. To understand the basic knowledge of programming concepts.
- 2 To understand the C language & its concepts.

**Syllabus**

**THEORY**  
**UNIT-I**

**Principles of Programming**, Introduction to Programming, Program Concept, Characteristics of Programming, Stages in Program Development, Tips for Program Designing, Programming Aids, Algorithms, Notations, Design, Flowcharts, Symbols, Rules

**Programming Techniques and Logic**, Introduction, Introduction to programming techniques, Top-down approach or technique, Bottom-up approach or technique, Unstructured technique of programming, Structured technique of programming, Modular technique of programming, Comparative study of programming techniques, Cohesion , Coupling, Debugging , Syntax Errors, Logical Errors, Data Entry Errors, Linker Errors, Runtime Errors, Program Testing

**UNIT-II**

**Turbo C IDE**, Turbo C IDE (Integrated Development Environment), Main Menu Bar, File Options, Edit option, Run option, Compile option, Project option, Options option, Debug option, Break/watch option, Edit Window,

Message Window, Status bar, Editing, Compiling and Running a C Program, Features of C language, C language standards, Standardization , Successors of C language

**Introduction to 'C'**, Introduction, Structure of a C program, 'C' Tokens, Keywords, Identifiers, 'C' Constants, Variables in C, Data Types, Derived Data Types : , Operators, Precedence and Associativity of operators, Hierarchy of operators at a glance, Expression & its Evolution, Type conversion in expressions , (Implicit and Explicit type conversion)

### UNIT-III

**Decision Making and Branching**, Introduction, Sequential statements, Unformatted I/O functions, Formatted input using scanf() function, Formatted output using print(), Branching statements, The if-else statement, The nested if-statement, The switch statement, Additional programs

**Looping Statements**, Introduction, for-statement, while-statement, do-while statement, Difference between while-loop and do-while loop, Nested loops, Jumps in loops, Programming examples

**Arrays**, Introduction, Single-dimensional arrays, Reading and writing single dimensional arrays, Examples of Complex Programs, Searching, Sorting, Two-dimensional arrays (Multi-dimensional arrays), Reading-writing two-dimensional arrays, Manipulation in two-dimensional arrays, Programming Examples

**Strings**, Concepts of string, Strings in C language, String variable, Initializing strings, String input/output functions, Arrays of strings, String handling functions, Memory formatting

### UNIT-IV

**User Defined Functions**, Introduction, Elements of user-defined functions, Categories of functions, Passing parameters to functions, Programming Examples, Arrays in functions, Nesting of Functions, Recursion, Command Line Arguments , Storage Classes

**Structure and Union**, Introduction to structures, Structure and its definition, Structure declaration, Tagged Structure, Structure variables, Type-Defined Structure, Structure initialization, Accessing structures, Nested structures, Array of structures, Structures and functions, Sending individual members, Sending the whole structure, Passing structures through pointers, Uses of structures, Union and its definition

**Debugging**, Common Programming Errors, Program Testing and Debugging, Types of Errors, Debugging C program

**Pointers**, Introduction, Pointer concepts, Pointer variable, Accessing variables through pointers, Pointer declaration and Definition, Initializing a pointer variable, Pointers to Pointers, Compatibility, Pointer applications, Pointers and other operators, Memory allocation functions, Memory map of C program, Memory management functions

### UNIT-V

**File Handling**, Introduction to file handling, File system basics, Standard streams in C, File structure, FILE pointer, Opening and closing a file, File handling functions, File types, Text and Binary, Input / Output operations on file, Reading a character using getc(), Writing a character using putc(), Using feof(), Working with string using fputs() and fgets(), Using fprintf() and fscanf(), Using fread() and fwrite(), Direct Access file, fseek()

Out Comes – After study this student will be able to know about and concepts of Fundamentals of Computers & Information Technology (hardware, software, networking, security, Internet/Web, and applications).

#### Practicals:

1. Write a C Program to add two integer numbers.
2. Write a C Program to Check Whether a Number is Even or Odd.
3. Write a C Program to Check Whether a Number is Positive or Negative or Zero.
4. Write a C Program to Display Fibonacci Series.

5. Write a C Program to Reverse a Number.
6. Write a C Program to Check Whether a Number is Palindrome or Not.
7. Write a C Program to Make a Simple Calculator to Add, Subtract, Multiply or Divide Using switch...case.
8. Write a C Program to Calculate Factorial of a Number Using Recursion.
9. Write a C Program to Calculate Average Using Arrays.
10. Write a C Program to Add Two Matrix Using Multi-dimensional Arrayas.
11. Write a C Program to Swap Numbers in Cyclic Order Using Call by Reference.

**TEXTS & REFERENCE BOOKS:**

- E. Balaguruswamy, "Programming In C ", TMH Publications
  - Gottfried, Schaum's Outline Series, " Programming With C ", TMH Publications
  - Mahapatra, " Thinking In C ", PHI Publications
  - Anurag Seetha, "Introduction To Computers And Information Technology ", Ram Prasad & Sons, Bhopal.
  - S.K.Basandra, " Computers Today ", Galgotia Publications.
  - Peter Juliff, " program design ", PHI Publications
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## AISECT UNIVERSITY, Bhopal, (M.P.)

### Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT104	Computer Networks & Internet	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able

1. To understand the fundamental concepts of computer networking.
2. To understand the with the basic taxonomy and terminology of the computer networking area.
3. To understand the advanced networking concepts, preparing the student for entry Advanced courses in computer networking.
4. To understand the various transition method.

**Syllabus**

## THEORY

**UNIT-I-INTRODUCTION TO COMPUTER NETWORK**, Network, Computer Networks, Need of Network , Uses of Computer Network, Applications of networks, Network Criteria, Network Hardware and Software, network types : client, server & peers, Classification of Computer Network, Server, ATM (Asynchronous Transfer Mode), Modem

**THE THEORETICAL NETWORK MODEL - OSI**, OSI Model, open system interconnection model (OSI), Layered Architecture of the OSI Reference Model, Functions of the ISO/OSI Layers, Summary of OSI Layer functions

**UNIT-II-TRANSMISSION TECHNOLOGY**, transmission technology, Data can be analog or digital, Analog and Digital Transmission, asynchronous & synchronous transmission, Types of Communication Modes, BaseBand and Broadband Transmission, Comparison of Baseband and Broadband Signaling

**NETWORK TOPOLOGY**, Network Topology, Types of Network, Local Area Network (LAN), Metropolitan Area Networks (MAN), Wide Area Networks (WAN), Satellite Networks, Wireless LAN

### UNIT-III

**TRANSMISSION MEDIA**, Transmission Media, Classification of Transmission Media, Comparison of Guided and Unguided Media, Twisted Pair (TP) Cable, Coaxial Cable, Fiber Optic Cable (FOC), Unguided Media, Radio Frequency Characteristics, Microwave Transmission, Applications of Infrared Transmission, Switching Methods, Packet switching, Circuit Switching, Message Switching

**DATA LINK LAYER**, Data Link Layer Design issues, Sliding Window Protocols

### UNIT-IV

**NETWORK ADAPTERS**, Multiple Access Protocol, ALOHA, Carrier Sense Multiple Access (CSMA), CSMA/CD [Carrier Sense Multiple Access/Collision Detection], Collision Free Protocols, Limited Contention Protocol

**NETWORK LAYER**, Functions of Network Layer, Routing Algorithms, Congestion Control Algorithm

**APPLICATION LAYER**, Domain Name System, Simple Mail Transfer Protocol (SMTP), Hyper Text Transfer Protocol (HTTP), File Transfer Protocol

### UNIT-V

**CRYPTOGRAPHY**, Encryption & Decryption - Cryptography, Terminology, Classification of Cryptography :, Substitution Ciphers :, Security of algorithms :, Steganography :, Steganography vs Cryptography :, public key encryption , Comparison of Symmetric and Asymmetric Key Cryptography , Public Key Cryptanalysis, Digital Signature , Requirements of Digital Signature, Direct Digital Signature, Arbitrated Digital Signature, Authentication Protocols, Symmetric Encryption Approach, Public-Key Encryption Approach, Digital Signature Standard, RSA and Digital Signature, DSS Approach, The Digital Signature Algorithm

Outcomes- After study this student will be able to know about

1. Independently understand basic computer network technology.
2. Understand and explain Data Communications System and its components.
3. Identify the different types of network topologies and protocols.
4. Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.

## TEXT BOOKS & REFERENCE

- James Chellis Charles Perkins, Matthew Strebe “Networking Essentials:Study Guide MCSE”, Second Edition, BPB Publications.



			Sem	Sem	onal	Sem	work			
IMEC1 01	Digital Electronics & Logic Design	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able

1. To understand the overview of the principles, operation and application of the analog building blocks like diodes, BJT, FET etc for performing various functions.
2. To understand the overview of amplifiers, feedback amplifiers and oscillators.
3. To understand the knowledge on existing on future analog circuits.

### Syllabus

#### THEORY

##### UNIT-I

**Digital Number System** - Data Type, Number System, Decimal Number System, Binary Number System, Octal Number System, Hexadecimal Number System, Conversions, Decimal to Binary Number System, Decimal to Octal Number System, Decimal to Hexadecimal Number System, Binary-To-Decimal Conversion, Binary to Octal Number System, Binary to Hexadecimal Number System, Octal to Decimal Number System, Octal to Binary Number System, Octal to Hexadecimal Number System, Hexadecimal to Decimal Number System, Hexadecimal to Binary Number System, Hexadecimal to Octal Number System

**Binary Arithmetic** - Addition, Binary Number Addition, Octal Number Addition, Hexadecimal Number Addition, Subtraction, Binary Number Subtraction, Octal Number Subtraction, Hexadecimal Number Subtraction, Binary Multiplication, Binary Division, 1's Compliment, 2's Compliment, Subtraction Using 2's Compliment

##### UNIT-II

**Arithmetic Operations** - Integer Data, 8 Bit Signed Binary Representation, 16 Bit Signed Binary Representation, Fixed Point Representation, Floating Point Representation, Binary Codes, Weighted Code (8421, 2421, 528), Un Weighted Code, Excess 3 Code, Gray Code, Error Detection Code, Even Parity, Odd Parity, Error Detection and Correction Code, Alpha Numeric Code, EBCDIC

**Boolean Algebra** - Introduction, Boolean Postulates : , Boolean Identities :, OR Gate Identity, AND Gate Identity, NOT Gate Identity, Boolean Laws, Commutative Law, Associative Law, Distributive Law, Duality, DeMorgan's Theorem

**Logic Gates** - Logic Gates, NOT Gate, AND Gate, OR Gate, NAND Gate, NOR Gate, Ex OR Gate, Ex NOR Gate, Universal Gate

**Karnaugh Map** - Introduction, Karnaugh Map, MIN and MAX Terms, MIN and MAX Terms from Truth Table, Product of Sum (POS) Equation, Simplification of Boolean Equation by K Map, Two Variable K Map, Three Variable K Map, Four Variable K Map, Don't Care Condition

##### UNIT-III

**Combinational Circuits** - Introduction, Arithmetic Circuits, Adders, Half Adder, Full Adder, Serial Adder, Parallel Adder, BCD Adder, Subtractors, Half Subtractor, Full Subtractor, Parity Generator - Checker, Three Bit Parity Generator, Three Bit Parity Checker, Binary Comparators, Two Bit Comparator, Multiplexers, 4-to-1 Multiplexer, 16-to-1 Multiplexer, De-multiplexer, 1-to-4 De-multiplexer, 1-to-16 De-multiplexer, Encoder, Decimal to BCD Encoder, Octal to Binary Encoder, Decoder

**Sequential Circuits** - Introduction, Clock, FLIP FLOP, Latch, S-R Flip Flop, J-K Flip Flop, Master Slave J-K Flip Flop, Preset and Clear Inputs, T(Toggle) Flip Flop, D(Delay) Flip Flop, State Diagrams of Flip-Flops, State Diagram of SR Flip-Flop, State Diagram of JK Flip-Flop, State Diagram of T Flip-Flop, State Diagram of D Flip-Flop, 8.5 Excitation Table of Flip-Flops, Excitation Table of SR Flip—Flop, Excitation Table of JK Flip-Flop, Excitation Table of D-Flip-Flop, Excitation Table of T-Flip-Flop

##### UNIT-IV

**Registers** - Introduction, Bit Shift Register, Serial In Serial Out (SISO), Serial In Parallel Out (SIPO), Parallel In Serial Out (PISO), Parallel In Parallel Out (PIPO), 4 Bit Left Shift Register, 4 Bit Right Shift Register, Universal Shift Register, Applications of Registers, Ring Counter, Self Correcting Ring Counter, Johnson or Twisted Ring Counter

##### UNIT-V

**Counters** - Introduction, 2-Bit Asynchronous Up Counter, 4-Bit Asynchronous Up Counter, 4-Bit Asynchronous Down Counter, Asynchronous Binary Up/Down Counter, Asynchronous Counter Design, 2-Bit Synchronous Counter, 3-Bit Synchronous Counter, 3-Bit Synchronous Down Counter, 3-Bit Synchronous Up/Down Counter, Design of Modulus N Synchronous Counters, Skipping State Counter, State Reduction and State Assignment, Comparison Between Asynchronous Vs Synchronous Counters

**Register Transfer Level (RTL)** - Introduction, Micro-operations, Transfer Micro-operations, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro-operations, Instruction Code and Code Format, Design of a Simple Computer, Components Of Digital Computer, Designing a Simple Computer, Steps to Design a Computer

Out Comes – After study this student will be able to know about

1. Knowledge in the field of solid state materials.
2. To analyze the structure of different types of semiconductor crystal structures. Know the intrinsic property of semiconductor materials.
3. Idea about the equilibrium and non equilibrium states of semiconductors.
4. The complete internal structure of PN junction including different

***Text & Reference Books:***

- Computer System Architecture by: Morris Mano.
  - Digital Computer Fundamentals by Bartee.
  - Digital Computer Electronics by Malvino.
  - Digital Computer Organization by Kamal Prakashan
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SECOND SEMESTER  
**AISECT UNIVERSITY, Bhopal, (M.P.)**  
**Scheme of Examination**

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Assi gn.	End Sem	Term work			
IMIT201	Objects Oriented Programming with C++	6(3-1-2)	70	20	10	70	30	200	3 hr	3 hr

Objective – Student will be able

1. To understand the basic knowledge of opps with C++ language.
- 2 To understand the Structure & classes concepts, data member.
- 3 To understand the Array, Pointers operations.
- 4 To understand the Function overloading & Operator Overloading.
- 5 To understand the Inheritance & C++I/O system.

**Syllabus**

**THEORY: 2MSCIT1-OBJECTS ORIENTED PROGRAMMING WITH C++**

**UNIT-I**

**Overview of C++** - Overview of C++, Software crisis, Object oriented programming paradigm, Basic concepts of OOP, Advantages/Benefits of OOP, Usage/applications of OOP

**C++ Environment**, Program development environment, The language and the C++ language standards, Tntroduction to various C++ compilers, The C++ standard library, Prototype of main() function, i/o operator, manipulator, comments, data types

**Creating and Compiling C++ Programs** - TURBO C++ IDE, Creating, compiling and running a C++ program using ide and through command line, Elements of C++ Language, Structure of a C++ program, C++ tokens, Type conversion in expressions

## UNIT-II

**Decision Making and Branching** - Introduction, Sequential statements, Mathematical Functions, Branching statements, looping Statements, Nested loops, Programming examples

**Arrays and Functions-** Arrays, The meaning of an array, Single-dimensional arrays, Two-dimensional arrays (Multi-dimensional arrays), User Defined Functions, Elements of user-defined functions, Return values and their types, Function calls, Categories of functions, Passing parameters to functions, Recursion, Command Line Arguments, Storage Class Specifiers

## UNIT-III

**Classes and Objects** - Classes, Structures and classes, Unions and classes, Friend function, Friend classes, Inline function, Scope resolution operator, Static class members, Static data members, Static member functions, Passing object to functions, Returning objects, Object assignment

**Array, Pointers, References and the Dynamic Allocation Operators** - Array of objects, Pointer to object, Type checking in C++, The this pointer, Pointer to Derived Types, Pointer to class members, References, C++'s Dynamic Allocation Operators

**Constructors and Destructors** - Introduction, Constructors, Default Constructor, Parameterized constructors, Copy Constructors, Multiple Constructors in a class, Constructors with default arguments, Default Arguments, Special Characteristics of Constructor functions, Destructors

## UNIT-IV

**Function and Operator Overloading** - Function overloading, Overloading Constructor Function, Finding the address of an overloaded function, Operator Overloading, Creating a Member Operator Function, Creating Prefix and Postfix forms of the increment (++) and decrement (--) operators (Overloading Unary Operator), Overloading the Shorthand Operators (i.e. +=, -= etc), Operator Overloading Restriction (Rules), Operator Overloading using friend function, Overloading new and delete operator, Overloading some special operators, Overloading [ ] (Subscripting) operator, Overloading() (Function Call) operator, Overloading Binary Arithmetic operators, Concatenating String, Overloading Comma (, ) operator, Overloading the I/O operators

## UNIT-V

**Inheritance** - Introduction to inheritance, Features or Advantages of Inheritance, Type of Inheritance :, Base Classes and Derived Classes, Base Class Access Control, Protected Members, Protected Base class Inheritance, Inheriting Multiple Base Classes, Constructors, Destructors and Inheritance, Passing Parameters to Base Class Constructors, Granting Access, Virtual Base Classes

**Polymorphism** - Polymorphism, Types of Polymorphism, Virtual Functions and Polymorphism, Pure Virtual Functions, Early Vs Late Binding

**The C++ I/O System Basics** - The C++ I/O System basics, C++ predefined streams, Formatting using the ios members, Clearing Format Flags, An Overloaded form of setf( ), Examining the Formatted Flags, Using width( ), Using precision( ), Using fill( ), Using Manipulators to format I/O, Creating your own Manipulators

**Out Comes** – After Study This Student Will Be Able To Know About And Concepts Of Oops with C++ Language,Classes.Student will be able to create Arrays Its uses,Uses of function overloading,inheritance & C++I/O system.

**Practicals:**

1. WAP to add, subtract, multiply and divide two numbers using concepts of C++.
2. WAP to show swapping of two numbers using C++.
3. WAP to calculate volume of cube, cylinder, rectangular box using three times function overloading in C++.
4. WAP using virtual function.
5. WAP using copy constructor.
6. WAP to show multiple inheritances.
7. WAP to find mean value of two numbers using friend function.
8. WAP using inline function.
9. WAP to demonstrate the use of Local Object, Static Object & Global Object using C ++.
10. WAP in C++ to demonstrate the creation and the use of dynamic object.
11. Derive the two classes son and daughter and, demonstrate polymorphism in action.

**TEXT & REFERENCE BOOKS :**

- Herbert Schildt, “C++ The Complete Reference ” - TMH Publication ISBN 0-07-463880-7
  - R. Subburaj, “Object Oriented Programming With C++ ”, Vikas Publishing House, New Delhi.isbn 81-259-1450-1
  - E. Balaguruswamy, “C++ ”, TMH Publication ISBN 0-07-462038-x
  - M Kumar “Programming In C++”, TMH Publications
  - R. Lafore, “Object Oriented Programming C++ ”
  - Ashok. N. Kamthane, “Object Oriented Programming with ANSI & Turbo C++”, Pearson Education Publication, ISBN 81-7808-772-3
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## **AISECT UNIVERSITY, Bhopal, (M.P.)**

### **Scheme of Examination**

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End	Mid	Sessi	End	Term			

			Sem	Sem	onal	Sem	work			
IMIT202	DBMS & SQL (With MS Access / MS SQL Server)	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective – Student will be able

1. To understand the basic knowledge of DBMS Concepts.
- 2 To understand the Database Design.
- 3 To understand the RELATIONAL DATA MODEL.
- 4 To understand the RELATIONAL DATABASE DESIGN.
- 5 To understand the Indexing & Hashing-Basic Concepts & Recovery System.

### Syllabus

#### THEORY

#### UNIT-I

**Introduction to DBMS & RDBMS** - Introduction to database, Introduction DBMS, Different database models, Structure of DBMS, RDBMS an introduction, Cod's law for RDBMS, Components of rdbms (kernel/data dictionary)

**Introduction to Oracle RDBMS and Client/Server Computing** - Introduction to Oracle, The Features of Oracle 9i, The oracle product details, An introduction to client/server computing, Oracle and client/server computing

**Overview of Oracle Architecture** - Oracle Architecture, Oracle Files, System and User Processes, Oracle Memory, System Database Object, Protecting Data

#### UNIT-II

**Introduction to SQL\*PLUS** -Introduction to SQL, Features of SQL, Components of SQL, Introduction to SQL\*PLUS, Features of SQL\*PLUS, Execution of SQL\*PLUS, Important commands used in SQL\*PLUS, Oracle Data-Types

**Working with Tables** -Tables - An Introduction, Use Of Table In SQL, Viewing The Stored Data In Tables, Filtering Table Data, Updating Data, Deleting Data From Tables, Modifying The Structure Of Tables, Destroying A Table, A Few Other SQL Statements

#### UNIT-III

**Data Constraints** - Data Constraints, The Use of Data Constraints, The Types of Data Constraints, Defining Integrity Constraints By 'Alter Table', Removing Integrity Constraints, 'Null' Value Concept, 'Not Null' Constraint, Default Value Concept, 'User Constraints' Table

**Data Manipulation in SQL** - Oracle Operators, Range Searching, Pattern Matching, LIKE 'IN' and 'NOT IN' Predicates, An Introduction to 'DUAL' Table, An Introduction to 'SYSDATE'

**Oracle Functions** - Oracle Function, Function Types, Group Function, Scalar Function, Working With 'Date' in SQL, Grouping Of Data Of Different Tables In SQL

**Joins, Sub-Queries & Views** - types of joins, use of sub-query, 'union' and clause, 'Intersect' Clause, Minus Clause, Concept of View, Types of View, Use of View

#### UNIT-IV

**User Accounts Management & Indexing** - Creation of User Account, User Account Management, Granting Privileges, Revoking Privileges, Modifying Password, Closing User Account, Concept of Index, Creation of Index, Types of Index, Use of Index, Deleting Index

**Introduction to PL/SQL Programming** - Introduction to PL/SQL, Advantages of PL/SQL, Differences between SQL and PL/SQL, PL/SQL Block Structure, PL/SQL Character set, Variable, Constant and Data type, Assignment Operator and the use of 'SELECT...INTO, PL/SQL Program Control Structure, The use of 'IF...THEN...ELSE...ENDIF', Iteration Control (The use of LOOP, WHILE, FOR), The use of 'GOTO Statement

**Cursor** - Cursor an Introduction, Types of Cursor, Features of Cursor, Implicit Cursor, Explicit Cursor, Application of for Loop with Cursor

#### UNIT-V

**Exception Handling in PL/SQL** - Exception Handling in PL/SQL, Built in Exception Handling, User Defined Exception Handling, The Raise Application-error Procedure

**Oracle Transaction** - Oracle Transaction, Commit Statement, Rollback Statement, Save point statement, Concept of lock, Types of locks, Levels of Locks, 'SELECT.....FOR UPDATE' Statement, Removing the Lock

**Procedures and Functions**- Concept of Procedures and Functions, Advantages of Procedure and Function, Creation of Procedure and Function, Deleting Procedure and Function

**Database Triggers** - Concept of Triggers, Types of Triggers, Creation of Triggers, Application of Triggers, Deleting Triggers

Out Comes – After study this student will be able to know about and concepts & Fundamentals of DBMS, Concept of keys, RELATIONAL DATA MODEL & design.

**Practicals:**

1. Write a query to implement Different types of DDL statements in SQL.
2. Write a query to implement Different types of DML statements in SQL.
3. Write a query to implement Different types of DQL statements in SQL.
4. Write a query to implement Different types of DCL statements in SQL.
5. Write a query to explore 'select' clause using where, order by, between, like, group-by, having etc.
6. Write a query to implement the concept of Joins in SQL.
7. Write a query to implement the concept of Indexes and views.
8. Write a query to implement the restrictions on the table.
9. Write a query to implement the concept of SubQuestionries.
10. Write a query to implement the structure of the table.

**TEXT & REFERENCE BOOKS :**

Ivan Bayross, "SQL, PL/SQL", Bpb Publications"

Liebschuty, "The Oracle Cook Book", BPB Publication

Michael Abbey, Michael J.Corey, "Oracle A Beginners Guide". TMH Publication

Oracle Unleashed (Chapter 1, 2,3,4,5 and 9)

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**AISECT UNIVERSITY, Bhopal, (M.P.)**

**Scheme of Examination**

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT203	A. Computerized Accounting with Tally	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

**Syllabus****THEORY****UNIT-I**

Accounting, Meaning Of Accounting, Objectives Of Accounting, Important Terms, Accounting Equation, Rules Of Debit And Credit- Journal & Ledger, Journal, Ledger, Cash Book, Subsidiary Books, Financial Statement, Trading & P&L A/C, Balance-sheet, Inventory, Adjustment Entries, Bill Of Exchange

Installing Tally 9, Introduction, Tally 9.0 (Release 1.0), Major Enhancements In Tally 9, Minor Enhancements In Tally 9, Multilingual Business Accounting And Inventory Management Features, Performance And Implementation Features, Accounting And Inventory Control Features, Installing Tally 9.0, Application Directory, Data Directory, Configuration Directory, Language Directory, Activating Tally, Activating Tally Gold For Multi User, Registering Tally, Validating Tally, Tally Data Migration Tool, Uninstalling Tally 9

**UNIT-II**

ABC of Company, Creation Of New Company Selection Of New Company Deletion Of Company Alteration Of Company Shut A Company

Company Features, Features Of Company Accounting Features Inventory Features, , Statutory Features

Tally Screen Components, Title Bar, Button Bar, Calculator, Working Area, Quitting, Gateway Of Tally, Current Status Area

Configuration, General, Numeric Symbols, Accts/Inventory Info, Printing, Connectivity, Licensing, Shop, Quit

Budget, Introduction, Budget, Creating Budget, Alter A Budget, Delete Budget, Display Budget/ Budget Variance, Scenarios

Job Costing, Introduction, Enabling Or Configure Job Costing In Tally, Master Creation For Job Costing, Voucher Type And Voucher Class, Job Cost Reports

Reports, Introduction Accounting Reports, Trial Balance, Balance Sheet, Profit & Loss, Cash Flow Statement, Fund Flow Statement, Ratio Analysis, Day Book, Cash/Bank Book Sales Register Purchase Register Outstanding Interest Cost Centers Job Work Analysis Statistics Inventory Reports

**UNIT-III**

Accounts Groups & Ledgers, Introduction Accounts Group Multiple Group Creation Display Group Alter Group Multiple Ledgers Display Ledger Alter Ledger Voucher Types

Payroll Accounting, Introduction, To Activate Payroll In Tally 9, Payroll Menu, Display Pay Heads, Multiple Group Creation, Employee Creation, Salary Detail, Attendance, Attendance Type, Voucher Creation

Export & Import, Introduction, Export, Import, ODBC Compliances

Cost Centre, Introduction Cost Centre, Creating Cost Centre, Display Cost Centre, Alter Cost Centre Cost Category, Create Cost Categories, , Display Cost Categories, Alter Cost Categories Voucher Entry Cost Centre Class, Creating Cost Centre, Invoice Entry Using Cost Centre Reports Related To Cost Centre

#### **UNIT-IV**

Foreign Currencies, Introduction Foreign Currency, Create Foreign Currency, Alter Foreign Currency, Display Foreign Currency, Exchange Rate Entry Voucher Entry Using Foreign Currency Voucher Entry through Forex Journal Voucher Class Reports Related To Foreign Currency

Interest, Introduction, Interest, Simple Mode, Interest On Outstanding Balances, Reports On Interest Calculated On Outstanding Balances, Advanced Parameter Mode, Interest Calculation Transaction By Transaction/Voucher Interest At Fixed Rate, Voucher Interest At Variable Rate, Statement Of Interest Due On Invoice, Interest Reports, Interest Voucher Class

Printing, Introduction Cheque Printing Printing of Cheque Multi Account Printing Printing Options General, Purchase Printing, Sales Transaction, Receipt Voucher, Journal/Contra, Debit/Credit Note, Reminder Letter, Confirmation Statement Reports Printing Button Related

#### **UNIT-V**

Bank Reconciliation, Introduction, Bank Reconciliation In Tally 9, Configuration Of Bank Reconciliation

Security Control, Introduction Security Levels Access Type

Backup & Restore, introduction, Group Company, Create a Group Company; Alter a Group Company, Tally Audit, Splitting Company Data

Inventory, Introduction Stock Group Stock Item Stock Categories Godowns Units Of Measures Rate Of Duty Inventory Vouchers Reorder Level Inventory Reports Inventory Info Inventory Books Statement Of Inventory Batch Wise Details Price List

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**AISECT UNIVERSITY, Bhopal, (M.P.)**

**Scheme of Examination**

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT203	B- Introduction to Internet & Web Technology	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

### Syllabus

#### THEORY

#### UNIT-I

**Introduction To Internet-** introduction, what is internet actually ?, growth of internet , owner of the internet, internet service provider, anatomy of internet, arpanet and internet history of the world wide web, services available on internet wais , basic internet terminologies, net etiquette, applications, commerce on the internet, governance on/through the internet, impact of internet on society

**TCP/IP - Internet Technology and Protocols-**introduction, switching technology, internet protocols, overview of TCP/IP reference model, introduction to TCP/IP, routers, internet addressing scheme

#### UNIT-II

**Internet Connectivity** - connectivity types, level one connectivity, level two connectivity, level three connectivity, hardware requirements, modems, narrow-band/phone-line dialup modems, software requirements, modem configuration:, telephone line options, making a dial-up connection, protocol options, service options, news services, desktop alerts

**Internet Network-** computer networks, applications of networks, common terminologies :, interoperability, network security, the need for security, common threats, security barriers in network pathways, network components :, communication media, network devices, types of network : client / server & peers, addressing in internet, domain name system (DNS), domain name and their organization, network topology, internet vs. intranet

**Services Of Internet (Definition And Functions)** - introduction, file transfer protocol, ftp related terminologies, ftp servers and authentication, public and private software services, ftp clients, types of ftp client software, displaying files , remote login, chat programs, connecting to a server, search engines

#### UNIT-III

**Electronic Mail** - introduction, what is an e-mail?, email networks and servers, merits of e-mail, limitations, e-mail protocols, structure of an e-mail, e-mail address, Microsoft internet explorer and outlook express, applying stationary, web based emails, working with yahoo, starting the mail program , creating signature in outlook express, creating signature in yahoo, email encryption, why email encryption?, digital certificate

**Current Trends On Internet** -current trends of internet:, languages used on the internet, internet phones, internet video / internet TV, streaming video & audio, collaborative computing, e-commerce, technical and organizational aspects

**Web Publishing-** overview, SGML (standard generalized markup language), what is the need of a website? , types of web sites, components of web publishing, domain name planning and registration, choosing a web host and signing up for an account, web hosting, web design and development, testing your website, promotion of the site, registering your site with a search engine, publishing tools, html editor, image editor, program to transfer your files to a web server, uploading web pages using Cuteftp

## UNIT-IV

**World Wide Web-** introduction , evolution of the www, basic features, mechanism of the world wide web, search and meta-search engines, searching the web, using boolean operators in your searches, using advanced , using a metasearch engine, site specific search tools, web protocols, hyper text transfer protocol (http), web server

**Browsers** , introduction, www web browsers, Mozilla Firefox browser, the opera browser, google chrome, what are bookmarks?, adding folders, favorites, deleting favorite folders and pages, history, progress indicator, customizing internet explorer, turning off graphics to display all web pages faster, customizing the toolbar, copying, saving and printing in internet explorer, printing an image from a web page, printing a web page, cookies, what is cache setting ?, internet explorer, the standard toolbar, internet explorer keyboard shortcuts

**Hyper Text Markup Language Programming Basics** - introduction, html editors, elements of html, definition lists , compact attribute, nested list, type attribute, html links, using alt attribute, background graphics, html document tables, creating tables within tables, html frames, html rules, introduction of multimedia, meaning of multimedia, what is multimedia ?, identifying multimedia elements, audio on the web, video on the web

## UNIT-V

**Introduction To Interactivity Tools-** overview, what is ASP?, functions of asp, the basic syntax rule , writing output to a browser, adding some html to the text, declaring a variable in asp, declaring an array in asp, what is VBScript?, java, features of java, starting with java, Javascript and java, syntax and conventions, FrontPage, introduction to flash, installation of flash MX, creating simple animation for the web, working with layers in flash, masking in flashmx, bouncing effect in flash, to create motion tween , flash ripple effect

**Internet Security Management Concepts, Information Privacy And Copyright Issues** - overview , basic security concepts, security events, measures for check threats, firewalls , monitoring tools, security analysis tools, cryptography , information privacy, copyrights and the internet, copyright legislation in India, key points of copyright, encryption & decryption - cryptography, terminology

**Firewalls** - firewalls, firewall design principles, firewall attributes, firewall strengths and weaknesses, types of firewalls, comparison of firewall types, DMZ DNS server, VLAN

### Practicals:

1. WAP which shows headings five time in ascending order. Align the heading also.
2. Write a program which show four paragraph under four headings.
3. Write a program for formatting the text &marked highlighted text.
4. Write a program for some text using CSS technique.
5. Write a program to insert an image in a page.
6. Write a program to make a table for any company employee's data record.
7. Write a program to make forms for different uses.
8. Write a java script to print the heading and paragraph & also create a button
9. Write a program to upload video on web page.
10. Write a program to change the back ground of any page.
11. Write a program to create a link between page.

### TEXT & REFERENCE BOOKS :

- Frontiers of Electronic Commerce, By- Kalakota, Ravi ; Stone, Tom ; Whinston, Andrew B, Addison Wesley Publishing Co , ISBN 8178080575
- E-Commerce An Indian Perspective (Second Edition) – by P.T. Joseph, S.J. Prentice-Hall of India





IMIT204	Programming with VB.Net	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr
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**Objective – Student will be able-**

- The aim of the course is for the student to aim knowledge in the basic concepts of object-oriented programming and build skills to develop modern software programs using the language Visual Basic. The course is also suitable for students with prior programming experience who wish to strengthen their knowledge in the area of object-oriented design and programming with Windows.
- Analyze program requirements
- Design/develop programs with GUI interfaces
- Code programs and develop interface using Visual Basic .Net
- Perform tests, resolve defects and revise existing code

**Syllabus**

**THEORY**

**UNIT-I**

**Introduction to .NET** - Introduction, What is a Program?, What is Programming?, What do you mean by .NET Framework?, Features of .NET Framework, VB 6 VS VB.NET, VB.NET VS JAVA, VB.NET VS C#, What is .NET Architecture?, What is CLR?, What do you mean by Class Library?, Versions of .NET Framework, What are Assemblies?, Namespaces, CTS (Common Type System), Interfaces, What is special in VB.NET?

**Visual Studio 2005** - Introduction, What is Visual Studio?, Flavors of Visual Studio, Visual Studio 2005, File Extensions Used in VB.Net, Using Visual Studio 2005, Feature of Visual Studio 2005, Output Window, Components Tray, References and the Reference Window, Quick View of Visual Studio 2005, Opening an existing project, Adding a Form to a Project

**UNIT-II**

**The Visual Basic Language** - Visual Basic Statements, Data Types in VB.NET, Declaring Variables, Declaration of Variables (Advanced), Data Type Conversion, String Functions, Formatting Data, Arithmetic Operators, Parentheses and Precedence, Operator Operation, Constants, Control Statements, Arrays in VB.NET, Specifying Optional Procedure Arguments, Passing a Variable Number of Arguments, Recursion, Using a Delegate

**Working With The Controls** - The Toolbox, Adding and deleting Tools in the Toolbox, creating a tab on the toolbox, Form Designer Basics, The Button, The Combo Box, The List Box, The Checkbox, The Picture Box, The Radio Buttons, The Scroll Bar, Timer, List View, Tree View, Toolbar, Dialog Boxes, Menus in VB.NET, Link Label Control

**UNIT-III**

**Designing Menus** - Menus, Context menu, Event of the Menu Item, Creating menu items in Visual Studio .Net

**Object Oriented Programming with VB.NET** - OOPs?, What is an Object?, What are Classes?, Visual Basic .NET and Object-Oriented, Principles of Object-Oriented Programming, Classes V/s Objects, Inheritance, Polymorphism and Overloading, Scope and Accessibility in Class Modules, Namespaces, Managed Execution, Assemblies, Assemblies in VB .NET

**The .NET Framework Class Library** - The .NET Framework Class Library, The System Namespace, Data Type Conversion Using Convert Class, The Array Class, The Math Class, The String Class, Other Namespaces, System.Collections, System.Data, System.IO

**UNIT-IV**

**OLE/COM/Win32 API** - Object Linking and Embedding, History of OLE/COM, Component Object Model (COM), COM interoperability in .NET, Win32 API in .NET, COM Interoperability in .NET, Installation and Registration of Assembly, Microsoft Office solutions with Visual Studio .NET, Automation of Office from Visual Studio .NET, Creating and opening Microsoft Word document from VB.NET

**User Controls in VB.NET** - Introduction, The Control Class, The Control Class' Properties, The Control Class' Methods, Creating the Control Project 1, The Round Button Control, Creating the Control Project 2, Building the new Button

**UNIT-V**

**A Brief Introduction to Database Access with VB .NET** - Introduction, What is ADO?, What is ADO.NET?, The Connection Object, Connecting to a Database, The Command Object, The Data Adapter Object, The Data Reader Object, The Dataset Object, Updating Your Database by Using Datasets, The Accept Changes () Method, The Reject Changes () Method, The Has Changes () Method, The Get Changes () Method, Working with Datasets in Visual Studio, Moving Around in Dataset and Retrieving Data, Using Strongly Typed Datasets, Datasets With Multiple Tables, Finding and Sorting Data in Datasets, Filtering on Row State and Version, Data View Manager  
**Graphics In VB.NET** - Introduction, Service of GDI+, Using GDI+ Managed Classes, BRUSH Class, Bitmap Class, Graphics Class, Simple Drawing, Drawing Text, An Example: Show All Fonts, Printing, Printing Multiple Pages, More on the PrintPageEventArgs Class, Using a Print Dialog Control, Rolling Your Own Printing Code, Print Preview

### **Out Comes –**

After the completion of the course, students are expected to:

- have gained a good understanding of the basic concepts of object orientation
- have a good understanding of the Visual Basic language structure and language syntax
- have developed the ability to design and develop interactive applications using the object-oriented principals, encapsulation, inheritance and to some extents polymorphism
- be able to effectively develop applications with full functionality and a graphical user interface using the language Visual Basic
- have the capability of analysing and finding suitable and effective solutions to Windows based applications using classes and objects

### **Practicals:**

1. Working with call backs and delegates in VB.
2. Program to display the first 10 natural numbers and their sum using console application..
3. Program to display the addition using the windows application.
4. Create your own Web browser application, which you can customize with shortcuts to your favorite Web sites..
5. Write a program to simple calculator using windows application.
6. Code access security with VB.
7. Creating a COM+ component with C#.
8. Creating a Windows Service with C#
9. Using Reflection in C#
10. Sending Mail and SMTP Mail and C#
11. Write a program working with Page using VB.Net.

### **TEXT & REFERENCE BOOKS :**

VB.NET Programming Black Book by Steven holzner –dreamtech publications  
Mastering VB.NET by Evangelos petroutsos- BPB publications  
Introduction to .NET framework-Worx publication  
[msdn.microsoft.com/net/](http://msdn.microsoft.com/net/)  
[www.gotdotnet.com](http://www.gotdotnet.com)

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**AISECT UNIVERSITY, Bhopal, (M.P.)**  
**Scheme of Examination**

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT205	Data Structure with C++	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective – Student will be able

1. To understand the basic knowledge of data structure.
- 2 To understand the Abstract data type concepts.
- 3 To understand the Linked List & its Basic operations.
- 4 To understand the Basic Terminology of TREES.
- 5 To understand the Analysis of algorithm & Introduction to graphs.

**Syllabus**

THEORY

**UNIT-I**

**Analysis of Algorithm**-Introduction, Criteria of Algorithm, Time Complexity, Space Complexity, Asymptotic Notation: Big Oh (O) Notation: Big Omega ( $\Omega$ ) Notation: Big Theta ( $\Theta$ ) Notation

**Types of Data structures**- Introduction, Types of Data structures, Linear Data Structures, Non Linear Data Structure, Array, SPARSE MATRICES, Garbage Collection, Benefits, Disadvantages

**UNIT-II**

**Stacks**-Introduction, Push operation, Pop operation, Stack implementation using arrays, (static implementation of stacks), STACK as a Linked List, Stack as an abstract data structure, Applications of stack, Conversion of Expressions, Precedence and associativity of the operators, Evaluation of Postfix expression, Multiple stacks,

**Recursion**-Introduction, Working of recursion, Fibonacci series, Tower of Hanoi, Efficiency of recursion

**Queue**-Introduction, Different types of queues, Queue (Linear queue), Queue as an abstract data structure, Circular queue, Double ended queue (Deque), Priority queue, QUEUE as a Linked List, Applications of Queue

**Linked Lists**-Concept of list and array , Introduction to Data Structures, Arrays, Linked list, Singly or Linear linked list, Circular singly linked list, Doubly linked lists, Header Node, Applications of linked lists, Addition of two long positive numbers, Evaluation of a polynomial

### **UNIT-III**

**Trees**-Introduction, Representation of tree, Binary Tree , Representation of binary tree, Array representation of binary tree, Linked List representation of binary tree, Basic Operation on Binary Tree- Traversals, Binary Tree Traversal Algorithms (Recursive), Creation of Binary Search Tree:, Types of binary trees, Operations on Binary Search Tree (BST), Threaded binary trees, Application of Binary Tree:, B-Tree, Height Balanced Tree ,

**Graph**- Introduction to Graphs, Undirected Graph, Directed Graph or digraph, Graph Representation, Adjacency Matrix Representation, Adjacency List Representation, Graph Traversals, Breadth First Traversal, Depth First Traversal , Searching in Graph, Minimal Spanning Tree, Kruskal's Algorithm, Prim's Algorithm , Shortest Path in Graph,

### **UNIT-IV**

**Sorting and Searching** - Introduction, Bubble sort, Selection Sort, Merge Sort, Quick sort, Insertion Sort, Shell sort, Address calculation sort, Radix sort, Comparison of sorting methods, Hash Table, Collision Resolution Techniques, Linear Search (Sequential Search), Binary Search, Searching an ordered table, Indexed sequential search, Interpolation search

### **UNIT-V**

**File Structure And Indexing**- Introduction, Objectives, Terminology, File Organization, Sequential Files, Disadvantages, Direct File Organization, Indexed Sequential File Organization

#### **Practicals:**

1. Write a program to Traversal of an Array.
2. Write a program to Insert Item into Sorted Array.
3. Write a program to Delete Item from Array.
4. Write a program to Insert Item at the Specific Node.
5. Write a program to Implement Stack using Array.
6. Write a program to Implement Queue using Linked List.
7. Write a program to Traversing of binary tree (IN-Order, Pre-Order, Post-Order).
8. Write a program to Sort an Array using BUBBLE SORT.
9. Write a program to Sort an Array using SELECTION SORT.
10. Write a program to Sort an Array using INSERTION SORT.
11. Write a program to Traversal of graph (BFS, DFS).

Out Comes – After Study This Student Will Be Able To Know About And Concepts Of Data Structure Using C++ Language, List & Its Operations Concept Of Tree, Algorithm & Graphs Design.

## REFERENCE BOOKS

- Fundamentals Of Data Structure, By S. Sawhney & E. Horowitz
  - Data Structure : By Trembley & Sorrenson
  - Data Structure : By lipschuists (Schaum's Outline Series McGraw Hill Publication)
  - Fundamentals Of Computer Algorithm: By Ellis Horowitz and Sartaj Sawhney
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## AISECT UNIVERSITY, Bhopal, (M.P.)

### Scheme of Examination

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT206	Minor Project	4(0-0-4)	-	-	-	70	30	100	3 hr	

**Pattern:**

The question paper will consist of five questions. Each question carry 10 marks each, one from each of the five units of the syllabus and may have internal choice. These five questions will have two parts A & B, preferably one theoretical and other numerical/short notes. Questions should test the concepts, knowledge & applications. Candidates are required to answer all questions.

### Syllabus

**THEORY:**

A two-three weeks project topic will be assigned to each of the student individually on the related topics studied in the First Semester on which student shall prepare a project report and submit to the University. Detailed Guidelines related to the Minor project can be obtained in the contact-class or can be downloaded from the website.

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## **AISECT UNIVERSITY, Bhopal, (M.P.)**

### **Scheme of Examination**

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
<b>SCIT201</b>	Web Development	3(1-0-2)	30	10	10	50	50	150	3 hrs.	2 hrs.

**Pattern:**

The question paper will consist of five questions. Each question carry 10 marks each, one from each of the five units of the syllabus and may have internal choice. These five questions will have two parts A & B, preferably one theoretical and other numerical/short notes. Questions should test the concepts, knowledge & applications. Candidates are required to answer all questions.

### **Syllabus**

**THEORY:**

**UNIT I:** Introduction and Web Development Strategies

History of Web, Protocols governing Web, Creating Websites for individual and Corporate World, Cyber Laws, Web Applications, Writing Web Projects, Identification of Objects, Target Users, Web Team, Planning and Process Development.

**UNIT II: HTML, XML and Scripting**

List, Tables, Images, Forms, Frames, CSS Document type definition, XML schemes, Object Models, Presenting XML, Using XML Processors: DOM and SAX, Introduction to Java Script, Object in Java Script, Dynamic HTML with Java Script.

**UNIT III: Java Beans and Web Servers**

Introduction to Java Beans, Advantage, Properties, BDk, Introduction to EJB, Java Beans API Introduction to Servlets, Lifecycle, JSDK, Servlet API, Servlet Packages: HTTP package, Working with Http request and response, Security Issues.

**UNIT IV:** JSP Introduction to JSP, JSP processing, JSP Application Design, Tomcat Server, Implicit JSP objects, Conditional Processing, Declaring variables and methods, Error Handling and Debugging, Sharing data between JSP pages- Sharing Session and Application Data.

**UNIT V:** Database Connectivity, Database Programming using JDBC, Studying Javax.sql.\*package, accessing a database from a JSP page, Application-specific Database Action, Developing Java Beans in a JSP page, introduction to Struts framework.

- 1 Implements Basic HTML Tags
- 2 Implementation of Table Tag
- 3 Implementation of FRAMES
- 4 Design A FORM In HTML (Yahoo registration form)
- 5 Validation of FORM Using Java Script.
- 6 Program for exception handling using multiple catch statements and also create your Own exception.
- 7 Program to create an applet of a moving banner.
- 8 Program to create a chatting application
- 9 Program to create a servlet in which user enters a name in edit box, after pressing submit Button the name will be displayed on the next page
- 10 Program to create your own resume by using HTML
- 11 Install a database (Mysql or Oracle).  
Create a table which should contain at least the following fields: name, Password, email-id, phone number (these should hold the data from the registration form) Practice 'JDBC' connectivity. Write a java program/servlet/JSP to connect to that database And extract data from the tables and display them. Experiment with various SQL queries. Insert the details of the users who register with the web site, whenever a new user clicks the Submit button in the registration page (week2).
12. Write a JSP which does the following job: Insert the details of the 3 or 4 users who register with the web site(week9) by using registration form. Authenticate the user when he submits the login form using the user name and password from the database

Reference Books:-

- Internet & Web Design by A. Mansoor, Pragya Publications.
- Learn HTML in a weekend by Steven E. Callihan, PHI
- Using HTML By Lee Anne Phillips, PHI
- SAMS Teach Yourself Javascript in 24 Hrs. By Michael Moncur, TechMedia
- E. Balaguruswamy, “Programming In Java”, 2nd Edition, TMH Publications ISBN 0-07-463542-5
- Peter Norton, “Peter Norton Guide To Java Programming”, Techmedia Publications ISBN 81-87105-61-5
- JAVA, How to Program, Deitel & Deitel, PHI, Pearson

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THIRD SEMESTER

**AISECT UNIVERSITY, Bhopal, (M.P.)**

Scheme of Examination

Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT301	Operating Systems	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able

1. To develop the understanding of functioning of Operating System.
- 2 To understand the Process Concepts, process state & process control
- 3 To understand the Critical Section Problem
- 4 To understand the Contiguous Allocating, Paging
- 5 To understand the Disk Scheduling, Disk Management

**Syllabus**



THEORY:

## UNIT-I

**Operating Systems:** Overview -Introduction of Operating System, Types of Operating System, System Components and its services, System Calls, System Programs, Structure, Design and, Implementation, Operating System Generation

## UNIT-II

**Process :** Concept, Description and Control -Concept of process, Process state model, Process description - PCB, Process control, Threads, Threads in Linux

**Process Scheduling** - Types of Scheduler, Scheduling Criteria, Uniprocessor, Scheduling, Multiprocessor Scheduling, Algorithm Evaluation, Process Scheduling in Linux

**Concurrency** - Introduction to concurrency, Critical section problem, Mutual Exclusion solutions, S/w approach, H/w support, semaphore, monitor, Classical problem of synchronization

## UNIT-III

**Deadlock** - Deadlock Characterization, Deadlock Prevention, Deadlock Detection, Deadlock Avoidance, Combined Approach

**Protection** - Goal of Protection, Protection Domains, Access Matrix, Implementation of Access Matrix, Revocation of Access Rights, Language Based Protection

**Security and Encryption** - Security Problem, User Authentication, Program Threats, System Threats, Securing System and Facilities, Encryption & Decryption - Cryptography

## UNIT-IV

**Memory Management** -Memory Management Requirements, Address Space, Linking and Loading, Swapping, Partitioning, Paging, Segmentation

**Virtual Memory** - Introduction to Virtual Memory, Demand Paging, Page Replacement, Thrashing, Demand Segmentation

**Input Output Systems** - Input - Output Devices, Hardware Support for I/o, I/O Communication Techniques, I/O Software Device Drivers, Performance Consideration,

**Disk Structure** - Introduction to Disks, Disk Scheduling, Disk Management, Disk Reliability, Swap Space Management, Stable Storage Implementation

## UNIT-V

**File Management** - File Concepts, Directory structure, File Sharing, Protection, File system in Linux

**Out Comes** – After Study This Student Will Be Able To Know About functioning of Operating System. To make students able to learn different types of operating systems along with concept of file systems and CPU scheduling algorithms used in operating system.

To provide students knowledge of memory management and deadlock handling algorithms.

At the end of the course, students will be able to implement various algorithms required for management, scheduling, allocation and communication used in operating system

## REFERENCE BOOKS :-

- Operating System Concepts by Silberschatz & Galvin, Addison Wesley Publication 6th Edition.
  - Operating System Concepts & Design by Milan Milen Kovic, TMH Publication
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**AISECT UNIVERSITY, Bhopal, (M.P.)**  
**Scheme of Examination**

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT302	Java Programming	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective – Student will be able

1. To understanding the JAVA environment.
- 2 To understand the Process Concepts, process state & process control
- 3 To understand the Critical Section Problem
- 4 To understand the Contiguous Allocating, Paging
- 5 To understand the Disk Scheduling, Disk Management

### Syllabus

THEORY:

#### UNIT-I

**OVERVIEW OF JAVA** - Introduction, Programming paradigm, OOPS Concepts, Evolution of Java, Features of Java, C++ Vs Java, Java and Internet, Java and WWW, Java support systems, Java Environment

**KEY FEATURES OF JAVA** - Introduction, Java Program Structure, Simple Java Program, Tokens, Java Statements, Java Virtual Machine, Constants and Variables, Declaration of Variables, Scope of Variables, Data types, Symbolic Constants, Type Casting, Command line arguments

#### UNIT-II

**OPERATORS** - Operators, Arithmetic Operators, Relational Operators, Logical Operators, Bitwise Operators, Increment and Decrement, Conditional Operators, Special Operators, Assignment Operators, Expression & its evaluation

**CONTROL STATEMENTS** - Introduction, Control Statements, Sequence Control Statement, Decision Control Statement, Case Control Statement, Iteration Control Statement, Jump in loops, Labelled Loops

**ARRAYS AND STRINGS** - Introduction, Array, Need of Array, Types of Array, One dimensional Array, Two-Dimensional Array, Multidimensional Array, Strings, Concatenation of Strings, Methods for String Comparison, Methods for searching Strings, Changing the case of characters, String Buffer

#### UNIT-III

**CLASSES** - Introduction, Defining a Class, Adding Variables, Adding Methods, Creating Objects, Accessing Class members, Call by value and call by reference, Recursion, Access Control, Constructors, Method overloading, Constructor Overloading, Garbage Collection, finalize( ) method, this keyword, Static Members, Nesting of Methods

**INHERITANCE** - Inheritance, Single Inheritance, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Using Super, Constructor -Order of Execution in Inheritance, Overriding methods, Final variables and methods, Final Classes, Abstract methods and Classes, Containership, Visibility Control

**WRAPPER CLASSES AND VECTORS** - Introduction, Wrapper Classes, Number Class, Byte class, Short class, Integer class, Long class, Converting Numbers to and from Strings, Float class, Double class, Character class, Boolean class, Vectors, Creating a vector

#### UNIT-IV

**INTERFACE & PACKAGES** - Introduction, Interfaces, Defining interface, Implementing interface, Accessing interface method, Accessing interface variable, Extending interfaces, Packages, System packages, Using system packages, User defined packages, Adding class to a package, Accessing and using package

**EXCEPTION HANDLING** - Introduction, Exceptions, Using try & catch, multiple catch clauses, Finally, Throw, Throws

**MULTITHREADING** - Introduction, The Main Thread, Creating Threads, Life cycle of Thread, Using Threads Methods, Thread Priorities, Stopping and Blocking a thread, Thread Exceptions, Using is Alive( ) and join( ), Synchronization

#### UNIT-V

**APPLETS** - Introduction, Local & remote applets, Applet vs applications, Writing applets, Life cycle of an applet, Creating source code of applet, Creating an executable applet, Creating applet tag, Adding applet tag to html, Running the applet, Detailed form of applet tag, Passing parameters to applet, Aligning the display, Html tags, Getting input from user

**INPUT-OUTPUT STREAMS AND FILE MANAGEMENT** - Introduction, Stream, Stream Classes, Byte Stream Classes, Character Stream Classes, System Class, Reading Console Input, Writing Console Output, Using the File Class, Random Access File

**GRAPHICS PROGRAMMING** - Introduction, The Graphics Class, Drawing Lines and Rectangles, Using drawOval() and fillOval() method, Drawing arcs, Drawing Polygon, Line Graphs, Drawing Bar Chart

### **Out Comes –**

Students will complete software projects comprised of an object-oriented design, implementation, and test plan.

- Designs will demonstrate the use of good object-oriented design principles including encapsulation and information hiding.
- The implementation will demonstrate the use of a variety of basic control structures including selection and repetition; classes and objects in a tiered architecture (user interface, controller, and application logic layers); primitive and reference data types including composition; basic AWT components; file-based I/O; and one-dimensional arrays.
- Test plans will include test cases demonstrating both black box and glass box testing strategies.

### **Practicals:**

1. Write a Java Program to Display message on computer screen.
2. Write a Java Program to develop a class for Rational numbers
3. Design a Date class in Java
4. Write a Java Program to design an interface for Stack ADT and implement Stack ADT using both Array and Linked List.
5. To develop a vehicle class hierarchy in Java to demonstrate the concept of polymorphism
6. Design a Date class in Java.
7. To write a Java Program to randomly generate objects and write them into a file using concept of Object Serialization
8. Develop a scientific calculator using even-driven programming paradigm of Java.
9. To write a multi-threaded Java program to print all numbers below 100,000 that are both prime and Fibonacci number
10. To develop a Java Program that supports multithreaded echo server and a GUI client.
11. To implement a calculator using GUI Environment with the help of javax.swing package.

### **REFERENCE BOOKS:**

- E. Balaguruswamy, “Programming In Java”, 2nd Edition, TMH Publications ISBN 0-07-463542-5
  - Peter Norton, “Peter Norton Guide To Java Programming”, Techmedia Publications ISBN 81-87105-61-5
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# AISECT UNIVERSITY, Bhopal, (M.P.)

## Scheme of Examination

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT303	Software Engineering	5(3-2-0)	50	20	30	-	-	100	3 hr	-

### Objective – Student will be able-

This course introduces the concepts and methods required for the construction of large software intensive systems. It aims to develop a broad understanding of the discipline of software engineering. • It seeks to complement this with a detailed knowledge of techniques for the analysis and design of complex software intensive systems. It aims to set these techniques in an appropriate engineering and management context. • It provides a brief account of associated professional and legal issues

### Syllabus

#### Theory:

#### UNIT-I

**Introduction to software engineering** - introduction, reusable software components, what is well engineered software? Programming and software engineering, what is software engineering?, goals of software engineering, software processes, software process models, process iteration, other important software models

**Software project management** - project management, management activities, project planning, project scheduling, risk management, selecting staff, metrics used for measuring the software cost, cocomo model

**Software process and project metric** - software quality, metrics for the analysis model, metrics for the design model, metrics for source code, metrics for testing

#### UNIT-II

**Software project planning** - introduction, software project planning, other planning activities, organization of the software project, management plan (smp) document

**Software cost estimation** - introduction, software cost factors, programmer's ability, product complexity, product size, required level of reliability, level of technology, decomposition technique, empirical estimation models, the structure of estimation models

**Software project requirements** - software requirements, functional and non-functional requirements, user requirements, system requirements, software requirements document

**Requirements engineering process** - requirements engineering process, feasibility study, requirements elicitation and analysis, scenarios, requirements specification, ethnography, requirements validation, requirements management

#### UNIT-III

**Software prototyping** - software prototyping, prototyping in the software process, rapid prototyping techniques, user interface prototyping

**Analysis concept and modeling** - analysis modeling, context model, data modeling concepts, cardinality and modality, flow oriented diagram, data dictionary

**Design concepts and principles** - introduction, design within the context of software engineering, design process and design quality, design concepts, information hiding, functional independence, design classes, the design model, software patterns

#### UNIT-IV

**Software architecture** - software architecture data design, architectural styles and patterns, analyzing alternative architectural designs, mapping the requirements into a software architecture, architectural design

**Designing the user interface** - user interface, input design, end-user considerations for input design, output design, design principles, screens, forms, menu, messages, importance of code, data codification schemes, designing code less systems

Software quality management, software quality management, role of a software quality manager, ISO quality model, quality assurance standards, quality planning, quality control, software reviews, software reliability

**Verification and validation** - verification and validation, software testing, verification and validation planning, software inspections, automated static analysis, cleanroom software development

#### UNIT-V

**Software testing models** - software testing fundamentals, black-box and white-box testing, white-box testing, basis path testing, control structure testing, black-box testing, object-oriented testing methods

**Software testing strategies** - the strategic approach, the software testing strategy, strategic issues, unit testing, integration testing, validation testing, system testing, test automation

**Computer aided software engineering (CASE)** - computer aided software engineering (CASE), case workbenches, integrating case environment, need of software reuse: types of reuse, reuse

#### Out Comes –

- Carry out an evaluation and selection of projects against strategic, technical and economic criteria and use a variety of cost benefit evaluation techniques for choosing among competing project proposals. Approach project planning in an organized step by step manner and select an appropriate process model produce an activity plan for a project.
- Identify project risks, monitor and track project deadlines and produce a work plan and resource schedule.

Plan the evaluation of a proposal or a product and manage people in software environments. Understand the importance of teamwork and quality management in software project management. Apply these project management tools and techniques in a diversity of fields such as new product and process development, construction, information technology, health care, and applied research.

#### REFERENCE BOOK :

- Software Testing: Principles and Practice By Gopaldaswamy and Srinivasan, 817758121x. Publisher, Pearson Education India. ISBN, 817758121x.
- Software Testing Tools: Covering WinRunner, Silk Test, LoadRunner, JMeter and TestDirector with case By Dr. K.V.K.K. Prasad, ISBN: 8177225324, Wiley Dreamtech, List Price: Rs. 279.00
- <http://www.columbia.edu/~jm2217/>
- Basics of Software Project Management – By NIIT,, Prentice Hall of India, ISBN 81-203-2490-0

- Software Project Management by Bob Hughes & mike Cotterell, Tata McGraw Hill , ISBN – 0-07-061985-9

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## AISECT UNIVERSITY, Bhopal, (M.P.)

### Scheme of Examination

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT30 4-A	A. Computer Architecture	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able

1. To understand the lower level abstraction of a computer system including digital logic, instruction set and assembly language programming.
2. To understand data representation, logic gates, simplification of logical expressions, design and analysis of simple combinational circuit such as decoders and multiplexers.
3. To understand the working of flip-flops and registers, design and analysis of simple synchronous sequential circuit, random-access and read-only memories, instruction set architecture and programming in assembly language.

#### Syllabus

THEORY:

**UNIT-I**



**INTRODUCTION-** Digital Computers, Computer Architecture, Computer Organization, Difference between Computer Architecture and Organization, Structure and Functions, Summary, Exercise

**BASIC ARRANGEMENT OF A COMPUTER SYSTEM** - Computer, Basic organization of a computer system, Types of computers, Microprocessor ( $\mu$ p), Working of Microprocessor, Microprocessor 8085 Architecture, Speed of Microprocessors, Summary, Exercise

## **UNIT-II**

**NUMBER SYSTEM AND ITS REPRESENTATION** - Data Types, Number System, Number System Conversion, Binary Arithmetic, Integer and Floating Point Representation Overflow Underflow

**COMPUTER CODES** - Introduction, BCD (Binary Coded decimal) Code, EBCDIC Code, ASCII Code, Excess-3 Code, Gray Code, Error Detection Code, Error Correction Code

**BASIC BUILDING BLOCKS** - Logic Gates , Universal Gates, Exclusive Gates, Bubbled Gates, Universality of NAND and NOR gates

**BOOLEAN ALGEBRA** - Boolean Variable, Boolean Algebra, Boolean Functions and Truth Tables, Logic Diagram, Laws of Boolean Algebra, Rules for Boolean Algebra, DeMorgan's theorems, Simplification of Boolean Functions, Implementation Using Basic Gates, To Obtain Expression from Logic Circuits

## **UNIT-III**

**KARNAUGH MAP** - Introduction, Algebraic Expression by Karnaugh Map, Simplification of Boolean Expression using K Map, Simplification of Boolean expression using K-map, Don't care conditions

**DIGITAL LOGIC CIRCUITS** - Introduction, Combinational Logic Circuit, Sequential Logic Circuits

**BASIC COMPUTER ORGANIZATION** - Register Transfer language and Micro-operations, Instruction Codes , Instruction Set, Operations and Operands, Computer Registers, Instruction Format, Instruction Cycle, Addressing Modes, Real and Protected Addressing Modes, Assembly Language Programming, Input-Output and Interrupt

## **UNIT-IV**

**Von Neumann Architecture-** Data Path and Memory Bus, Arithmetic and Logic Unit (ALU), Memory, Static Random Access Memory (SRAM), Dynamic Random Access Memory (DRAM), Control Unit (CU), Register Transfer Language, Execution of Instructions, Micro architecture, Complex and reduced instruction sets (CISC/RISC), Input/output

**CENTRAL PROCESSING UNIT DESIGN** - Central Processing Unit (CPU), BUS Organization, Register Organization, Stack Organization, Data Path and Control Signals, Types of Processor (CPU) , Micro Programmed Control and Hardwired Control, Pipelining, Software - Hardware Interaction layers in Computer Architecture

**INPUT-OUTPUT ORGANIZATION**, Transfer of Information between I/O Devices, CPU & Memory, Data Transfer Format , Types of Data Transfer , I/O Interface , Modes of Data Transfer , I/O Channels and Processors, Input/output Identification (Peripheral or Memory Mapped), Conditions of Data Transfer

## **UNIT-V**

**MEMORY ORGANIZATION** - Computer Memory, Characteristics of Memory, Units of Memory, Data Accessing/Storing Methods in Computer Memory, Memory Hierarchy, Classification of Memory, Associative Memory, Virtual Memory, Memory Management System

**Optimizing Hardware Performance** - Memory Hierarchy, Cache, Virtual Memory, Pipelining, Pipelining Hazards, Conclusion, Superscalar CPU, Brief Historical Detour into Supercomputing, Superscalar Principle

**Outcomes-** After study this student will be able to know about the basic computer organization, design and micro-operations, Understanding of CPU functioning and computer arithmetic. Learning various methods and techniques of memory organization.

**Texts & Reference Books:**

- Computer Organization & Architecture - William Stallings.
  - Intel Microprocessors - Architecture, Programming & Interfacing - Barry. b Brey.
  - Computer System Architecture by: Morris Mano.
  - Digital Computer Fundamentals by Bartee.
  - Digital Computer Electronics by Malvino.
  - Digital Computer Organization by Kamal Prakashan
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			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT304-B	B. MICROPROCESSOR & ASSEMBLY LANGUAGE PROGRAMMING	5(3-2-0)	50	20	30	-	-	100	3 hr	-

### Syllabus

**THEORY:**

#### **UNIT-I**

Introduction, OR gate identity, AND gate identity, DeMorgan's theorem, logic gates, Karnaugh map, simplification of Boolean equation by K map, don't care condition, combinational circuits, arithmetic circuits, Subtractors, sequential circuits, clock, flip flop, binary counters, asynchronous (or ripple) down counter, up-down counter

#### **UNIT-II**

Microprocessor evolution and types, dedicated or embedded controllers, characteristics of embedded controllers, other common controller features, embedded controllers vs. general microprocessors and microcontrollers, bit-slice processors, general purpose CPUs, RISC processor, RISC versus CISC, RISC properties, RISC evaluations, computing speed, specification of sun SPARC cy7c601, the Intel i860 processor architecture, RISC processor-Motorola 88000, superscalar processor, register renaming, branch prediction, PowerPC organization, machine status register (msr), data types, features of PowerPC architecture

#### **UNIT-III**

8086 internal architecture, register organization of 8086, addressing modes, instruction set and assembler directives, data movement instructions, addition, subtraction and compare instructions, multiplication and division instructions, BCD and ASCII arithmetic instructions, logical instructions, shift and rotate instructions, string compare instructions, jump instructions, machine control and miscellaneous instructions, interrupt instructions, instruction templates and coding formats, assembler directives and operators

#### **UNIT-IV**

Assembly language of 8086, languages used for programming, assembly language programming tips, 8086 signals, addressing memory, addressing i/o, general bus operation, special processor activities, minimum mode 8086 system and timings, maximum mode 8086 system and timings, the processor 8088

#### **UNIT-V**

Intel 80386 processor, architecture and bus cycles: features of 80386: architecture of 80386dx, instruction decode unit, execution unit: pin diagram of the 80386 microprocessor, DMA controller: DMA controller: data transfer modes, pin configuration of 8237, block diagram of 8237

#### **Texts & Reference Books:**

- Computer Organization & Architecture - William Stallings.

- Intel Microprocessors - Architecture, Programming & Interfacing-Barry. b Brey.
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**Scheme of Examination**

**Department: CSA**

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			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT305	A. Compiler Design	5(3-2-0)	50	20	30	-	-	100	3 hr	-

**Syllabus**

THEORY:

**UNIT-I****LEXICAL ANALYSIS**

Introduction to Compiling- Compilers-Analysis of the source program-The phases-Cousins-The grouping of phases-Compiler construction tools. The role of the lexical analyzer- Input buffering-Specification of tokens-Recognition of tokens-A language for specifying lexical analyzer.

**UNIT-II****SYNTAX ANALYSIS AND RUN-TIME ENVIRONMENTS**

Syntax Analysis- The role of the parser-Context-free grammars-Writing a grammar-Top down parsing-Bottom-up Parsing-LR parsers-Constructing and SLR (1) parsing table.

Type Checking- Type Systems-Specification of a simple type checker. Run-Time Environments-Source language issues-Storage organization-Storage-allocation strategies.

**UNIT-III****INTERMEDIATE CODE GENERATION**

Intermediate languages-Declarations-Assignment statements - Boolean expressions-Case statements- Back patching-Procedure calls

**UNIT-IV****CODE GENERATION**

Issues in the design of a code generator- The target machine-Run-time storage management-Basic blocks and flow graphs- Next-use information-A simple code generator-Register allocation and assignment-The dag representation of basic blocks -Generating code from dags.

**UNIT-V****CODE OPTIMIZATION**

Introduction-The principle sources of optimization-Peepphole optimization- Optimization of basic blocks-Loops in flow graphs- Introduction to global data-flow analysis-Code improving transformations.

**TEXT BOOK & REFERENCE**

1. Alfred V. Aho, Ravi Sethi Jeffrey D. Ullman, "Compilers- Principles, Techniques, and Tools", Pearson Education Asia, 2007.

## REFERENCES:

1. David Galles, "Modern Compiler Design", Pearson Education Asia, 2007
2. Steven S. Muchnick, "Advanced Compiler Design & Implementation", Morgan Kaufmann Publishers, 2000.
3. C. N. Fisher and R. J. LeBlanc "Crafting a Compiler with C", Pearson Education, 2000.

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**Scheme of Examination**

**Department: CSA**

Subject	Subject Name	Credits	Maximum marks Allotted	Duration of Exam.
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Code			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT305	B. Artificial Intelligence and Expert System	5(3-2-0)	50	20	30	-	-	100	3 hr	-

### Syllabus

THEORY:

#### UNIT-I

**Introduction to Artificial Intelligence**, Overview and definition of AI, Importance of AI, Early work in AI, General issues in AI, Problems of AI, AI Techniques, Scope and Application areas of AI

**Problem Solving and Search**, State Space Search for problem solving, Production System, Search and Control Strategies, Breadth First Search, Depth First Search, Heuristic Search, Production System Characteristics, Problem characteristics, Some other Control Strategies, Uniform cost search, Depth-limited search, Iterative deepening search, Adversarial Search, Two agent Games, The Minimax procedure, Example Problems, -Puzzle Problem and Playing Chess, Traveling Salesman Problem, Tic-Tac-Toc Problem, Water Jug Problem

#### UNIT-II

**Heuristic Search Techniques**, Introduction, A General Graph Searching Algorithm, Generate and Test, Hill Climbing Search, Best First Search and A\* algorithm, Admissibility of A\*, Monotone or Consistency Condition, Problem Reduction, AND-OR TREE, Constraint Satisfaction, Cryptarithmic Problem

**Knowledge Representation and Logic**, Introduction and Importance of Knowledge, Characteristics of Knowledge, Explicit and Implicit Knowledge, Declarative or Procedural knowledge, Internal vs. External Knowledge, Mappings and Knowledge representation Methods, Issues in Knowledge representation, Important Attributes, Relationship among attributes, Granularity of representation, Representing set of objects, Finding the Suitable structure

#### UNIT-III

**First order logic or predicate calculus**, Introduction, Syntax and Semantix, Extensions and Notational Variations, Representing Simple facts in Predicate Logic, Representing Instance and ISA Relationships, Inference in First Order Logic, Inference Rules Involving Quantifiers, Generalized Modus Ponens, Canonical Form, Unification, Forward and Backward Chaining, A Complete Inference Procedure: Resolution, The Resolution Inference Rule, Canonical Form for Resolution, Resolution Proofs, Conversion to Normal Form (Skolimization), Conversion to Clause Form, Resolution control strategies, Unit Preference, Set of support, Linear Input Resolution, Subsumption, Natural Deduction and Question Answering

**Knowledge Representation Using Rules**, Representing Knowledge Using Rules, Procedural V/S Declarative Knowledge, Logic Programming, Forward and Backward Reasoning, Matching, Indexing, Matching with Variable, Complex and Approximate Matching, Conflict Resolution, Control Knowledge

**Symbolic and Statistical Reasoning**, Symbolic Reasoning under Uncertainty, Introduction to Reasoning, Nonmonotonic Reasoning and its Logics, Implementation Issues, Implementation: Depth – First Search, Implementation: Breadth – First Search, Statistical Reasoning, Symbolic Verses Statistical Reasoning

#### UNIT-IV

**Structural Knowledge Representation**, Weak Slot and filter structures, Semantic nets, Intersection search, Non-binary predicates Representation, Essential distinctions, Partitioned semantic nets, Semantic nets to Frames, Frames, Frames as sets and instances, Additional ways of relating classes to each other, Slots and full-fledged objects, Property Inheritance algorithm, Languages for Frame, Strong slot and filter structures, Conceptual Dependency, Scripts, CYC

**NLP : Natural Language Processing**, Introduction, Computational linguistics, Problems of NLP, NLP Steps, Syntactic processing, Grammars, parsers, One or many Interpretations, Parsing techniques, Transition networks and augmented transition net, Unification Grammar, Semantic analysis, Semantic grammars, Case grammars,

Conceptual parsing, Semantic interpretation, Discourse & pragmatic processing, Focus use in understanding, Modeling beliefs, Use of goals and plans for understanding, Acts of speech, Postulates of conversation

#### UNIT-V

**Expert system**, Introduction, Need and Justification, Benefits of using ES, Characteristics, Applications, Building blocks of Expert system, Knowledge Base, Inference Engine, User Interface, Expert System Life Cycle, Representing and Using Domain Knowledge, Knowledge Engineering and Acquisition, Expert System Tools, Expert System Shells, Case Study: Mycin & Dendral, Rule Based Systems, Learning Procedure

**PROLOG: AI Programming Language**, Introduction, Data Types & Structures: Atom, Variables, Lists, Prolog Syntax and Programming, Prolog Objects and Methods, Objects & Relationships using Trees and Lists, Facts, rules, Relationships and queries, 'IS' Operator & Singleton Variable, 'CUT' Operator

#### Texts & Reference Books:

Artificial Intelligence, Rich E and Knight K, TMH, New Delhi

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### Scheme of Examination

**Department: CSA**

Subject	Subject Name	Credits	Maximum marks Allotted	Duration of Exam.
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Code			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
<b>SCIT 301</b>	Web Development	3(1-0-2)	30	10	10	50	50	150	3 hrs.	2 hrs.

**Pattern:**

The question paper will consist of five questions. Each question carry 10 marks each, one from each of the five units of the syllabus and may have internal choice. These five questions will have two parts A & B, preferably one theoretical and other numerical/short notes. Questions should test the concepts, knowledge & applications. Candidates are required to answer all questions.

Syllabus

**THEORY:**

UNIT I: Introduction and Web Development Strategies

History of Web, Protocols governing Web, Creating Websites for individual and Corporate World, Cyber Laws, Web Applications, Writing Web Projects, Identification of Objects, Target Users, Web Team, Planning and Process Development.

UNIT II: HTML, XML and Scripting

List, Tables, Images, Forms, Frames, CSS Document type definition, XML schemes, Object Models, Presenting XML, Using XML Processors: DOM and SAX, Introduction to Java Script, Object in Java Script, Dynamic HTML with Java Script.

UNIT III: Java Beans and Web Servers

Introduction to Java Beans, Advantage, Properties, BDk, Introduction to EJB, Java Beans API Introduction to Servlets, Lifecycle, JSDK, Servlet API, Servlet Packages: HTTP package, Working with Http request and response, Security Issues.

UNIT IV: JSP Introduction to JSP, JSP processing, JSP Application Design, Tomcat Server, Implicit JSP objects, Conditional Processing, Declaring variables and methods, Error Handling and Debugging, Sharing data between JSP pages- Sharing Session and Application Data.

UNIT V: Database Connectivity, Database Programming using JDBC, Studying Javax.sql.\*package, accessing a database from a JSP page, Application-specific Database Action, Developing Java Beans in a JSP page, introduction to Struts framework.

- 1 Implements Basic HTML Tags
- 2 Implementation of Table Tag
- 3 Implementation of FRAMES
- 4 Design A FORM In HTML (Yahoo registration form)
- 5 Validation of FORM Using Java Script.
- 6 Program for exception handling using multiple catch statements and also create your Own exception.
- 7 Program to create an applet of a moving banner.
- 8 Program to create a chatting application

- 9 Program to create a servlet in which user enters a name in edit box, after pressing submit Button the name will be displayed on the next page
  - 10 Program to create your own resume by using HTML
  - 11 Install a database (Mysql or Oracle).  
Create a table which should contain at least the following fields: name, Password, email-id, phone number (these should hold the data from the registration form) Practice 'JDBC' connectivity. Write a java program/servlet/JSP to connect to that database And extract data from the tables and display them. Experiment with various SQL queries. Insert the details of the users who register with the web site, whenever a new user clicks the Submit button in the registration page (week2).
12. Write a JSP which does the following job: Insert the details of the 3 or 4 users who register with the web site(week9) by using registration form. Authenticate the user when he submits the login form using the user name and password from the database

**Reference Books:-**

- Internet & Web Design By A. Mansoor, Pragma Publications.
  - Learn HTML in a weekend by Steven E. Callihan, PHI
  - Using HTML By Lee Anne Phillips, PHI
  - SAMS Teach Yourself Javascript in 24 Hrs. By Michael Moncur, TechMedia
  - E. Balaguruswamy, "Programming In Java", 2nd Edition, TMH Publications ISBN 0-07-463542-5
  - Peter Norton, "Peter Norton Guide To Java Programming", Techmedia Publications ISBN 81-87105-61-5
  - JAVA, How to Program, Deitel & Deitel, PHI, Pearson
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**FOURTH SEMESTER**  
**AISECT UNIVERSITY, Bhopal, (M.P.)**

**Scheme of Examination**

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT401	Computer Graphics	5(3-2-0)	50	20	30	-	-	100	3 hr	-

**Objective – Student will be able-**

To learn the multimedia communication standards and compression techniques. • To provide the foundation knowledge of multimedia computing, e.g. media characteristics, compression standards, multimedia representation, data formats, multimedia technology development. • To provide programming training in multimedia computing, multimedia system design and implementations. To learn the Multimedia communication across the networks

**Syllabus**

**THEORY:**

**UNIT-I**

**Introduction to Computer Graphics** - introduction to computer graphics, advantages of computer graphics, applications of computer graphics, classification of computer graphics, graphics standards, graphical user interface, basic elements of graphics

**Graphical Input Devices** - Introduction, Keyboard, Mouse, Trackball, Track pads, Touch Screens/panels, Automatic Teller Machine, Joystick, Light Pen, Data Glove, image scanners, Digitizers/digitizing or graphic tablets

**Graphical Output Devices** - Introduction, hard copy and soft copy output devices, graphical Display or soft copy Devices, Monitor , Raster Scan and Random scan displays, Display technologies, Cathode Ray Tube (CRT) Displays, Flat Panel Displays, Characteristics OF A Monitor, video/Display Adapters , Modes , HARD COPY DEVICES

**UNIT-II**

**Drawing Geometry:** Line & Circle Generation, Introduction, lines, Line Segments, Vectors, Vector Generation, Thick Lines, Basic Concepts in Circle Drawing, Circle Drawing Algorithms, Ellipse Drawing Algorithm

**Aliasing, Antialiasing and Character Generation** - Aliasing and Antialiasing, Character Generation, Normalized Device Co-ordinates, Display of Frame Buffer

**UNIT-III**

**Polygon Representation and Filling** - Introduction, Types of Polygons, Representation of Polygons, Entering Polygons, An Inside Test, Polygon Filling, Filling with Patterns, Scan Conversion

**2D Geometric Transformation** - Introduction, Matrices, Transformations, Homogeneous Co-ordinates, Composition of 2D Transformations, Other Transformations

**2D Viewing Transformation and Clipping** - Introduction, Viewing Transformation, More about Viewport and Window, Two-Dimensional Viewing Functions, Clipping, Cohen-Sutherland Subdivision Line Clipping Algorithm, Midpoint Subdivision Algorithm, Polygon Clipping, Sutherland - Hodgeman Polygon Clipping Algorithm

#### **UNIT-IV**

**3D Geometric Transformation** - Introduction, 3D Geometry, 3D Primitives, Techniques to Achieve Realism, 3D Geometric transformations, Reflection with Respect to Given Plane, Reflection with Respect to Any Plane

**3D Display Methods** - Three Dimensional Viewing, Viewing Parameters, Transformation from World co-ordinate to , Viewing co-ordinates, Projections, 3D Clipping, 3D Midpoint Subdivision Algorithm

#### **UNIT-V**

**Segments** - Introduction, Segment Table, Functions for Segmenting the Display File, More about Segments, Image Transformation, Raster Techniques, Animation using Segmentation

**Curve Generation** - Introduction, Curve Generation, Interpolation, Interpolating Polygons, Spline Representation, Bezier Curves, B-Spline Curves, hidden surface, Back face Removal Algorithm, Z-Buffer Algorithm, Scan Line Algorithm, Painter's Algorithm (Depth Sort Algorithm)

#### **Out Comes –**

- To understand about various latest interactive multimedia devices, the basic concepts about images and image formats.
- To understand about data compression techniques, image compression techniques like JPEG, video compression techniques like MPEG, and the basic concepts about animation.

To develop an interactive multimedia presentation by using multimedia devices and identify theoretical and practical aspects in designing multimedia applications surrounding the emergence of multimedia technology.

#### **Texts & Reference Books:**

Computer Graphics, Donald Hearn and M.P. Becker, Pearson Pub

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### Scheme of Examination

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted					Duration of Exam.		
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT402	Data warehousing & Mining	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Students will be able

1. To understand the scope and necessity of Data Mining & Warehousing for the society.
2. To understand the designing of Data Warehousing so that it can be able to solve the root problems.
3. To understand various tools of Data Mining and their techniques to solve the real time problems.
4. To develop ability to design various algorithms based on data mining tools.

#### Syllabus

**THEORY:**

#### **UNIT-I**

**Strategic Information Management**, Need for strategic information, Decision support system, Knowledge discovery & decision making, Need for data warehouse, Definitions of Data warehousing and data mining, Common characteristics of Data warehouse, Data Marts, Metadata, Operational versus analytical databases, Trends and planning of Data warehousing.

#### **UNIT-II**

**Data Modeling Strategy**, Defining business requirements, Data modeling strategy, Fact tables, Dimensions, Star schema and other schemas, Multi dimensional data models, Data Cube presentation of fact tables, Using the Data warehouse, Designing tools for Data warehouse, OLAP models and operations.

### **UNIT-III**

**Data Warehouse Architecture Components and Implementation Options**, Architectural components, Infrastructure: Operational & Physical, Extraction, Transformation and Loading, Components of an Oracle Data warehouse, Data Transformation Functions, DBA responsibilities, Capacity Planning. .

### **UNIT-IV**

**Data Warehouse Implementation**, Implementation of Data warehouse, Physical design: steps, considerations, physical storage, indexing, Performance Optimization, Data warehouse deployment activities, Data security, Backup and recovery concepts, Data warehouse Maintenance.

### **UNIT-V**

**Data Mining**, Basics of data mining, Related concepts, Data mining techniques, Data Mining Algorithms , Classification, Clustering and Association rules, Knowledge Discovery in databases( KDD) Process, Introduction to Web Mining

Outcomes- After study this student will be able to know about the

1. Process raw data to make it suitable for various data mining algorithms.
2. Discover and measure interesting patterns from different kinds of databases.
3. Apply the techniques of clustering, classification, association finding, feature selection and visualization to real world data.

#### **Texts & Reference Books:**

- Data Mining Concepts & Techniques, Jiawei Han and Micheline Kamber, Elsevier Pub
- Data Mining Techniques, Arun.K.Pujari, University Press
- Data Mining Technique & Trend, N.P Gopalan, PHI
- Introduction to Data Mining, Tan, Pearson

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Department: CSA

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMIT403	Advanced Java Programming	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective – Student will be able

1. To understanding the JAVA environment.

- 2 To understand the Process Concepts, process state & process control
- 3 To understand the Critical Section Problem
- 4 To understand the Contiguous Allocating, Paging
- 5 To understand the Disk Scheduling, Disk Management

### **Syllabus**

**THEORY:**

#### **UNIT-I**

EXCEPTION HANDLING - Introduction, Exceptions, Using try & catch, Multiple catch clauses, Finally, Throw, Throws

MULTITHREADING - Introduction, The Main Thread, Creating Threads, Life cycle of Thread, Using Threads Methods, Thread Priorities, Stopping and Blocking a thread, Thread Exceptions, Using is Alive( ) and join( ), Synchronization

#### **UNIT-II**

APPLETS - Introduction, Local & remote applets, Applet vs applications, Writing applets, Life cycle of an applet, Creating source code of applet, Creating an executable applet, Creating applet tag, Adding applet tag to html, Running the applet, Detailed form of applet tag, Passing parameters to applet, Aligning the display, Html tags, Getting input from user

#### **UNIT-III**

Using Standard Java Packages, Exploring java Input Output Classes

Exploring Java.util package- Interface summary, Class summary, Collection Framework, Core collection Interface, Set Interface, List Interface, Map Interface, Stored Map, and Interface Iterator.

Networking in Java-Network Basics, Java & Networking – Sockets & Ports, Client Server architecture, TCP, UDP, Server Sockets ad Datagram, Networking classes in JDK

#### **UNIT-IV**

TCP/IP & Datagram Programming in Java – Socket Programming Basics, Datagram Communication, TCP/IP Socket Programming in Java.

AWT – AWT Programming basics, working with Windows, Graphics & Text.

Multimedia in Java- Handling images, sound and animations in Java

#### **UNIT-V**

Event Handling in Java-Handling of various events in Java, Handling Mouse & Keyboards events

Swing Classes.

#### **Out Comes –**

Students will complete software projects comprised of an object-oriented design, implementation, and test plan.

- Designs will demonstrate the use of good object-oriented design principles including encapsulation and information hiding.
- The implementation will demonstrate the use of a variety of basic control structures including selection and repetition; classes and objects in a tiered architecture (user interface, controller, and application logic layers); primitive and reference data types including composition; basic AWT components; file-based I/O; and one-dimensional arrays.

- Test plans will include test cases demonstrating both black box and glass box testing strategies.

**Practicals:**

1. Write a Java Program to Display message on computer screen.
2. Write a Java Program to develop a class for Rational numbers
3. Design a Date class in Java
4. Write a Java Program to design an interface for Stack ADT and implement Stack ADT using both Array and Linked List.
5. To develop a vehicle class hierarchy in Java to demonstrate the concept of polymorphism
6. Design a Date class in Java.
7. To write a Java Program to randomly generate objects and write them into a file using concept of Object Serialization
8. Develop a scientific calculator using even-driven programming paradigm of Java.
9. To write a multi-threaded Java program to print all numbers below 100,000 that are both prime and Fibonacci number
10. To develop a Java Program that supports multithreaded echo server and a GUI client.
11. To implement a calculator using GUI Environment with the help of javax.swing package.

**REFERENCE BOOKS**

- E. Balaguruswamy, “Programming In Java”, 2nd Edition, TMH Publications ISBN 0-07-463542-5
  - Peter Norton, “Peter Norton Guide To Java Programming”, Techmedia Publications ISBN 81-87105-61-5
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# AISECT UNIVERSITY, Bhopal, (M.P.)

## Scheme of Examination

**Department: CSA**

Subject Code	Subject Name	Credits	Maximum marks Allotted						Duration of Exam.	
			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IMMA 401	Discrete Mathematics	5(4-1-0)	70	20	10	-	-	100	3 hr	-

Objective – Student will be able

1. To understand the Use mathematically corrects terminology and notation.
2. To construct correct direct and indirect proofs.
3. To use division into cases in a proof.
4. To apply logical reasoning to solve a variety of problems.

### Syllabus

**THEORY:**

#### **UNIT-I**

**SET THEORY** - Set and Subsets, Operations on Sets, Countable and Uncountable Sets, The Principle of Inclusion-Exclusion, Derangements, Propositions

**PERMUTATION, COMBINATIONS, DISCRETE PROBABILITIES** - The rules of sum and product, Permutations, Combinations, Binomial and Multinomial Theorems, Combinations with Repetitions, Probability, Random Variables & Probability Distributions, Repeated Trials

#### **UNIT-II**

**RELATION AND FUNCTION-** Cartesian (Cross) Product of Sets, Relation, Operation on Relations, Properties of Relation as Binary Relation on a Set, Two Important Relations, Partial Ordered Relation, Lattices, Functions - Mappings, Types of Functions, Cardinality of Set, Composition of Relation and Function, Composition of Function, Existence of Inverse Function (Mapping), Set Image/Preset Image of Function

#### **UNIT-III**

**Graph** - Directed Graphs, Graphs, Isomorphism, Subgraphs, and Operations on Graphs, Walks and their classification, Connected and Disconnected Graphs, Euler circuits Euler trails, Planar and non-planar graphs

**Recurrence relations** - First-order Recurrence Relations, Second-order Homogeneous Recurrence Relations, Third and higher-order Homogeneous Recurrence Relations, Non-homogenous Recurrence Relations of second and higher orders, Method of Generating Functions

#### **UNIT-IV**

**Groups** - Introduction, Important Examples, Necessary and sufficient Condition for any subset of a group to be subgroup, Partition of a Group, Characteristics of Cosets of a Subgroups, Normal Subgroups, Necessary and sufficient condition for any subgroup of group to be normal subgroup, Characteristics of Normal (Sub groups), Quotient groups, Concept of Homomorphism, Rings, Some special types of Rings, Elementary Properties of Rings, Subrings, Results of Sub-rings of a ring, Standard Properties of ideals, Homomorphism of Rings, Properties of Homomorphism

## **UNIT-V**

**Discrete Numeric Functions and Generating Functions** -Discrete Numeric Functions, Manipulation of Numeric Functions, Asymptotic Behavior of Numeric Functions, Binomial Coefficients

Outcomes- After study this student will be able to know about some fundamental mathematical concepts and terminology, how to use and analyse recursive definitions, how to count some different types of discrete structures, techniques for constructing mathematical proofs, illustrated by discrete mathematics examples

### **REFERENCE BOOKS:-**

- S.S.SASTRY, “Engineering Mathematics”, Prentice Hall of India
  - Bernard Kolman, Robert C.Busby, Sharon Ross, “Discrete Mathematical Structures Engineering Mathematics”
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**Chairman**  
**(Board of studies)**

**Dean (Faculty)**

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IMIT404	Major Project	4(0-0-4)	-	-	-	100	100	200	-	2 hrs.

#### Pattern:

The question paper will consist of five questions. Each question carry 10 marks each, one from each of the five units of the syllabus and may have internal choice. These five questions will have two parts A & B, preferably one theoretical and other numerical/short notes. Questions should test the concepts, knowledge & applications. Candidates are required to answer all questions.

#### Syllabus

#### THEORY:

A two-three weeks project topic will be assigned to each of the student individually on the related topics studied in the First Semester on which student shall prepare a project report and submit to the University. Detailed Guidelines related to the Minor project can be obtained in the contact-class or can be downloaded from the website.

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