

**Dr. C. V. Raman University**  
**Khandwa**

**BACHELOR OF SCIENCE (CS & IT)**

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## Department of Computer Science & Application

### Bachelor of Science-Computer Science & IT

#### Courses Offered

<b>SUBJECT CODE</b>	<b>SUBJECT NAME</b>	<b>Credits</b>
IBSC101	FUNDAMENTALS OF COMPUTERS & INFORMATION TECHNOLOGY	5(4-1-0)
IBSC102	WINDOWS & OFFICE AUTOMATION PACKAGES	6(3-1-2)
IBSC103	PROGRAMMING METHODOLOGY & PROGRAMMING IN C LANGUAGE	6(3-1-2)
IBSC104	BASIC ELECTRONICS - I	5(4-1-0)
IBSC105	ADVANCED CALCULUS AND MATRICES	5(4-1-0)
IBSC201	DATA BASE MANAGEMENT SYSTEMS	6(3-1-2)
IBSC202	DATA STRUCTURES USING C PROGRAMMING	6(3-1-2)
IBSC203	BASIC ELECTRONICS & INSTRUMENTATION -II	5(4-1-0)
IBSC204	DISCRETE MATHEMATICS	5(4-1-0)
IBSC205	COMMUNICATIVE ENGLISH- I	5(4-1-0)
IBSC206	SUMMER ASSIGNMENT & SEMINAR	5(0-0-5)
IBSC301	OBJECT ORIENTED PROGRAMMING WITH C++	6(3-1-2)
IBSC302	NETWORK BASICS, INTERNET & WEB DESIGN	6(3-1-2)
IBSC303	DIGITAL COMPUTER ORGANIZATION	5(4-1-0)
IBSC304	COUNTING PRINCIPLES, PROBABILITY AND STATISTICS	5(4-1-0)
IBSC305	COMMUNICATIVE ENGLISH -II	5(4-1-0)
SCIT-301	Data Entry Operations	3(1-0-2)
SSBI-301	Health care nutrition and Food Preservation	3(1-0-2)
SMGT-301	Communication Skill & Personality Development	3(1-0-2)
SCOM-301	Tally	3(1-0-2)
SBBA-301	Classical Dance	3(1-0-2)
IBSC401	SYSTEM ANALYSIS & DESIGN	5(4-1-0)
IBSC402	OPERATING SYSTEM CONCEPTS	5(4-1-0)
IBSC403	LINUX AND SHELL PROGRAMMING	6(3-1-2)
IBSC404	NUMERICAL ANALYSIS AND SCIENTIFIC COMPUTING	6(3-1-2)
IBSC405	SOFTWARE TESTING AND PROJECT MANAGEMENT	5(4-1-0)
IBSC406	PROFESSIONAL PERSONALITY DEVELOPMENT-I & SEMINAR	5(0-0-5)
IBSC407	MINOR PROJECT	5(0-0-5)
SCIT-301	Data Entry Operations	3(1-0-2)
SSBI-301	Health care nutrition and Food Preservation	3(1-0-2)
SMGT-301	Communication Skill & Personality Development	3(1-0-2)
SCOM-301	Tally	3(1-0-2)
SBBA-301	Classical Dance	3(1-0-2)
IBSC501	JAVA PROGRAMMING	6(3-1-2)
IBSC502	GUI PROGRAMMING WITH Visual Basic.NET	6(3-1-2)
IBSC503	COMPUTER ARCHITECTURE & MICRO PROCESSORS	5(4-1-0)

IBSC504	OPTIMISATION AND GRAPH THEORY	5(4-1-0)
IBSC505	MULTIMEDIA SYSTEMS	5(4-1-0)
IBSC506	PROFESSIONAL PERSONALITY DEVELOPMENT-II & SEMINAR	5(0-0-5)
SCIT-301	Data Entry Operations	3(1-0-2)
SSBI-301	Health care nutrition and Food Preservation	3(1-0-2)
SMGT-301	Communication Skill & Personality Development	3(1-0-2)
SCOM-301	Tally	3(1-0-2)
SBBA-301	Classical Dance	3(1-0-2)
IBSC601	SOFTWARE ENGINEERING	5(4-1-0)
IBSC602	EMBEDDED SYSTEMS	5(4-1-0)
IBSC603	PROGRAMMING WITH ASP.NET	6(3-1-2)
IBSC604	MAJOR PROJECT	4(0-0-4)
IBSC605	INTERNAL ASSESSMENT & SEMINAR	5(0-0-5)

# **Department of Computer Science & Applications**

## **B.Sc. (CS & IT)**

### **PROGRAM OBJECTIVES**

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

- 1. Graduates of the programme will be employed in the field computer Science.**
- 2. Graduates of the programme will pursue higher studies.**
- 3. Graduates of the programme will apply new technologies in Computer Science to serve the needs of industry and society.**

### **PROGRAM OUTCOMES**

At the end of the Program, students will be able to:

- 1. UNDERSTAND THE BASIC CONCEPT OF COMPUTER ARCHITECTURES, INCLUDING COMPUTER HARDWARE AND NETWORKING.**
  - 2. DESIGN, AND ANALYZE PRECISE SPECIFICATIONS OF ALGORITHMS, PROCEDURES, AND INTERACTION BEHAVIOR.**
  - 3. ABILITY TO COMMUNICATE EFFECTIVELY IN BOTH VERBAL AND WRITTEN FORM IN INDUSTRY AND SOCIETY.**
  - 4. ABILITY TO WORK IN TEAMS TO BUILD SOFTWARE SYSTEMS.**
  - 5. APPLY THE TECHNOLOGIES IN VARIOUS FIELDS OF COMPUTER SCIENCE, INCLUDING MOBILE APPLICATIONS, WEB SITE DEVELOPMENT AND MANAGEMENT, DATABASES, AND COMPUTER NETWORKS.**
  - 6. ABILITY TO SELECT APPROPRIATE TECHNIQUES TO TACKLE AND SOLVE PROBLEMS IN THE DISCIPLINE OF INFORMATION SECURITY MANAGEMENT.**
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**COURSE STRUCTURE OF BSC 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>												
IBCS101	Fundamentals Of Computers & Information Technology	100	50	17	20	7	30	12	3	2	-	5
IBCS102	Windows & Office Automation Packages	100	50	17	20	7	30	12	3	2	-	5
IBCS103	Programming Methodology & Programming In C Language	100	50	17	20	7	30	12	3	2	-	5
IBEC101	Basic Electronics - I	100	50	17	20	7	30	12	3	2	-	5
IBMA101	Advanced Calculus And Matrices	100	50	17	20	7	30	12	3	2	-	5
<b>Practical Group</b>			<b>Term End Practical Exam</b>				<b>Lab Performance</b>					
IBCS102	Computer Lab I: Operating Systems, Word, Excel & Powerpoint	50	25		8		25	8	-	-	1	1
IBCS103	Computer Lab Ii : C Programming	50	25		8		25	8	-	-	1	1
<b>Grand Total</b>		600										27

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 BSC 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>												
IBCS201	Data Base Management Systems	100	50	17	20	7	30	12	3	2	-	5
IBCS202	Data Structures Using C Programming	100	50	17	20	7	30	12	3	2	-	5
IBEC201	Basic Electronics & Instrumentation -Ii	100	50	17	20	7	30	12	3	2	-	5
IBMA201	Discrete Mathematics	100	50	17	20	7	30	12	3	2	-	5
IBEN201	Communicative English- I	100	50	17	20	7	30	12	3	2	-	5
<b>Practical Group</b>			<b>Term End Practical Exam</b>				<b>Lab Performance</b>					
IBCS202	Computer Lab III: Data Structures Using C	50	25		8		25	8	-	-	1	<b>1</b>
IBCS201	Computer Lab IV: Ms-Access	50	25		8		25	8	-	-	1	<b>1</b>
IBCS205	Summer Assignment & Seminar	50					50	17	-	-	2	<b>2</b>
<b>Grand Total</b>		600										<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.

\*\*IBCS205 Seminar-Minimum 2 seminars of 15 minutes each by every student during the semester to be evaluated by a panel of examiners.

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

COURSE STRUCTURE OF BSC III 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>												
IBCS301	Object Oriented Programming With C++	100	50	17	20	7	30	12	3	2	-	5
IBCS302	Network Basics, Internet & Web Design	100	50	17	20	7	30	12	3	2	-	5
IBEC301	Digital Computer Organization	100	50	17	20	7	30	12	3	2	-	5
IBMA301	Counting Principles, Probability And Statistics	100	50	17	20	7	30	12	3	2	-	5
IBEN301	Communicative English -II	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>					
IBCS301	Computer Lab V: C++	50	25		8		25	8	-	-	1	1
IBCS302	Computer Lab VI : Internet And Web Design	50	25		8		25	8	-	-	1	1
*	Elective I(s)	100	50		17		50	17	-	-	2	2
<b>Grand Total</b>		600										<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%

**COURSE STRUCTURE OF BSC IV 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>												
IBCS401	System Analysis & Design	100	50	17	20	7	30	12	3	2	-	5
IBCS402	Operating System Concepts	100	50	17	20	7	30	12	3	2	-	5
IBCS403	Linux And Shell Programming	100	50	17	20	7	30	12	3	2	-	5
IBMA401	Numerical Analysis And Scientific Computing	100	50	17	20	7	30	12	3	2	-	5
IBCS404	Software Testing And Project Management	100	50	17	20	7	30	12	3	2	-	5
<b>Practical Group</b>			<b>Term End Practical Exam</b>				<b>Lab Performance</b>					
IBMA401	Computer Lab Viii: Numerical Analysis Using C++	50	25		8		25	8	-	-	1	<b>1</b>
IBCS405	Professional Personality Development-I & Seminar	50	25		8		25	8	-	-	1	<b>1</b>
IBCS406	Minor Project	100	50		17		50	17	-	-	4	<b>4</b>
<b>Grand Total</b>		850										<b>31</b>

Minimum Passing Marks are equivalent to Grade D

L- Lectures T- Tutorials P- Practicals

\*\* IBCS405 Seminar Minimum 2 seminars of 15 minutes each by every student during the semester to be evaluated by a panel of examiners.

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



COURSE STRUCTURE OF BSC V 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>												
IBCS501	Java Programming	100	50	17	20	7	30	12	3	2	-	5
IBCS502	GUI Programming With Visual Basic.Net	100	50	17	20	7	30	12	3	2	-	5
IBEC501	Computer Architecture & Micro Processors	100	50	17	20	7	30	12	3	2	-	5
IBMA501	Optimisation And Graph Theory	100	50	17	20	7	30	12	3	2	-	5
IBCS503	Multimedia Systems	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>					
IBCS501	Computer Lab Ix:Java	50	25		8		25	8	-	-	1	<b>1</b>
IBCS502	Computer Lab X: Vb.Net	50	25		8		25	8	-	-	1	<b>1</b>
IBCS504	Professional Personality Development-Ii & Seminar	50	25		8		25	8	-	-	1	<b>1</b>
*	Elective I(s)	100	50		17		50	17	-	-	2	<b>2</b>
<b>Grand Total</b>		750										<b>31</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.**

**\*\* IBCS504 Seminar Minimum 2 seminars of 15 minutes each by every student during the semester to be evaluated by a panel of examiners.**

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

**COURSE STRUCTURE OF BSC VI 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>												
IBCS601	Software Engineering	100	50	17	20	7	30	12	3	2	-	5
IBCS602	Embedded Systems	100	50	17	20	7	30	12	3	2	-	5
IBCS603	Programming With Asp.Net	100	50	17	20	7	30	12	3	2	-	5
<b>Practical Group</b>			<b>Term End Practical Exam</b>				<b>Lab Performance</b>					
IBCS604	Major Project	300	150		50		150	50	-	-	4	<b>4</b>
IBCS603	Computer Lab Xi:Asp.Net	50	25		8		25	8	-	-	1	<b>1</b>
IBCS605	Internal Assessment & Seminar	50	-		-		50	17	-	-	1	<b>1</b>
<b>Grand Total</b>		700										<b>21</b>

Minimum Passing Marks are equivalent to Grade D

L- Lectures T- Tutorials P- Practicals

\*\* IBCS605 Seminar Minimum 2 seminars of 15 minutes each by every student during the semester to be evaluated by a panel of examiners.

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

# Dr. C. V. Raman University, Khandwa

## 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			
IBCS101	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

Brief history of development of computers. Computer system concept. Computer system characteristics, capabilities & limitations. Types of computers- Analog, Digital, Hybrid, General, Special Purpose, Micro, Mini, Mainframe and Super Computers. Generations of Computers. Personal Computer (PCs) - IBM PCs, characteristics, PC/PCXT/PCAT configurations, Pentium and Newer PCs specifications and main characteristics. Types of PCs and their characteristics.

Basic components of a computer system - Control unit, ALU, Input/output functions and characteristics, Memory - RAM, ROM, EPROM, PROM and other types of memory.

##### UNIT-II

Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-codereader, Voice recognition, Light pen, Touch screen. Monitors - characteristics and types of monitor. Printers - Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer. Plotter, Sound Card and Speakers. Storage fundamentals - Primary Vs Secondary. Data Storage and Retrieval methods. Various Storage Devices - Magnetic Tape, Magnetic Disks, Cartridge Tape, Hard Disk Drives, Floppy Disks (Winchester Disk), Optical Disks, CD, VCD, CD-R, CD-RW, Zip Drive.

##### UNIT-III

Need of Software, Types of Software - System software, Application software. System Software - Operating System, Utility Program, Programming languages, Assemblers, Compilers and Interpreter. Operating Systems-Functions, Types-Batch, Single, Multiprogramming, Multiprocessing. Programming languages- Machine, Assembly, High Level, 4GL their merits and demerits. Application Software - Word-processing, Spreadsheet, Presentation Graphics, Data Base Management Software, characteristics, Uses and examples and area of applications of each of them. Computer Viruses, Virus working principles, Types of viruses, Virus detection and prevention, Viruses on network.

##### UNIT-IV

Analog and Digital Signals. Modulations - Amplitude Modular (AM), Frequency Modulation (FM),Phase Modulation (PM) Communication Process. Direction of Transmissions Flow - Simplex, Half Duplex, Full Duplex. Communication Software, Communication Protocols, Communication Channels. Modem -

Working and characteristics. Types of Connections - Dialup, Leased Lines, ISDN. Types of Network- LAN, WAN, MAN. Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies. Components of LAN - Media, NIC, Nos, Bridges, HUB, Routers, Repeater and Gateways. Use of Communication in daily life.

#### **UNIT-V**

History & versions of DOS, DOS basics- Physical structure of disk, Drive name, FAT, File & directory structure and naming rules, Booting process, DOS system files. DOS commands :- Internal - DIR, MD, CD, RD, COPY, DEL, REN, VOL, DATE, TIME, CLS, PATH, TYPE. External - CHKDSK, XCOPY, PRINT, DISKCOPY, DISKCOMP, DosKey, TREE, MOVE, LABEL, APPEND, FORMAT, SORT, FDISK, BACKUP, EDIT, MODE, ATTRIB, HELP, SYS. Executable V/s Non executable files in DOS.

**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)**

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**Dr. C. V. Raman University, Khandwa**  
**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			
IBCS102	Windows & Office Automation Packages	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.**
4. **TO UNDERSTAND THE MS POWERPOINT & OUTLOOK EXPRESS.**

**Syllabus**

**Theory:**

**UNIT – I**

MS Windows: Introduction to M.S. Windows; Features of Windows; Various versions of Windows & its use; Working with Windows; My Computer & Recycle bin ; Desktop, Icons and Windows Explorer; Screen description & working styles of Windows; Dialog Boxes & Toolbars; Working with Files & Folders; simple operations like copy, delete, moving of files and folders from one drive to another, Shortcuts & Auto starts; Accessories and Windows Settings using Control Panel- setting common devices using control panel, modem, printers, audio, network, fonts, creating users, internet settings, Start button & Program lists; Installing and Uninstalling new Hardware & Software program on your computer.

**UNIT – II**

Office Packages-Office activates and their software requirements, Word-processing, Spreadsheet, Presentation graphics, Database, introduction and comparison of various office suites like MSOffice, Lotus Office, Star Office, Open Office etc.

MS Word Basics: Introduction to MS Office; Introduction to MS-Word; Features & area of use. Working with MS Word.; Menus & Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates; Creating a New Document; Different Page Views and layouts; Applying various Text Enhancements; Working with – Styles, Text Attributes; Paragraph and Page Formatting; Text Editing using various features ; Bullets, Numbering, Auto formatting, Printing & various print options.

**UNIT-III**

Advanced Features of MS-Word: Spell Check, Thesaurus, Find & Replace; Headers & Footers ; Inserting – Page Numbers, Pictures, Files, Auto texts, Symbols etc.; Working with Columns, Tabs & Indents; Creation & Working with Tables including conversion to and from text; Margins & Space management in Document; Adding References and Graphics; Mail Merge, Envelops & Mailing Labels. Importing and exporting to and from various formats.

**UNIT – IV**

MS Excel: Introduction and area of use; Working with MS Excel.; concepts of Workbook & Worksheets; Using Wizards; Various Data Types; Using different features with Data, Cell and Texts; Inserting,

Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different Views of Worksheets; Column Freezing, Labels, Hiding, Splitting etc.; Using different features with Data and Text; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with various options.

#### **UNIT – V**

MS PowerPoint: Introduction & area of use; Working with MS PowerPoint; Creating a New Presentation; Working with Presentation; Using Wizards; Slides & it's different views; Inserting, Deleting and Copying of Slides; Working with Notes, Handouts, Columns & Lists; Adding Graphics, Sounds and Movies to a Slide; Working with PowerPoint Objects; Designing & Presentation of a Slide Show; Printing Presentations, Notes, Handouts with print options.

Outlook Express: Features and uses, Configuring and using Outlook Express for accessing e-mails in office.

**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**  
**(Board of studies)**

**Dean (Faculty)**

**(Registrar)**

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# Dr. C. V. Raman University, Khandwa

## 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			
IBCS103	Programming Methodology & Programming In C Language	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

Program Concept, Characteristics of Programming, Various stages in Program Development Programming aids Algorithms, Flow Charts - Symbols, Rules for making Flow chart, Programming Techniques – Top down, Bottom up, Modular, Structured - Features, Merits, Demerits, and their Comparative study. Programming Logic- Simple, Branching, Looping, Recursion, Cohesion & Coupling, Programming Testing & Debugging & their Tools .

#### UNIT – II

Introduction to C language, C language standards features of C, Structure of C program.

Introduction to C compilers, Creating and compiling C Programs, IDE features of Turbo C compiler, Command line options to compile C program in TC.

Keywords, Identifiers, Variables, constants, Scope and life of variables - local and global variable. Data types, Expressions, Operators: Arithmetic, Logical, Relational, Conditional and Bit wise Operators. Precedence and Associativity of Operators, Type conversion.

Basic input/output library functions: Single character input/output i.e. getch(), getchar(). getche(), putchar(). Formatted input/output i.e. printf() and scanf().

Library functions: Mathematical & Character functions.

#### UNIT – III

Declaration statement, conditional statement: If statement, If....Else statement, Nesting of If....Else Statement, else if ladder, The? Operator, Switch statement. Iteration statements: for loop, while loop, do-while loop. Jump statements: break, continue, Goto exit ().

ARRAYS: concept of Single and Multi Dimensional arrays, Array declaration and initialization of arrays

Strings: declaration, initialization, functions.

#### UNIT – IV

The need of C functions, User defined and library function, prototype of functions, prototype of main() function, Calling of functions, Function arguments, argument passing: call by value and call by reference, Return values. Nesting of function, Recursion, Array as function argument, Command line arguments.

Storage class specifier - auto, extern, static, register.

## **UNIT – V**

Defining structure, Declaration of structure variable, typedef, Accessing structure members, Nested structures, Array of structure, Structure assignment, Structure as function argument, Function that return structure, Union.

Concept of debugging. Finding Errors in the programs, error codes and their meanings, Various debugging options in Turbo C compiler. (Debug and Options Menu of the TCC IDE).

**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 Arryas.
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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# Dr. C. V. Raman University, Khandwa

## 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			
IBEC101	Basic Electronics - I	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

Type of resistance, Resistance symbol, Color code capacitors, Capacitors symbol, Code types, Mica & paper capacitor, Inductance, Conductor, Insulator, Band theory, Intrinsic & extrinsic semiconductors. Theory of p-n junction, Capacitance & Diffusion capacitance.

##### UNIT-II

Zener diode, Tunnel diode, Varactor diode, Power diode, Photo diode, LED, LCD, Point contact diode, Schottky diode, Halfwave & fullwave rectifier with & without filter,.

##### UNIT-III

BJT characteristics, CE, CB, CC configurations, FET metal oxide, Semiconductors (MOSFET), CMOS, Unijunction transistor & Photo transistor.

##### UNIT-IV

Single stage RC coupled amplifier frequency response class A, class B, class AB, class C, Push pull amplifier, Efficiency distortion in amplifier their merits & demerits, BJT & FET RC coupled amplifiers.

##### UNIT-V

Switching characteristic BJT & FET, Monostable, A stable Multivibrators, RC integrators & differentiators, Clipper clamper circuit.

**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:**

- Basic Electronics by B.L. Thareja.
  - Basic Electronics by A.K. Sahani.
  - Basic Electronics by V.K. Mehta.
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# Dr. C. V. Raman University, Khandwa

## 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			
IBMA101	Advanced Calculus And Matrices	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able

1. To deal with the skills of vector calculus operations which are needed for further study in mathematics?
2. with the skills necessary to be able to give reasonable explanations.
3. With the critical thinking skills required to solve problems in physics and in engineering.

## Syllabus

### Theory:

#### UNIT-I

- Definition of a function as a map between sets.
- Definition of a real valued function of a real variable.
- Graphical representation of a function as a curve in 2-dimensions.
- Equation of a straight line and of a curve.
- Tangent to a curve.
- Equations of tangent to a curve.
- Representation of real numbers on a computer.
- Graphical representation of a function on a computer screen.

#### UNIT-II

- Derivative as tangent to a curve.
  - Continuity and differentiability.
  - Definition of a limit, and derivative as a limit.
  - Derivative as a linear map.
  - Derivatives of products and composites: Leibniz rule and Chain rule.
  - Applications to maxima and minima.
  - Second derivative and its use for testing extreme.
  - Applications to root finding.
-

### UNIT-III

- Integral as anti-derivative.
- Relation to integral as area under a curve.
- Integral as a limit.
- Integration by parts.
- Change of variables formula.
- Elementary techniques of numerical quadrature.

### UNIT-IV

- Higher derivatives.
- Statement of Taylor's theorem in one variable.
- Euler-Maclaurin expansion and its applications to numerical computing.
- Difficulties in numerical computation of derivatives as limits.
- Ordinary differential equations.
- Statement of Peano's existence theorem.
- Calculation of numerical solution by Euler's method.
- Basics of Runge -Kutta methods.

### UNIT-V

- Matrix algebra: addition and multiplication of matrices.
- Inverse of a non -singular matrix.
- Determinant of a matrix.
- Testing non-singularity using determinants.
- Solution of systems of linear equations using matrices and determinants.

**Out Comes** – After study this student will be able to know about the vector calculus operations by applying addition, subtraction, scalar multiplication, dot product, and cross product. Students will be able to work with power series by applying the iterated derivatives.. Students will be able to take derivatives of multivariable functions by using appropriate rules. Students will be able to use the chain rule by applying necessary rules.

### TEXTS AND REFERENCE BOOKS :

- Engineering Mathematics by S.S. Sastry.

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# Dr. C. V. Raman University, Khandwa

## 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			
IBCS201	Data Base Management Systems	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

DBMS CONCEPTS AND ARCHITECTURE: Operational data, Purpose of database system, Views of data, Data models: Relational, Network, Hierarchical, Instances & schemas, Data dictionary, Types of database languages: DDL, DML, Structure of a DBMS, Advantages & disadvantages of a DBMS.

DATABASE DESIGN : 3-level architecture proposal-External, Conceptual & Internal levels, Entity Relationship model as a tool of conceptual design: Entities & entity set, Relationship & relationship set, Attributes, Mapping constraints, Keys, Entity-Relationship diagram (ER diagram): Strong & weak entities, Generalization, Specialization, Aggregation, Reducing E-R diagram to tables.

#### UNIT-II

RELATIONAL DATA MODEL: Set theory concepts and fundamentals: Relations, Domain, Attributes, Tuple, Concept of keys: Candidate key, Primary key, Alternate key, Super key, Foreign key, Fundamental integrity rules: Entity integrity, Referential integrity, Extension & Intension, Relational Algebra: Select, Project, Cross product, Different types of joins, Set operations, Structured Query Language (SQL), Codd's rules.

#### UNIT-III

RELATIONAL DATABASE DESIGN: Functional dependencies, Good & bad decomposition, Anomalies in a database- A consequences of bad design, Universal relation, Normalization: First, Second, Third & BCNF normal forms, Multivalued dependency, Join dependency & Fourth and Fifth normal form.

#### UNIT-IV

Indexing & Hashing-Basic Concepts, Indexing: B+ tree Index Files, B tree Index Files, Hashing: Static hash functions, Dynamic hash Functions, Index definition in SQL, Multiple key access.

**UNIT-V**

Recovery System, Failure classification, The storage hierarchy, Transaction model, Log based recovery, Buffer management, Shadow paging.

**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:**

- Database System Concepts by Henry F. Korth & Abraham Silberschatz.
  - An Introduction To Database System by Bipin C. Desai.
  - Database Management Systems by Leon & Leon, Vikas Publications.
  - An Introduction To Database System by C. J. Date.
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# Dr. C. V. Raman University, Khandwa

## 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			
IBCS202	Data Structures Using C Programming	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

**NOTE-** Implementation shall be done of the following data structures using C Programming Language.

#### UNIT-I

The concept of data structure, Abstract data type, Concept of list & array Introduction to stack, Stack as an abstract data type, primitive operation on stack, Stacks application: Infix, post fix, Prefix and Recursion, Multiple Stack.

Introduction to queues, Primitive Operations on the Queues, Queue as an abstract data type, Circular queue, Dequeue, Priority queue, Applications of queue

#### UNIT-II

Introduction to the Linked List, Basic operations on linked list, stacks and queues linked list, Header nodes, Doubly Linked List, Circular Linked List, Stacks & Queues as a Circular Linked List, Application of Linked List.

#### UNIT-III

TREES - Basic Terminology, Binary Trees, Tree Representations using Array & Linked List, Basic operation on Binary tree, Traversal of binary trees:- In order, Preorder & post order, Application of Binary tree, Threaded binary tree, B-tree & Height balanced tree, Binary tree representation of trees.

#### UNIT-IV

Analysis of algorithm, complexity using big 'O' notation. Searching: linear search, Binary search, their comparison.

Sorting: Insertion sort, Selection sort, Quick sort, Bubble sort, Heap sort, Comparison of sorting methods.

Hash Table, Collision resolution Techniques.

**UNIT-V**

Introduction to graphs, Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs, Graph Traversal-Depth first & Breadth first search. Spanning Trees, minimum spanning Tree, Shortest path algorithm.

**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.

**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).

**TEXT & 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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# Dr. C. V. Raman University, Khandwa

## 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			
IBEC201	Basic Electronics & Instrumentation -II	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 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

CRT - display, The screen characteristics, CRO-CRT Construction, electrostatic gamma and magnetic deflection system, Deflection sensitivity regulated power supply, Shunt & series regulator, Emitter follower regulator, current regulator.

##### UNIT-II

Dual Trace & dual beam CRO, Sampling & digital read out CRO, Feedback amplifier, Oscillator, Current voltage feedback, Multistage feedback, Crystal oscillators.

##### UNIT-III

Direct-coupled amplifiers using BJT, JFET, Darlington configuration, Boot strapping, Series & shunt chopper, Differential amplifier.

##### UNIT-IV

Classification of transducers, Strain gauge displacement transducer, LVDT Thermo couple, Photoelectric transducer, Photo sensitive device, Magnetic transducer

##### UNIT-V

Digital measurement V/S analog measurement, D/A conversion method, A/D conversion method, Simultaneous conversion method, Successive approximation method, LED, LCD, Seven segment display, Alphanumeric display, IC555 Timer.

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: -**

- Basic Electronics by B.L. Thareja.
- Basic Electronics by A.K. Sahani.
- Basic Electronics by V.K. Mehta.

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# Dr. C. V. Raman University, Khandwa

## 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			
IBMA201	Discrete Mathematics	5(3-2-0)	50	20	30	-	-	100	3 hr	-

**Objective**-This course introduces the applications of discrete mathematics in the field of computer science. It covers sets, logic, proving techniques, combinatory, functions, relations, Graph theory and algebraic structures. These basic concepts of sets, logic functions and graph theory are applied to Boolean Algebra and logic networks while the advanced concepts of functions and algebraic structures are applied to finite state machines and coding theory.

## Syllabus

### Theory

#### UNIT-I

Statements, logical connectives, truth table, tautologies, contradictions, logical equivalence, Applications to everyday reasoning.

#### UNIT-II

An axiom system for the sentence calculus. Truth tables as an effective procedure for deciding logical validity. Relation of sentence calculus to Boolean algebra.

#### UNIT-III

Quantifiers: Universal and existential quantifier. Predicate calculus, Axiom system for predicate calculus. Application to everyday reasoning.

#### UNIT-IV

Sets and classes, Relations. Equivalence relation and equivalence classes. Partial order relation, lub and glb. Trees and lattices. Mappings: Conjective, Subjective and bijective mappings. Cardinality, Finite and infinite sets.

Definition and basic properties of: semigroups and groups, rings, integral domains, and fields.

#### UNIT-V

Vector spaces and algebra. Linear dependence and independence. Bases. Linear transformations and their representation as matrices. Invertible linear transformation and invertible matrix. Geometrical interpretation of determinant of a 2X2 matrix.

#### Outcome:-

After this completion student will be familiar with relational algebra, Functions and graph theory.

#### TEXT AND REFERENCE BOOKS:

- Discrete Mathematical Structures by Bernard Kolman, Robert C. Busby, Sharon Ross.

- Engineering Mathematics by S. S. Sastry, Prentic Hall Of India.
  - Schaum's Outline of Theory & Problems of Logic by John Gric Nolt, Dennis Rohatyn.
  - Theory of Practical Calculus by JP. Trembly, R. Manohar McGraw Hill
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# Dr. C. V. Raman University, Khandwa

## 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			
IBEN201	Communicative English-I	5(3-2-0)	50	20	30	-	-	100	3 hr	-

### Syllabus

#### OBJECTIVE:

This course is designed on a predominantly communicative or interactive approach to the learning of English. This approach is based -on the belief that language is not a body of knowledge to be learnt but a skill to be acquired. Student acquires the ability to use the language fluently effectively, correctly, confidently and naturally in real life situations that is to say, they imbibe and internalize the language. However, the approach is to encourage the learners to formulate and express their ideas and offer ample scope for creativity. The approach has been aimed at an integrator development of the four basic skills - Listening, speaking, reading and writing.

#### UNIT-I

- Sentences: Simple, Compound, Complex, Assertive, Interrogative, Imperative, Exclamatory.
- Clauses : Co-ordinate, Sub-ordinate, Relative, Adverb, Comparative (Adverb + Adjective)
- Articles: Usage of 'A', 'AN', 'THE'
- Preposition: Position of Prepositions, Place Relations Time Relations and other relations.

#### UNIT-II

- Tenses: Simple Present, Progressive Perfect, Present Perfect Progressive along-with Past Tense and indications of futurity.
- Reported speech Modals (Will, Shall Should, Would and others)
- Voice : Active and Passive

#### UNIT-III

- Comprehension of unseen passage, short answer type questions to test understanding of the passage.

#### UNIT-IV

- Paragraph writing based on expansion of given ideas Note taking /Note making

#### UNIT-V

- Vocabulary: making sentences with idioms & phrases, corrections of sentences with words likely to be confused/Commonly Miss-spelled. Word formation like prelix suffix

Outcomes- After study this student will be able to know about how to become active readers, what are the writing skills and process. What are the oral communication skills?

#### TEXT BOOKS:

- Written communication In English by Sarah Freeman Published by Orient Longman

**REFERENCE BOOKS:**

- A Practical English Grammar by Thomson and Martinet.
  - English Grammar by W.S. Allen.
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# Dr. C. V. Raman University, Khandwa

## 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			
IBCS301	Object Oriented Programming 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 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

#### UNIT-I

Object Oriented Programming, Introducing C++ classes, Concepts of object oriented programming.

Classes, Structure & classes, Union & Classes, Friend function, Friend classes, Inline function, and Scope resolution expression.

Static data member, Static member function, passing objects to function, Returning objects, Object assignment.

#### UNIT-II

Array, Pointers references & The Dynamic Allocation operators, Array of objects, Pointers to object, Type checking C++ pointers, The This pointer, Pointer to derived types, Pointer to class members, Reference parameter, Passing references to objects, Returning reference, Independent reference, dynamic allocation operators, Initializing allocated memory, Allocating Array, Allocating objects.

Constructor & Destructor- Introduction, Constructor, Parameterized constructor, Multiple constructor in a class, Constructor with default argument, Copy constructor, Constructing two-dimensional Array, Destructor.

#### UNIT-III

Function overloading, Overloading constructor function finding the address of an overloaded function, Operator Overloading: Creating a member operator function, Creating Prefix & Postfix forms of the increment & decrement operators, Overloading the shorthand operation (i.e. +=, -= etc), Operator overloading restrictions, Operator overloading using friend function, Overloading New & Delete, [], (), -, comma operator, <<.

#### UNIT-IV

Base class Access control, Inheritance & protected members, Protected base class inheritance, Inheriting multiple base classes, Constructors, destructors & Inheritance, When constructor & destructor function are executed, Passing parameters to base class constructors, Granting access, Virtual base classes.

Virtual function, Pure Virtual functions, Early Vs. late binding.

#### **UNIT-V**

The C++I/O system basics: C++ streams, The basic stream classes, C++ predefined streams, Formatted I/O: Formatting using the ios members, Setting the format flags, Clearing format flags, An overloaded form of setf ( ), Examining the formatted flags, Setting all flags, Using width() precision( ) and 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:**

- C++ by Balaguruswamy - TMH.
  - Programming In C++ by M. Kumar Tata McGraw Hill
  - Object Oriented Programming C++ by Kamal Prakashan
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# Dr. C. V. Raman University, Khandwa

## 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			
IBCS302	Network Basics, Internet & Web Design	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective – Student will be able

1. To understand the conceptual and technological developments in the field of Internet and web designing with the emphasis on comprehensive knowledge of Internet
2. To understand its applications and the TCP/IP protocols widely deployed to provide Internet connective worldwide.
3. To understand the World Wide Web with its widespread usefulness has become an integral part of the Internet.

### Syllabus

#### THEORY

##### UNIT-I

Need & advantages of Networks , Types : server based , Peer based, Hybrid.

Topology, Network media types, H/W protocol, Software protocol, digital signaling, analog signaling, bit synchronization, base band and broad band transmission.

##### UNIT-II

OSI and IEEE 802 Model, IEEE 802.3, IEEE 802.4, IEEE 802.5 & fast Ethernet FDDI, ATM, LAN access techniques , Bit map protocol, BRAP, adaptive walktree protocol , URN protocol.

Connectivity, Hubs, Repeaters, Bridges, Multiplexers, Router and Brouter, Gateways, Simple installation and configuration of Windows NT, Modem, Types of modem, modulation schemes.

##### UNIT-III

Internet v/s Intranet, growth of internet, ISP, Connectivity, Dial up leased line, URL, Domain name Portals Application, POP & Web based e-mail, merits ,IP address.

Basics of sending & receiving e-mails.

FTP, Data transmission protocol.

Telnet, Remote logging, Internet chatting, WWW, HTTP, URL, HTML.

##### UNIT-IV

Concepts of Hypertext, HTML introduction, features, uses & versions Using various HTML tags, Elements of HTML syntax, Head & Body Sections, , Inserting texts, Text alignment, Using images in pages, Hyperlinks – text and images, bookmarks, Backgrounds and Color controls, creating and using Tables in HTML, and presentation, Use of font size & Attributes, List types and its tags.

Cascading Style sheets – defining and using simple CSS.

Introduction to WYSIWYG Design tools for HTML, Overview of MS FrontPage, Macromedia Dream weaver, and other popular HTML editors, designing web sites using MS FrontPage / Expression Web

Use of Frames and Forms in web pages, Image editors, Issues in Web site creations & Maintenance,

#### **UNIT-V**

JavaScript Overview, JavaScript and the WWW, JavaScript vs. VBScript, JavaScript vs. Java, JavaScript versions, Script element.

Functions: Functions introduction, Calling functions, JavaScript Comments, Variables: Variables overview, declaring variables, Types of variables, Casting variables, Alert box, Prompt & confirm.

Expressions: Arithmetic operators, Assignment operators, Logical operators, Expressions and precedence, Statements: If statement, For statement, While statement, Break/Continue

Creating arrays/event handlers, JavaScript Object model, Object and Events in JavaScript – OnClick, On MouseOver, On Focus, OnChange, OnLoad etc. Getting data with forms.

Web Hosting and publishing Concepts, Hosting considerations, Choosing Web servers – Linux Vs Windows Web servers, Choosing Domain names, Domain name Registration, Obtaining space on Server for Web site,

FTP software for upload web site. Add your website on search engines.

Outcomes- At the end of the course the students will be known to Review the current topics in Web & Internet technologies. Describe the basic concepts for network implementation. Learn the basic working scheme of the Internet and World Wide Web. Understand fundamental tools and technologies for web design. Comprehend the technologies for Hypertext Mark-up Language (HTML). Specify design rules in constructing web pages and sites. • Effectively deal with programming issues relating to JavaScript.

#### **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:**

- Computer Network by A.S. Tanenbaum.
  - Data Communication and Networks by William Stallings.
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- Data Communication Today by Stan Gelber..
  - Data Communication by Prakash G. gupta.
  - Data Communication by Singh & Sapre.
  - Network Basics, Internet & Web Design by Kamal Prakashan
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# Dr. C. V. Raman University, Khandwa

## 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			
IBEC301	Digital Computer Organization	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able

1. To introduce basics of digital logic circuits design and Computer Organization.
- 2 To understand the Input-Output Organizations.
- 3 To understand the Memory Organization.

### Syllabus

#### THEORY

##### UNIT-I

DATA REPRESENTATION : Data types and Number systems ,Binary number system ,Octal & Hexa-decimal number system, 1's & 2's complements, Binary Fixed- Point Representation, Arithmetic operation on Binary numbers, Overflow & underflow, Floating Point Representation, ASCII, EBCDIC codes, Gray code, Excess-3 & BCD, Error detection & correcting codes.

##### UNIT-II

DIGITAL LOGIC CIRCUITS: Logic Gates, basic gates and their Truth tables, NOR, NAND & XOR gates, Boolean algebra, Basic Boolean Law's, DeMorgan's theorem, MAP Simplification, Minimization techniques up to 4 variables K Map. Sum of Product & Product of Sums, Combination & Sequential circuits, Half Adder & Full Adder, Full subtractor, Flip-flops RS, D, JK & T Flip-flops, Shift Registers.

##### UNIT-III

CPU ORGANIZATION: ALU & Control Circuit, Idea about Arithmetic Circuits, Program Control, Instruction Sequencing.

##### UNIT-IV

INPUT-OUTPUT ORGANIZATIONS: I/O Interface, Properties of simple I/O devices and their controller, isolated versus memory-mapped, I/O, Modes of Data transfer, Synchronous & Asynchronous Data transfer. Handshaking, Asynchronous serial transfer, I/O Processor.

##### UNIT-V

MEMORY ORGANIZATION: Memory Hierarchy ,Auxiliary memory, Magnetic drum, Disk & Tape, Semiconductor memories, Associative memory, Virtual Memory, Address space & Memory space, Address mapping, Page table, Page Replacement, Cache memory, Hit Ratio,

Various mapping techniques, writing into Cache.

**Out Comes** – After Study This Student Will Be Able To Know About digital logic circuits design and Computer Organization .

**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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**Dr. C. V. Raman University, Khandwa**  
**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			
IBMA301	Counting Principles, Probability And Statistics	5(3-2-0)	50	20	30	-	-	100	3 hr	-

**Syllabus**

Objective – Student will be able to

1. Learn the language and core concepts of probability theory.
2. Understand basic principles of statistical inference.
3. Use software and simulation to do statistics (R).
4. Become an informed consumer of statistical information.
5. Prepare for further coursework or on-the-job study.

**THEORY**

**UNIT-I**

ELEMENTARY COUNTING PRINCIPLE: Product rule, Binomial and multinomial theorem, Stirling's formula, Principle of inclusion and exclusion, Permutations and combinations, Dearrangements, Marriage problem.

**UNIT-II**

RECURRENCES: Recurrences and generating functions, Solution of recurrences using generating functions

**UNIT-III**

DISCRETE PROBABILITY: Discrete probability, Applications of counting principles to calculate discrete probability.

**UNIT-IV**

PROBABILITY DISTRIBUTIONS: Definition of a random variable, Probability distribution and density function, Mathematical Expectation.

mean, median, mode. Skewness and Kurtosis, Higher moments, Various probability distributions, Normal, Binomial, Poisson, and Cauchy distributions, and their properties.

**UNIT-V**

CORRELATION AND STATISTICAL INDEPENDENCE: Correlation and statistical independence, Conditional probability, Numerical generation of random variables with a given distribution, Statement of the central limit theorem, and numerical test of the central limit theorem.

**UNIT-VI**

Basics of sampling theory, Sample mean and variance, sampling biases, with special reference to Internet sampling, Stratified sampling.

**UNIT-VII**

Introduction to Monte Carlo methods

Outcomes- At the end of the course the students will be known to use basic counting techniques (multiplication rule, combinations, permutations) to compute probability and odds. Create and interpret scatter plots and histograms. Compute the covariance and correlation between jointly distributed variables. Find credible intervals for parameter estimates.

**TEXTS & REFERENCE BOOKS:**

- Discrete Mathematics For Computer Science and Mathematicians by Joe. L. Mott, Abraham Kandel , T.P. Baker.
  - Engineering Mathematics by S.S. Sastry.
  - Fundamentals Of Mathematics-II by Kamal Prakashan
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# Dr. C. V. Raman University, Khandwa

## 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			
IBEN301	Communicative English -II	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able

1. To understand how to communicate effectively and appropriately in real-life situation.
2. To use English effectively for study purpose across the curriculum.
3. To develop and integrate the use of the four language skills i.e. Reading, Listening, Speaking, Writing.

## Syllabus

### Theory

#### OBJECTIVES:

It has been observed that linguistic competence is essential to understand the basic concepts of various subjects. Therefore, this course is designed with an aim to make learners proficient and efficient in the use of English Language. A sincere effort is being made to expose the learners to the four basic linguistic skills - Listening, Writing, Speaking and Reading

#### UNIT-I

##### FUNCTIONAL GRAMMAR

**Nouns:** Countable, Uncountable

**Pronoun:** Personal, Relative and others

Verb and Verb structures (infinitives and gerundial)

Linking Devices

#### UNIT- II

##### FUNCTIONAL GRAMMAR:

Adverbs and adverb phrases, Comparisons and Intensification

Modifiers and adverbs

Adjectives and Adjective Phrases

#### UNIT-III

Comprehension of unseen passage: To evaluate the grasp of general language skills and issues with reference words & usage within passages.

#### UNIT-IV

##### VOCABULARY:

Synonyms Antonyms & Homonyms, Diminutives and Derivatives, Jargons or Registers



**UNIT-V**

**MECHANICS OF WRITING:**

Précis writing

Paragraph

Curriculum Vitae/ Resume

Interview skills

Outcomes- After study this student will be able to know about how to become active readers, what are the writing skills and process. What are the oral communication skills?

**TEXT BOOKS:**

- Written Communication in English by Sarah Freeman Published by Orient Longman.

**REFERENCE BOOKS:**

- Intermediate English Grammar by Raymond Williams.
  - Vocabulary by Michael McCarthy and Felicity O'Dell.
  - English Grammar by Jayanthi Dakshina Murthy.
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# Dr. C. V. Raman University, Khandwa

## Scheme of Examination

### Department: Computer Science and Application

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			
SCIT 301	Data Entry Operations	3(1-0-2)	25	10	15	50	50	150	3 hrs.	2 hrs.

### Syllabus

#### Theory

##### UNIT-1

**Basics of Computer:** Computer Organization, Input and Output Devices, System Software and Application Software, Computer Language, Compiler and Assembler

**Operating System:** Elements of Windows XP, Desktop Elements, Locating Files and Folders, Changing System Setting, File Management in Windows, Installation of Software and Hardware

##### UNIT-2

**Basics of Word Processing:** Starting Word Program, Word Screen Layout, Typing Screen Objects, Managing Documents, Protecting and Finding Documents, Printing Documents

**Formatting Documents:** Working with text, Formatting Text, Formatting Paragraphs, Bulleted and Numbered Lists, Copying and Moving Text, Spelling and Grammar, Page Formatting, Creating Tables, Mail Merge,

##### UNIT-3

**Types of document in Mail merge:** Creating data Source, Creating Mailing Labels, Creating Mailing Labels, Merging Data into Main Document

**Basics of Spreadsheet:** Selecting, Adding and Renaming Worksheets, Modifying a Worksheet, Resizing Rows and Columns, Workbook Protection

##### UNIT-4

**Formatting Worksheets:** Formatting Toolbar, Formatting Cells, Formatting Rows and Columns, Formatting Worksheets Using Styles, Protect and Unprotect Worksheets

**Formulas, Functions and Charts:** Formulas and Functions, Copying a Formula, Types of Functions, Types of Charts, Auto Shapes and Smart art

##### UNIT-5

**Creating Presentation:** Creating Slides, Slide Sorter View, Changing Slide Layouts, Moving Between Slides,

**Introduction to Internet:** Getting Connected to Internet, Types of Internet Connections, Internet Terminology, Understanding Internet Address, Web Browser and Internet Services

#### Practicals

1.To study the features of MS-Office 2007 such as MS-Word, MS-Excel, MS-Power

point and MS-Access

2. To create a document using mail merge in MS-Word.
  3. To create a document for type the mathematical equation in MS-Word.
  4. To create a employees work detail list using MS-Excel
  5. To calculate student mark details using MS-Excel.
  6. To Import External Data, Sort and Filter using MS-Excel.
  7. To create a database using MS-Access.
  8. To generate report using MS-Access.
  9. To create a presentation text and images with effects using MS-Power point.
  10. To create a presentation with effects using animation and sound effects.
11. To create a document using mail merge in MS-Word

**Reference Books:**

1. Anurag Seetha, "Introduction to Computers and Information Technology", Ram Prasad & Sons, Bhopal.
  2. Galgotia Publications, "Computers Today ", Galgotia Publications.
  3. Alexis Leon & Mathews Leon, "Fundamentals of Information technology ", Vikas Publishing House, New Delhi.
  4. Windows XP Complete Reference. BPB Publications
  5. MS Office XP complete BPB publication
  3. 6.MS Windows XP Home edition complete, BPB Publications
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# Dr. C. V. Raman University, Khandwa

## 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			
IBCS401	System Analysis & Design	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able to

1. Know variety of new software used by analysts.
2. Designers to manage projects, analyze and document systems, design new systems and implement their plans.
3. Introduces a recent coverage of UML, wireless technologies and ERP.
4. Web based systems for e-commerce and expanded coverage on RAD and GUI design.

theoretical and other numerical/short notes. Questions should test the concept knowledge and application. Candidates are required to answer all questions.

### Syllabus

#### THEORY

##### UNIT-I

**SYSTEM CONCEPTS:** The system concept, Characteristics of system, Elements of system, Types of system, man made information systems.

**SYSTEM DEVELOPMENT LIFE CYCLE:** Recognition of need, Feasibility study, Analysis, Design implementation, post implementation and maintenance, System planning and control.

##### UNIT-II

**SYSTEM PLANNING AND INITIAL INVESTIGATION:** Bases for planning system analysis, Determining users requirements and analysis, Fact finding, Determination of feasibility.

**TOOLS OF STRUCTURED ANALYSIS:** Logical and Physical models, Data flow diagram, Data dictionary, system structured charts, system model. Pseudo codes, Decision tree, Decision tables, HIPO chart, Gantt charts, Warries diagram.

##### UNIT-III

**FEASIBILITY STUDY:** System performance constraints, identification of system objective, feasibility analysis and report.

**COST / BENEFITS ANALYSIS:** Data analysis, Cost/benefit analysis, categories, determination and system proposal.

##### UNIT-IV

**SYSTEM DESIGN:** Stages of system design, Logical and physical design methods, Form driven methodologies, IPO and HIPO charts, structured walk through, Audit considerations: Processing controls, Data validation, Audit trail and documentation control.

## **UNIT-V**

**SYSTEM IMPLEMENTATION:** Input and output form design methodologies like prompts, menu, screen design, layout consideration, zoning box design, System testing and Quality assurance, implementation and software maintenance, System security, Disaster, Recovery planning, Ethics in system development.

**Outcomes-** After study this student will be able to know about the principles and tools of systems analysis and design. Understand the application of computing in different context. Understand the professional and ethical responsibilities of practicing the computer professional including understanding the need for quality.

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

- System Analysis and Design by E. M. Award.
  - Analysis and Design of Information System by J Senu.
  - The Analysis Design and Implementation of Information by Lucas.
  - Fundamentals of System Analysis by J.F. Garald and A.F. Garald.
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# Dr. C. V. Raman University, Khandwa

## 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			
IBCS402	Operating System Concepts	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

Definitions, functions and types of operating system, System components, Operating system Services, System Calls, System programs, System structure.

##### UNIT-II

Process Concepts, process state & process control block, Process Scheduling, Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling Real-Time Scheduling, Threads, Threads in Linux.

##### UNIT-III

Critical Section Problem , Semaphores, Classical Problem Of Synchronization, , Deadlock Characterizations, Method for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Process Scheduling in Linux.

##### UNIT-IV

Logical versus physical address space, Swapping, Contiguous Allocating, Paging, Segmentation, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement, Page Replacement Algorithms, Memory Management in Linux.

##### UNIT-V

Disk Scheduling, Disk Management, Swap Space Management, Disk reliability, Stable Storage Implementation.

File Concepts Directory structure, 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

**TEXT & 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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# Dr. C. V. Raman University, Khandwa

## 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				
IBCS403	Linux And Shell Programming	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr	

Objective – Student will be able

- 1 To introduce the internals of Linux Operating System.
- 2 To develop, debug and implement Shell Programme.
- 3 To understand System administration.
- 4 To understand configuration of Proxy Server
- 5 To Installation, configuration and managing a simple LAN within an organization using Linux.

## Syllabus

### THEORY

#### UNIT – I

**Linux introduction** - Basic Features, Different flavors of Linux. Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell. Linux File system-Boot block, super block, Inode table, data blocks, How Linux access files, storage files, Linux standard directories.

**Installation of Linux system**- Partitioning the Hard drive for Linux, Installing the Linux system, System startup and shut-down process, init and run levels.

Essential Linux commands Understanding shells, Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp & comm, View files, disk related commands, checking disk free spaces.

#### UNIT-II

Processes in Linux-process fundamentals, connecting processes with pipes, tee, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron, batch commands, kill, ps, who, sleep, Printing commands, find, sort, touch, file, file related commands-ws, sat, cut, dd, etc. Mathematical commands- bc, expr, factor, units. Creating and editing files with vi, joe & vim editor

#### UNIT-III

Shell programming- Basic of shell programming, Various types of shell available in Linux, comparisons between various shells, shell programming in bash, read command, conditional and looping statements, case statements, parameter passing and arguments, Shell variables, system shell variables, shell keywords, Creating Shell programs for automate system tasks. Simple filter commands – pr, head, tail, cut, paste, sort, uniq, tr. Filter using regular expressions – grep, egrep, and sed.

awk programming – report printing with awk.

#### UNIT-IV

System administration Common administrative tasks, identifying administrative files – configuration and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary



disable user's accounts, creating and mounting file system, checking and monitoring system performance file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel. Backup and restore files, reconfiguration hardware with kudzu, installing and removing packages in Linux. Configure X-windows starting & using X desktop. KDE & Gnome graphical interfaces, changing X windows settings.

#### **UNIT-V**

Installation, configuration and managing a simple LAN within an organization using Linux.

Setting up and using telnet server and clients.

Installation and simple configuration of Proxy Server - Squid, Mail server - Send mail, Web server - Apache, File server and Samba server in Linux

VNC server and client setting

**Out Comes** - After Study This Student Will Be Able To Know About Basic Features, Different flavors of Linux. Advantages, Installing. Student will know about Processes in Linux, Shell programming & Gnome graphical interfaces.

#### **Practicals:**

1. Write a shell script to find factorial of a given integer.
2. Write a shell script to list all of the directory files in a directory.
3. Write a shell script that accepts a list of file names as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files.
4. Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
5. Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
6. Shell script to display the period for which a given user has been working in the system.
7. Aim to compute gross salary of an employee, accordingly to rule given below.

If basic salary is <15000 then HRA =10% of basic and DA =90% of basic

If basic salary is >=15000 then HRA =500 and DA =98% of basic.

8. Write an awk script to find out total number of books sold in each discipline as well as total book sold using associate array down table as given

Electrical 34	electrical 80
Mechanical 67	computers 43
Mechanical 65	civil 198

Computers 64.

9. Create a script file called file properties that reads a file name entered and output its properties
  10. Write a shell script using expr command to read in a string and display a suitable message if it does not have at least 10 characters.
  11. Write a shell script that reports the logging in of a specified user within one minute after he/she logs in. The script automatically terminates if the specified user does not login during a specified period of time.
-

**TEXTS & REFERENCES BOOKS:**

- UNIX – Concepts & Applications (Third Ed.) – Sumitabha Das, Tata McGraw Hill Publications.
  - Unix for programmers and users (Third Ed.) – Graham Glass & King Ables, Pearson Education India. (Low Prices Edition).
  - Fedora Core 6 Bible
  - Linux and Shell Programming -Sumitabha Das, Tata McGraw Hill Publications.
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# Dr. C. V. Raman University, Khandwa

## 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			
IBMA401	Numerical Analysis And Scientific Computing	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

Objective – Student will be able to

1. Understand the fundamental principles of digital computing, including number representation and arithmetic operations.
2. Understand the linkage between accuracy, stability and convergence.
3. Perform error analysis for arithmetic operations.
4. Understand the propagation of errors through complex numerical algorithms.
5. Perform numerical stability analysis.

### Syllabus

#### THEORY

##### UNIT-I

Representation of numbers on computer, Differences between floating point and real arithmetic, Different types of errors and their estimates.

##### UNIT-II

Representation of a function on a computer, Discretisation, Table look up interpolation, Extrapolation, Function evaluation, Numerical differentiation, Numerical Quadrature.

##### UNIT-III

Root finding and numerical maxima and minima, Solutions of nonlinear equations, Conjugate gradient method.

##### UNIT-IV

Solutions of linear equations, Gaussian elimination, Iterative methods, Eigenvalue problems.

##### UNIT-V

Integration of ordinary differential equations, Picard's method of successive approximation, Euler's method, Runge Kutta method, Predictor-Corrector method.

##### UNIT-VI

Introduction to integration of partial differential equations.

##### UNIT-VII

Introduction to integration of stochastic differential equations.

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**Outcomes-** After study this student will be able to know stable algorithms for solving linear systems of equations. Develop efficient and stable algorithms for finding roots of non-linear equations. Implement numerically stable recursion algorithms for evaluating mathematical functions. Understand the use of interpolation for numerical differentiation and integration. Develop stable solution algorithms for ordinary differential equations.

**Practicals:**

1. Converting a temperature from centigrade to Fahrenheit.
2. Determine the area of a triangle.
3. Fibonacci numbers less than 50.
4. Find the real root of the equation  $x \log_{10} x = 1.2$  by Bisection method.
5. Algorithm for iteration method
6. Find a real root of the equation  $3x + \sin x - ex = 0$  by the method of false position
7. Using Muller's method, find the root of the equation
8. Using Newton-Raphson method, find the real root of the equation
9. Algorithm for Newton's Forward Difference Formula
10. Algorithm of Gauss's Backward Formula

**TEXT & REFERENCE BOOKS:**

- Numerical Methods by S.S. Sastry (Volume 2)
  - Numerical Recipes in C.
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# Dr. C. V. Raman University, Khandwa

## 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			
IBCS404	Software Testing And Project Management	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able

1. To introduce the methodologies involved in the development and maintenance of software (i.e.) over the entire life cycle.
- 2 To understand the types of testing on software projects.

### Syllabus

#### Theory

##### UNIT - I

Testing basics and Development Models: Principals and context of testing in software production, Usability and Accessibility Testing, Phases of Software Project, Process models to represents different phases, Software Quality Control and its relation with testing, validating and verification, Software Development life cycle models, various development models.

White Box Testing: White Box Testing - Static Testing, Structural Testing-Unit code functional testing, Code coverage testing, code complexity testing,.

Black Box Testing- What? Why and when to do Black box testing, Requirements based testing, Positive and Negative Testing, Boundary value testing, Decision Tables, Equivalence Partitioning, State Based or Graph Based Testing, Compatibility Testing, User Documentation Testing, Domain Testing.

##### UNIT - II

Integration Testing: Introduction and types of integration testing, Scenario testing, defect bash.

System and Acceptance Testing- Overview, functional and non-functional testing, Acceptance testing.

Overview of some software testing tools: WinRunner, LoadRunner, Test Director.

(Some practical should be conducted using these tools)

##### UNIT - III

Performance Testing- Introduction, factors related to performance testing, methodology for performing testing, Regression Testing,

Ad hoc Testing- Overview, Buddy & pair testing, Exploratory testing, Interactive testing, Agile and extreme testing.

Testing of Object Oriented Testing – Introduction, Differences in OO testing.

##### UNIT-IV

Software Project Management: Overview, Software Project Management Framework, Software Development life cycle,

Organization Issues and Project Management, Managing Processes, Project Execution, Problems in Software Projects, Project Management Myths and its clarifications.

Software Project Scope: Need to scope a software project, scope management process, communication techniques and tools, communication methodology

Software Requirement Gathering and Resource allocation: Requirement specifications, SRS Document preparation, Resources types for a software projects, requirement for resources allocation.

#### **UNIT – V**

Software Project Estimation: Work Breakdown structure (WBS), steps in WBS, Measuring efforts for a project, techniques for estimation – SLOC, FP, COCOMO and Delphi methods.

Project Scheduling: Scheduling and its need, scheduling basics, Gantt Chart, Network scheduling techniques, Pert and CPM

Using a Project Management Tool: Introduction to MS Project 2000, Managing tasks in MS Project 2000, Tracing a project plan, creating and displaying project information reports.

**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.

#### **TEXT & 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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# Dr. C. V. Raman University, Khandwa

## Scheme of Examination

### Department: Computer Science and Application

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			
SCIT 401	Data Entry Operations	3(1-0-2)	30	10	10	50	50	150	3 hrs.	2 hrs.

#### Pattern:

The question paper will consist of six questions. Question no. 1 will have 10 objective type questions and carry 10 marks, covering entire syllabus. Objective questions should have right mix of questions to test the logic, problem solving skill and reasoning. Each objective question should have four choices to pick up from. Remaining five questions carry 08 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 concept knowledge and application. Candidates are required to answer all questions.

### Syllabus

#### Theory

##### UNIT-1

**Basics of Computer:** Computer Organization, Input and Output Devices, System Software and Application Software, Computer Language, Compiler and Assembler

**Operating System:** Elements of Windows XP, Desktop Elements, Locating Files and Folders, Changing System Setting, File Management in Windows, Installation of Software and Hardware

##### UNIT-2

**Basics of Word Processing:** Starting Word Program, Word Screen Layout, Typing Screen Objects, Managing Documents, Protecting and Finding Documents, Printing Documents

**Formatting Documents:** Working with text, Formatting Text, Formatting Paragraphs, Bulleted and Numbered Lists, Copying and Moving Text, Spelling and Grammar, Page Formatting, Creating Tables, Mail Merge,

##### UNIT-3

**Types of document in Mail merge:** Creating data Source, Creating Mailing Labels, Creating Mailing Labels, Merging Data into Main Document

**Basics of Spreadsheet:** Selecting, Adding and Renaming Worksheets, Modifying a Worksheet, Resizing Rows and Columns, Workbook Protection

##### UNIT-4

**Formatting Worksheets:** Formatting Toolbar, Formatting Cells, Formatting Rows and Columns, Formatting Worksheets Using Styles, Protect and Unprotect Worksheets

**Formulas, Functions and Charts:** Formulas and Functions, Copying a Formula, Types of Functions, Types of Charts, Auto Shapes and Smart art

##### UNIT-5

**Creating Presentation:** Creating Slides, Slide Sorter View, Changing Slide Layouts, Moving Between Slides,

**Introduction to Internet:** Getting Connected to Internet, Types of Internet Connections, Internet Terminology, Understanding Internet Address, Web Browser and Internet Services

### **Practicals**

1. To study the features of MS-Office 2007 such as MS-Word, MS-Excel, MS-Power point and MS-Access
2. To create a document using mail merge in MS-Word.
3. To create a document for type the mathematical equation in MS-Word.
4. To create a employees work detail list using MS-Excel
5. To calculate student mark details using MS-Excel.
6. To Import External Data, Sort and Filter using MS-Excel.
7. To create a database using MS-Access.
8. To generate report using MS-Access.
9. To create a presentation text and images with effects using MS-Power point.
10. To create a presentation with effects using animation and sound effects.
11. To create a document using mail merge in MS-Word

### **Reference Books:**

1. Anurag Seetha, "Introduction to Computers and Information Technology", Ram Prasad & Sons, Bhopal.
  2. Galgotia Publications, "Computers Today ", Galgotia Publications.
  3. Alexis Leon & Mathews Leon, "Fundamentals of Information technology ", Vikas Publishing House, New Delhi.
  4. Windows XP Complete Reference. BPB Publications
  5. MS Office XP complete BPB publication
  4. 6. MS Windows XP Home edition complete, BPB Publications
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# Dr. C. V. Raman University, Khandwa

## 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			
IBCS501	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

C++ Vs JAVA, JAVA and Internet and WWW, JAVA support systems, JAVA environment, JAVA program structure, Tokens, Statements, JAVA virtual machine, Constants & Variables, Data Types, Type Casting, Operators , Expressions & its Evaluation, Decision making and branching, Loops, Jumps in Loops, Labeled Loops.

##### UNIT-II

Defining a class, Adding variables and methods, Creating objects, Accessing class members, Constructors, Method overloading , Static members, Nesting of methods, Inheritance: Extending a class, Overriding methods, Final variables and method~, Final classes, Finalizes methods, Abstract methods and classes, Visibility control.

##### UNIT-III

Arrays, One dimensional & two dimensional, Strings, Vectors, Wrapper classes, Defining interfaces, Extending interfaces, Implementing interfaces, Accessing interface Variables, System packages, Using system packages, Naming conventions, Creating packages, Accessing a package, Using package, Adding a class to a package, Hiding classes.

##### UNIT-IV

Threads, Creating threads, Extending the threads class, Stopping and blocking a thread, Life cycle of a thread, Using thread methods, Thread exceptions, Thread priority, Synchronization, Implementing the runnable interface.

## **UNIT-V**

Applets, Local and remote applets, Applets Vs applications, Writing applets, Applets life cycle, Creating an executable applet, Designing a web page, Applet tag, Adding applet to HTML file, Running the applet, Passing parameters to applets, Aligning the display, HTML tags & applets, Getting input from the user.

### **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 is 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.

### **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.

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

- Programming Java 2nd Edition by E. balagurusvamy, TMH Publications.
  - Peter Norton Quid E to Java Programming by Peter Norton, Techmedia Publications.
  - Java Programming by Kamal Prakashan
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**Dr. C. V. Raman University, Khandwa**

**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			
IBCS502	GUI Programming With Visual Basic.Net	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

**Objective – Student will be able-**

- The aim of the course is for the student to gain 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, .NET Framework features & architecture, CLR, Common Type System, MSIL, Assemblies and class libraries. Introduction to visual studio, Project basics, types of project in .Net, IDE of VB.NET- Menu bar, Toolbar, Solution Explorer, Toolbox, Properties Window, Form Designer, Output Window, Object Browser.

The environment: Editor tab, format tab, general tab, docking tab. visual development & event drive Programming -Methods and events.

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## **UNIT-II**

The VB.NET Language- Variables -Declaring variables, Data Type of variables, Forcing variables declarations, Scope & lifetime of a variable, Constants, Arrays, types of array, control array, Collections, Subroutines, Functions, Passing variable Number of Argument Optional Argument, Returning value from function.

Control flow statements: conditional statement, loop statement. MsgBox & Inputbox.

## **UNIT - III**

Working with Forms: Loading, showing and hiding forms, controlling One form within another.

GUI Programming with Windows Form: Textbox, Label, Button, Listbox, Combobox, Checkbox, PictureBox, RadioButton, Panel, scroll bar, Timer, ListView, TreeView, toolbar, StatusBar. There Properties, Methods and events. OpenFileDialog, SaveFileDialog, FontDialog, ColorDialog, PrintDialog. Link Label.

Designing menus : Context Menu, access & shortcut keys.

## **UNIT-IV**

Object oriented Programming: Classes & objects, fields Properties, Methods & Events, constructor, inheritance. Access Specifier: Public Private, Protected. Overloading, My Base & My class keywords.

Overview of OLE, Accessing the WIN32 API from VB.NET & Interfacing with MS office, COM technology, advantages of COM+, COM & .NET, Create User control, register User Control, access com components in .net application.

## **UNIT-V**

Database programming with ADO.NET – Overview of ADO, from ADO to ADO.NET, Accessing Data using Server Explorer. Creating Connection, Command, Data Adapter and Data Set with OLEDB and SQLDB. Display Data on data bound controls, display data on data grid.

Generate Reports Using CrystalReportViewer.

### **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.
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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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# Dr. C. V. Raman University, Khandwa

## Scheme of Examination

**Department: CSA**

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			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IBEC501	Computer Architecture & Micro Processors	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able to

1. Conceptualize the basics of organizational and architectural issues of a digital computer.
2. To analyze performance issues in processor and memory design of a digital computer.
3. To understand various data transfer techniques in digital computer.
4. To analyze processor performance improvement using instruction level parallelism
5. Microprocessor system design considerations.

### Syllabus

#### Theory

##### UNIT-I

COMPUTER SYSTEM: Computer Components, Computer function, Interconnection Structures, Bus Interconnection, PCI

##### UNIT-II

INTERNAL MEMORY & I/O : Computer memory system Overview, Semiconductor main memory, Cache memory, External devices, I/O Modules, Programmed I/O, Interrupt -Driver I/O, DMA, I/O channels & processors.

##### UNIT-III

INSTRUCTION SETS CHARACTERISTICS & FUNCTIONS: Machine Instruction Characteristics, Types of operands, Type of operations, Addressing, Instruction format

##### UNIT-IV

MICROPROCESSOR & ITS ARCHITECTURE Microprocessor - based PC system, Internal Microprocessor architecture, Arithmetic coprocessor

##### UNIT-V

PENTIUM : Introduction to Pentium Microprocessor, Special Pentium registers, Pentium memory management, New Pentium instructions

Outcomes- After study this student will be able to know the basic elements and functions of contemporary microprocessors and microcontrollers. Explain the architecture and operation of microprocessors and identify and explain the operations of peripherals and memories typically interfaced with microprocessors and microcontrollers.

**TEXTS & REFERENCE BOOKS:**

- Computer Organization & Architecture - William Stallings.
  - Intel Microprocessors - Architecture, Programming & Interfacing - Barry. b Brey.
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## Dr. C. V. Raman University, Khandwa

### 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			
IBMA501	Optimisation And Graph Theory	5(3-2-0)	50	20	30	-	-	100	3 hr	-

Objective – Student will be able to

1. Understand computational complexity, mainly in the framework of combinatorial optimization.
2. Computational complexity aims to study whether a given problem can be efficiently solved by an algorithm, allowing then to characterize the intrinsic hardness of problems.
3. Allows differentiating well solved problems to hard problems.
4. Have some basic notions about computational complexity since one has necessarily to face it sometimes.

### Syllabus

#### Theory

##### UNIT-I

- Review of finite dimensional vector spaces and linear transformations.
- Linear independence and bases. Matrix representation of a linear transformation. Translations and rotations in 3-d, and their matrix representations.
- Projections. Examples of orthogonal and perspective projections in 3-d and their matrix representations.

##### UNIT-II

- The vector space  $\mathbb{R}^n$ . Norm and distance.
  - Inner product.
  - Equation of a plane.
  - Functions of several variables.
  - Graphical representation of a function of two variables.
  - Normal to a surface and the total derivative.
-



- Gradient vector.
- Higher derivatives.
- Taylor's theorem for a function of n variables.

#### **UNIT-III**

- Gradient search techniques.
- Newton-Raphson method.
- Constrained maximization and Kuhn-Tucker conditions.
- Hessian and its use.

#### **UNIT-IV**

- Convex sets and extreme points.
- Extreme points and the simplex algorithm.
- Numerical implementation of the simplex algorithm.
- Graph Theory

#### **UNIT-V**

- Graphs, digraphs and trees.
- Subgraphs , isomorphism of graphs.
- Connectedness.
- Euler's formula.

#### **UNIT-VI**

- Konigsberg bridge problem.
- Eulerian graphs and Hamiltonian circuits.

#### **UNIT-VII**

- Minimal spanning trees.
- Representation of graphs on a computer.
- Adjacency matrix and transitive closure.

Outcomes- After study this student will be able to know the Graph concepts: basic graph algorithmic (paths, spanning trees, matching, ...), stable sets, cliques, coloring, ... Complexity of algorithms, Complexity theory: P, NP, NP-complete, polynomial reductions

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

- Discrete Mathematics for Computer Science And Mathematicians by Joe. L. Mott, Abraham Kandel , T.P. Baker
  - Engineering Mathematics by S.S. Sastry (Volume 2).
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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			
IBCS503	Multimedia Systems	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**

Multimedia: Needs and areas of use, Development platforms for multimedia - DOS, Windows, Linux. Identifying Multimedia elements - Text, Images, Sound, Animation and Video, Making simple multimedia with PowerPoint.

Text - Concepts of plain & formatted text, RTF & HTML texts, using common text preparation tools, Conversion to and from of various text formats, using standard software, Object Linking and Embedding concept, Basics of font design, overview of some fonts editing and designing tools, Understanding & using various text effects.

Images - importance of graphics in multimedia, Vector and Raster graphics, image capturing methods - scanner, digital camera etc. various attributes of Images - size, color, depth etc, Various Image file format - BMP, DIB, EPS, CIF, PEX, PIC, JPG, TGA, PNG and TIF format - their features and limitations, graphic file formats conversions, processing images with common software tools such as Photoshop, Paint Shop pro, Corel draw etc..

**UNIT-II**

Sound: Sound and its Attributes, Mono V/s Stereo sound, Sound channels, Sound and its effect in

multimedia, Analog V/s Digital sound, Basics of digital sounds-Sampling, Frequency, Sound Depth, Channels, Sound on PC, Sound standards on PC, Capturing and Editing sound on PC, Overview and using some sound recording, editing software. Overview of various sound file formats on PC - WAV, MP3, MP4, Ogg Vorbis etc.

### **UNIT-III**

Animation: Basics of animation, Principle and use of animation in multimedia, Effect of resolutions, pixel depth, Images size on quality and storage. Overview of 2-D and 3-D animation techniques and software-animation pro, 3D studio & Paint Shop pro animator.

Animation on the Web - features and limitations, creating simple animations for the Web using GIF Animator and Flash.

### **UNIT-IV**

Video: Basics of Video - Analog and Digital Video, How to use video on PC. Introduction to graphics accelerator cards, DirectX Introduction to AV/DV and IEEE1394 cards , Digitization of analog video to digital video, Interlacing and non-interlacing, Brief note on various video standards - NTSC, PAL, SECAM, HDTV, Introduction to video capturing Media & instrument - Videodisk, DVCAM, Camcorder, Introduction to digital video compression techniques and various file formats - AVI, MPEG, MOV, Real Video.

Brief Introduction to video editing and movie making tools - Quick time, video for windows & Adobe premier.

### **UNIT-V**

Authoring tools for CD Based Multimedia: Type of multimedia authoring tools, key factors of selecting CD based multimedia authoring tools. Planning and distribution of a multimedia project. Multimedia development team & skills requirement, Stages in designing & producing multimedia products for CD, Testing of product, distribution of multimedia product, various formats of CD's and DVD's.

### **UNIT - VI**

Multimedia on web bandwidth relationship, broadband technologies, Text in the web – Dynamics and embedded font technology, Audio on the Web- Real Audio and MP3/ MP4, Audio in HTML, Graphics – HTML safe color palate, Interlaced V/s Non interlaced model, Graphics support in HTML, Images Map, Video on the Web- Streaming video, Real Video, MPEG and SMIL, Virtual Reality on the Web.

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.

### **TEXT AND REFERENCE BOOKS:**

- Multimedia: Making (It Work (4<sup>th</sup> Edition) – by Tay Vaughan, Tata McGraw Hills.
  - Multimedia in Action – James E Shuman – Vikas Publishing House.
  - Multimedia Basics – Volume -1 Technology, Andres Holzinger, Firewall Media (Laxmi Publications Pvt Ltd) New Delhi.
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**Scheme of Examination**

**Department: Computer Science and Application**

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			
SCIT 501	Data Entry Operations	3(1-0-2)	30	10	10	50	50	150	3 hrs.	2 hrs.

**Pattern:**

The question paper will consist of six questions. Question no. 1 will have 10 objective type questions and carry 10 marks, covering entire syllabus. Objective questions should have right mix of questions to test the logic, problem solving skill and reasoning. Each objective question should have four choices to pick up from. Remaining five questions carry 08 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 concept knowledge and application. Candidates are required to answer all questions.

**Syllabus**

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## Theory

### UNIT-1

**Basics of Computer:** Computer Organization, Input and Output Devices, System Software and Application Software, Computer Language, Compiler and Assembler

**Operating System:** Elements of Windows XP, Desktop Elements, Locating Files and Folders, Changing System Setting, File Management in Windows, Installation of Software and Hardware

### UNIT-2

**Basics of Word Processing:** Starting Word Program, Word Screen Layout ,Typing Screen Objects, Managing Documents, Protecting and Finding Documents, Printing Documents

**Formatting Documents:** Working with text, Formatting Text, Formatting Paragraphs, Bulleted and Numbered Lists, Copying and Moving Text, Spelling and Grammar, Page Formatting, Creating Tables, Mail Merge,

### UNIT-3

**Types of document in Mail merge:** Creating data Source, Creating Mailing Labels, Creating Mailing Labels, Merging Data into Main Document

**Basics of Spreadsheet:** Selecting, Adding and Renaming Worksheets, Modifying a Worksheet, Resizing Rows and Columns, Workbook Protection

### UNIT-4

**Formatting Worksheets:** Formatting Toolbar, Formatting Cells, Formatting Rows and Columns, Formatting Worksheets Using Styles, Protect and Unprotect Worksheets

**Formulas, Functions and Charts:** Formulas and Functions, Copying a Formula, Types of Functions, Types of Charts, Auto Shapes and Smart art

### UNIT-5

**Creating Presentation:** Creating Slides, Slide Sorter View, Changing Slide Layouts, Moving Between Slides,

**Introduction to Internet:** Getting Connected to Internet, Types of Internet Connections, Internet Terminology, Understanding Internet Address, Web Browser and Internet Services

### Practicals

- 1.To study the features of MS-Office 2007 such as MS-Word, MS-Excel, MS-Power point and MS-Access
2. To create a document using mail merge in MS-Word.
3. To create a document for type the mathematical equation in MS-Word.
4. To create a employees work detail list using MS-Excel
5. To calculate student mark details using MS-Excel.
6. To Import External Data, Sort and Filter using MS-Excel.
7. To create a database using MS-Access.
8. To generate report using MS-Access.
9. To create a presentation text and images with effects using MS-Power point.
10. To create a presentation with effects using animation and sound effects.
11. To create a document using mail merge in MS-Word

### Reference Books:

1. Anurag Seetha, "Introduction to Computers and Information Technology", Ram Prasad & Sons, Bhopal.
  2. Galgotia Publications, "Computers Today ", Galgotia Publications.
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3. Alexis Leon & Mathews Leon, "Fundamentals of Information technology ", Vikas Publishing House, New Delhi.
  4. Windows XP Complete Reference. BPB Publications
  5. MS Office XP complete BPB publication
  6. MS Windows XP Home edition complete, BPB Publications
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**Dr. C. V. Raman University, Khandwa**  
**Scheme of Examination**

**Department: CSA**

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			Theory			Practical		Total	Theory	Practical
			End Sem	Mid Sem	Sessional	End Sem	Term work			
IBCS601	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

**SOFTWARE** : Software Characteristics, Components & Applications, Software Engineering - A Layered Technology, Software Process Models - Linear Sequential

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Model, Prototype & Rad Model., Evolutionary Software Process Model – Incremental Model and Spiral Model.

SOFTWARE PROJECT MANAGEMENT: Project Management Concepts – People Problem and Process S/W PROCESs and Project Metrics: Metrics in The Process and Project Domains. Software Measurement –Size Oriented, Function Oriented Metrics, Extended Function

## **UNIT - II**

SOFTWARE PROJECT PLANNING: Objectives, Scope, Project Estimation, Decomposition Techniques, and Empirical Estimation Models.

ANALYSIS CONCEPT AND PRINCIPLES: Requirement Analysis, Communication Techniques, Analysis Principles, Software Prototyping, Specifications.

ANALYSIS MODELING: Elements of The Analysis Modeling, Data Modeling. Functional Modeling and Information Flow, Behavioral Modeling, Data Dictionary.

## **UNIT - III**

DESIGN CONCEPTS AND PRINCIPLES: Design Process, Design Concepts, Design Principles, Effective Modular Design.

DESIGN METHODS: Architectural Design Process, Transform Mapping and Transaction Mapping, Interface Design, - Internal and External Design, Human computer Interface Design, Interface Design Guidelines, Procedural Design.

## **UNIT - IV**

S/W Quality Assurance: Quality Concepts, Matrix for Software Quality, Quality Movement, S/W Q A, S/W Review, Formal Technical Reviews, Formal Approaches to Sqa, S/W Reliability, ISO 9000quality Standards

S/W TESTING MODELS: S/W Testing Fundamentals, Test Case Design, White and Black Box Testing, Basic Path Testing, Control Structure

S/W TESTING STRATEGIES: Strategic Approach to S/W Testing, Unit Testing, Integration Testing, Validation Testing, System Testing, Debugging

## **UNIT - V**

S/W REUSE : Reuse Process, Building Reuse Components, Classified And Retrieving Components, Economics Of S/W Reuse COMPUTER AIDED S/W ENGINEERING: Introducing of Case, Building Block For Case, Taxonomy Of Case Tools, Integrating Case Environment, Integrating Architecture, Case Repository.

### **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.

**TEXTS & REFERENCE BOOKS:**

- Software Engineering By R.S.Pressman
  - An Integrated Approach To Software Engineering By Pankaj Jalote
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**Dr. C. V. Raman University, Khandwa**  
**Scheme of Examination**

**Department: CSA**

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			End Sem	Mid Sem	Sessional	End Sem	Term work			

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IBCS602	Embedded Systems	5(3-2-0)	50	20	30	-	-	100	3 hr	-
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**Objective –Student will be able-**

- 1.Introduction of the real-time systems.
2. Computing required for the real-time embedded systems.
3. Communication required for the real-time embedded systems.
4. Present an overview of the real-time embedded systems in practice.

**Syllabus**

**Theory**

**UNIT- I**

Introduction to Embedded systems Embedded Systems Vs General Computing Systems, Classification of Embedded Systems, Major application areas of Embedded Systems, Purpose of Embedded systems ,Core of the Embedded system, Memory, Sensors and Actuators, Communication Interface, Embedded firmware, PCB and Passive Components, Characteristics and Quality attributes of a Embedded System .

**UNIT - II**

Design of Embedded Systems with 8bit Microcontrollers-8051 Factors for considering in selecting a Controller, Designing with 8051 microcontroller Different addressing modes supported by 8051, Instruction set for 8051 microcontroller. Fundamental issues in Hardware Software Co-Design, Computational models in Embedded Design.

**UNIT - III**

Embedded Hardware & Firmware Design and Development Analog &Digital Electronic components, VLSI & Integrated circuit design, Electronic Design Automation tools, PCB layout Design and its fabrication .Embedded firmware design approaches, Embedded firmware Development Languages, Programming in Embedded C. Integration and testing of Embedded Hardware and Firmware , Safe & robust Design, Reliability, Faults, errors & Failure, Functional Design, Architecture Design, Prototyping.

**UNIT -IV**

Embedded System Development Environment Integrated Development Environment (IDE), Types of files Generated on Cross-Compilation, Disassemble / Decompile, Simulators, Emulators and Debugging, Boundary Scan.

**UNIT- V**

Embedded Product Development Lifecycle (EDLC) and Trends in Embedded Industry What is EDLC, Objectives of EDLC, Different phases of EDLC, EDLC Approaches-Linear or waterfall model, Iterative Model, Prototyping/Evolutionary Model, and Spiral Model. Processor trends in Industry, Embedded OS Trends, Development Language trends Open Standards, Frameworks and Alliances, Bottlenecks.

**Out Comes –**

After successfully completing these course students shall be able:

1. To present the mathematical model of the system.
2. To develop real-time algorithm for task scheduling.
3. To understand the working of real-time operating systems and real-time database.
4. To work on design and development of protocols related to real-time communication.

**REFERENCES:**

- Shibu, Introduction to Embedded System;, TMH
  - Barrett ,Embedded Systems :Design and Applications ,Pearson Education
  - Rajkamal, Embeded System, TMH
  - Vahid ,Givargis ,Embedded System Design ,Wiley
  - Balbno, Embedded Micro Computer System Cengage Learning
  - Siewert, Real Time Embeded System &
  - Peckol, Embeded System, Willey India
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**Chairman**  
**(Board of studies)**

**Dean (Faculty)**

**(Registrar)**

**Dr. C. V. Raman University, Khandwa**  
**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			
IBCS603	Programming With Asp.Net	6(3-2-1)	50	20	30	25	25	150	3 hr	2 hr

### Objective –Student will be able-

1. Introduction to Networking and the world wide web.
2. Building multi-tier enterprise applications.
3. Introduction to the .NET framework.
4. .NET Interoperation services.
5. Client side programming: HTTP, CGI, Cookies, JavaScript, HTML, XML.
6. Server side programming: Web Forms, ASP.NET Web Services, ADO.NET Data Access
7. Client/Server Programming, 3-tier architecture.
8. .NET Remoting.
9. ASP.NET Web services and web service security.
10. RESTful, SOAP, DISCO, and UDDI.
11. Simple Object Access Protocol (SOAP) and Web Services.

### Syllabus

#### Theory

##### UNIT – I

Overview of ASP.NET framework, Understanding ASP.NET Controls, Applications

Web servers, installation of IIS.

Web forms, web form controls -server controls, client controls, web forms & HTML, Adding controls to a web form ,Buttons, Text Box , Labels, Checkbox, Radio Buttons, List Box, etc.

Running a web Application, creating a multiform web project.

##### UNIT-II

Form Validation: Client side validation, server Side validation, Validation Controls: Required Field Comparison Range. Calendar control, Ad rotator Control, Internet Explorer Control.

State management- View state, Session state, Application state,

##### UNIT-III

Architecture of ADO.NET, Connected and Disconnected Database, Create Connection using ADO.NET Object Model, Connection Class, Command Class, Data Adapter Class, Dataset Class. Display data on data bound Controls and Data Grid.

Database Accessing on web applications: Data Binding concept with web, creating data grid, Binding standard web server controls. Display data on web form using Data bound controls.

##### UNIT-IV

Writing datasets to XML, Reading datasets with XML.

Web services: Introduction, Remote method call using XML, SOAP, web service description language, building & consuming a web service, Web Application deployment.

#### **UNIT-V**

Overview of C#, C# and .NET, similarities & differences from JAVA, Structure of C# program.

Language features: Type system, boxing and unboxing, flow controls, classes, interfaces, Serialization, Delegates, and Reflection.

#### **Out Comes –**

After successfully completing these course students shall be able:

1. Successful students will be able to design web applications using ASP.NET
2. Successful students will be able to use ASP.NET controls in web applications.
3. Successful students will be able to debug and deploy ASP.NET web applications
4. Successful students will be able to create database driven ASP.NET web applications and web services

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

- VB.NET Black Book by Steven Holzner – Dreamtech
- ASP.NET Unleashed
- C# programming – Wrox publication
- C# programming Black Book by Matt Telles

#### **Practicals:**

1. Working with call backs and delegates in C#.
  2. Program to display the addition using the windows application.
  3. Creating a Windows Service with C#
  4. Using Reflection in C#
  5. Sending Mail and SMTP Mail and C#
  6. Write a program working with Page using ASP.Net.
  7. Write a program working with forms using ASP.NET.
  8. Write a program using RequiredFieldValidator in ASP.NET.
  9. Write a program using Login Form in ASP.NET.
  10. Write a program using Checkbox List in ASP.NET.
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