

DEPARTMENT OF COMPUTER SCIENCE AND APPLICATIONS
SCHEME AND SYLLABUS OF EXAMINATION FOR
Bachelor of Physical Science
Duration 3 Years (6 Semesters) w.e.f. Academic Session 2023-24

Semester – I										
Course Code	Course Title	Credit	L : T :P: CH	Internal Marks		External Marks		Total Marks		
				Th	Pr	Th	Pr	Min	Max	
Major/Core Courses										
CC-A1		4	3 : 0 : 1 : 5	20	10	50	20	40	100	
CC-B1		4	3 : 0 : 1 : 5	20	10	50	20	40	100	
B23-CC-C1	Logical Organization of Computer	4	3 : 0 : 1 : 5	20	10	50	20	40	100	
Minor/Vocational Courses										
B23-CC-M1	Basics of Computer Science	2	1 : 0 : 1 : 3	10	05	20	15	20	50	
Multidisciplinary Courses										
B23-MDC1	Fundamentals of Computer Science	3	2 : 0 : 1 : 4	15	05	35	20	30	75	
Ability Enhancement Courses										
B23-AEC1	To be opted by student from the Central Pool	2	2 : 0 : 0 : 2	15	-	35	-	20	50	
Skill Enhancement Courses										
B23-SEC1	To be opted by student from the Central Pool	3	2 : 0 : 1 : 4	15	05	35	20	30	75	
Value Added Courses										
B23-VAC1	Human Values and Ethics	2	2 : 0 : 0 : 2	15	-	35	-	20	50	
Total		24		30					600	



B23-CC-C1 Logical Organization of Computer

Max. Marks: 100

Min. Pass Marks: 40

Internal Assessment Marks : 30 [Theory (20) + Practical (10)]

External End Term Exam Marks : 70 [Theory (50) + Practical (20)]

Time : Theory (3 Hours), Practical (3 Hours)

Credit: 4

Course Objectives:

1. To understand number systems, error detecting correcting code and representations of numbers in a computer system.
2. To understand computer arithmetic and Boolean algebra and simplification of Boolean expressions.
3. To understand working of logic gates and design various combinational circuits using these logic gates.
4. To understand working of different types of flip-flops and design different types of registers

Examiner Note: Examiner will set a total of NINE questions. Out of which FIRST question will be compulsory and the remaining EIGHT questions will be set from four units selecting two questions from each unit. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus. Candidate will have to attempt FIVE questions in all, selecting one question from each unit. Examination will be of three-hour duration.

Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.

UNIT-I

Number Systems: Binary, Octal, Hexadecimal etc. Conversions from one number system to another, BCD Number

System. BCD Codes: Natural Binary Code, Weighted Code, Self-Complimenting Code, Cyclic Code.

Error Detecting and Correcting Codes. Character representations: ASCII, EBCDIC and Unicode.

Number Representations: Integer numbers - sign-magnitude, 1's & 2's complement representation. Real Numbers normalized floating point representations.

UNIT-II

Binary Arithmetic: Binary Addition, Binary Subtraction, Binary Multiplication, Binary Division using 1's and 2's Complement representations, Addition and subtraction with BCD representations.

Boolean Algebra: Boolean Algebra Postulates, basic Boolean Theorems, Boolean Expressions, Boolean Functions, Truth Tables, Canonical Representation of Boolean Expressions: SOP and POS, Simplification of Boolean Expressions using Boolean Postulates & Theorems, Karnaugh-Maps (upto four variables), Handling Don't Care conditions.

UNIT-III

Logic Gates: Basic Logic Gates – AND, OR, NOT, Universal Gates – NAND, NOR, Other Gates – XOR, XNOR etc. Their symbols, truth tables and Boolean expressions.

Combinational Circuits: Design Procedures, Half Adder, Full Adder, Half Subtractor, Full Subtractor, Multiplexers, Demultiplexers, Decoder, Encoder, Comparators, Code Converters.

UNIT-IV

Sequential Circuits: Basic Flip-Flops and their working. Synchronous and Asynchronous Flip-Flops, Triggering of Flip-Flops, Clocked RS, D Type, JK, T type and Master-Slave Flip-Flops. State Table, State Diagram and State Equations. Flip-flops characteristics & Excitation Tables. Sequential Circuits: Designing registers – Serial-In Serial-Out (SISO), Serial-In Parallel-Out (SIPO), Parallel-In Serial-Out (PISO) Parallel-In Parallel-Out (PIPO) and shift registers.

UNIT-V (PRACTICUM)

In practical component the teacher concerned / instructor will ensure minimum 15 programs / case studies execution during the laboratory work.

Suggested Evaluation Methods:

Internal Assessment:	Theory	Practicum	End Term Examination:
Class Participation	5	5	A three hour exam for both Theory and Practicum
Seminar/presentation/assignment/quiz/class test etc	5	-	
Seminar/Demonstration/Viva-voce/Lab records etc.:	-	5	
Mid-Term Exam	10	-	
Total	20	10	

Suggested Readings:

1. M. Morris Mano, Digital Logic and Computer Design, Prentice Hall of India Pvt. Ltd.
2. V. Rajaraman, T. Radhakrishnan, An Introduction to Digital Computer Design, Prentice Hall.
3. Andrew S. Tanenbaum, Structured Computer Organization, Prentice Hall of India Pvt. Ltd.
4. Nicholas Carter, Schaum's Outlines Computer Architecture, Tata McGraw-Hill.



B23-CC-M1 Basics of Computer Science

Max. Marks: 50
Min. Pass Marks: 20

Internal Assessment Marks :15[Theory (10) + Practical (05)]
External End Term Exam Marks :35[Theory (20) + Practical (15)]

Time : Theory (3 Hours), Practical (3 Hours)

Credit: 2

Course Objectives:

5. To introduce to the students, the basic understanding of the working of a computer system.
6. To familiarize the students with the concept of algorithms and flowchart.
7. To familiarize the students with the various types of software.
8. To make the students familiar with the basic internet technology and concepts.

Examiner Note: Examiner will set a total of NINE questions. Out of which FIRST question will be compulsory and the remaining EIGHT questions will be set from four units selecting two questions from each unit. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus. Candidate will have to attempt FIVE questions in all, selecting one question from each unit. Examination will be of three-hour duration.

Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.

UNIT-I

Introduction to Computers: Definition of Computers, History and Generations of Computers, Characteristics of computer, Classification of Computers. Fundamental Block diagram of Computer: CPU, Input & Output Unit.

UNIT-II

Software: Definition of Software, Types of Software-System software, Application software and Utility software. Types of Computer Languages, Assemblers, Interpreters, Compiler.

UNIT-III

Introduction to Operating Systems: Types of Operating System, Functions of Operating System.
Windows: Introduction to Windows, Starting Windows, Desk Top, Task Bar, Opening and closing applications, icons- creating, renaming and removing. Date and Time setting, Working with files and folders-creating, deleting, opening, finding, copying, moving, and renaming.

UNIT-IV

Networking: Concept, Basic Elements of a Communication System, Data Transmission Media, LAN, MAN, WAN.

Introduction of Internet and WWW, Basic working of a Web Browser, Introduction to popular web browsers.

UNIT-V (PRACTICUM)

In practical component the teacher concerned / instructor will ensure minimum 15 programs / case studies execution during the laboratory work.

Suggested Evaluation Methods:

Internal Assessment:	Theory	Practicum	End Term Examination:
Class Participation	4	-	A three hour exam for both Theory and Practicum
Seminar/presentation/assignment/quiz/class test etc	-	-	

Seminar/Demonstration/Viva-voce/Lab records etc.:	-	5	
Mid-Term Exam	6	-	
Total	10	5	

Suggested Readings:

5. Fundamentals of Computers, VRajaraman 6th edition PHI Learning Private Limited 2014
6. Peter Norton: Computing Fundamentals. 6th Edition, McGraw Hill-Osborne, 2007
7. Alexis Leon and Marthews Leon: Introduction to Computers, Leon Vikas, 1999.
8. Internet Basics. E.Douglas Commer PHI.



B23-MDC1 Fundamentals of Computer Science

Max. Marks: 75

Min. Pass Marks: 30

Internal Assessment Marks : 20 [Theory (15) + Practical (05)]

External End Term Exam Marks : 55 [Theory (35) + Practical (20)]

Time : Theory (3 Hours), Practical (3 Hours)

Credit: 3

Course Objectives:

1. To understand the basic concepts of operating systems
2. To do the basic editing and formatting in a document
3. To create basic spread-sheets for different purposes
4. To create basic presentations for different applications

Examiner Note: Examiner will set a total of NINE questions. Out of which FIRST question will be compulsory and the remaining EIGHT questions will be set from four units selecting two questions from each unit. All questions will carry equal marks. First question will comprise of short answer type questions covering entire syllabus. Candidate will have to attempt FIVE questions in all, selecting one question from each unit. Examination will be of three-hour duration.

Practicum will be evaluated by an external and an internal examiner. Examination will be of three-hour duration.

UNIT-I

Computer Fundamentals: Evolution of Computers through generations, Characteristics of Computers, Strengths and Limitations of Computers, Classification of Computers, Functional Components of a Computer System, Applications of computers in Various Fields. Types of Software: System software, Application software, Utility Software.

UNIT-II

Memory Systems: Concept of bit, byte, word, nibble, storage locations and addresses, measuring units of storage capacity, access time, concept of memory hierarchy. Primary Memory - RAM, ROM, PROM, EPROM. Secondary Memory - Types of storage devices, Magnetic Tape, Hard Disk, Optical Disk, Flash Memory.

I/O Devices: I/O Ports of a Desk Top Computer, Device Controller, Device Driver. Input Devices: classification and use, keyboard, pointing devices - mouse, touch pad and track ball, joystick, magnetic stripes, scanner, digital camera, and microphone Output Devices: speaker, monitor, printers: classification, laser, ink jet, dot-matrix. Plotter.

UNIT-III

Introduction to Operating System: Definition, Functions, Features of Operating System, Icon, Folder, File, Start Button, Task Bar, Status Buttons, Folders, Shortcuts, Recycle Bin, Desktop, My Computer, My Documents, Windows Explorer, Control Panel.

UNIT-IV

The Internet: Introduction to networks and internet, history, Internet, Working of the Internet, Modes of Connecting to Internet.

Electronic Mail: Introduction, advantages and disadvantages, User Ids, Passwords, e-mail addresses, message components, message composition, mailer features. Browsers and search engines.

UNIT-V (PRACTICUM)

In practical component the teacher concerned / instructor will ensure minimum 15 programs / case studies during the laboratory work.

Suggested Evaluation Methods:

Internal Assessment:	Theory	Practicum	End Term Examination:
Class Participation	4	2	A three hour exam for both Theory and Practicum
Seminar/presentation/assignment/quiz/class test etc	4	-	
Seminar/Demonstration/Viva-voce/Lab records etc.:	-	3	
Mid-Term Exam	7	-	
Total	15	5	

Suggested Readings:

1. Sinha, P.K. & Sinha, Priti, Computer Fundamentals, BPB.
2. Dromey, R.G., How to Solve it By Computer, PHI.
3. Norton, Peter, Introduction to Computer, McGraw-Hill.
4. Leon, Alexis & Leon, Mathews, Introduction to Computers, Leon Tech World.
5. Rajaraman, V., Fundamentals of Computers, PHI.

