Paper 1.2: Computer Architecture

Sr. No.	Topic name	date
1	**Basic building blocks and Circuit Design:** OR, AND , NOT, XOR Gates; De Morgan's theorem	Ist, 2nd week October
2	laws and theorem of Boolean algebra, Simplifying logic circuits—sum of product and product of sum form	3rd,4th week October
3	algebraic simplification, Karnaugh simplification **Arithmetic**, Binary Multiplier and **Circuits:** Adder, Subtractor, parallel Binary-adder/Subtractor	1st week November
4	Divider. **Combinational Circuits:** Decoders and Encoder, Multiplexer and De-multiplexer circuits, Design of code Converters.	2nd week November
5	**Sequential Circuits:** Flip-flop-S-R, D, J-K, T, Clocked Flip-flop, Race Around condition	3rd week November
6	Master-Slave Flip-Flop, Realization of One Flip-Flop using other Flip-Flop	4th week December
7	Shift-Registers, Counters-Ripple, Modular Synchronous	Ist ,2nd week December
8	Ring & Twisted-Ring Counter. **Register transfer and Micro-operation**s: Register transfer Language	3rd ,4th week December
9	Bus and Memory Transfer, Arithmetic, Logic Micro-operations, Shift Micro-operations.	Ist ,2nd week January
10	**Basic computer organization and Design:** Instruction and instructions codes, computer instructions,	3rd week January
11	timing and control, instruction cycle, memory references instructions, input- output reference instructions and interrupts	4th week January
12	**Test and revision**	Till Exam

Paper-1.1: Computer Fundamentals & MS-Office

Sr. No	Topic name	Date
1	*Introduction* : Historical evolution of computers, Classification of computers, Block Diagram, Usefulness of Computers. Human being Vs computer, Computer as a tool, Applications of computers.	Ist, 2nd week October
2	*Number Systems*: Definition of Number system, necessity of binary number system, binary, de c ima l, octal and hexadecimal number system, interconversion	3rd,4th week October
3	Representation of integers, fixed and floating points, BCD codes, Error detecting and correcting codes, character Representation-ASCII, EBCDIC	1st week November
4	*Input/Output Devices*: Keyboards, mouse, joysticks, trackballs, digitizer, voice-recognition, optical-recognition, scanners, terminals, point-of-sale terminals, machine-vision systems. Hard-copy	2nd week November
5	devices: Impact printers - DMPs, Daisy-wheel printers, Line-printers. Non-impact printers - Inkjet, Laser, Thermal, LED; Plotters. Soft-copy devices: Monitors, video-standards (VGA and SVGA).	3rd week November
6	*Memory & Mass Storage Devices*: Characteristics of memory systems, types of memory, RAM, ROM, magnetic disks - floppy disk, hard-disk; optical disks - CD, CD-I, CD-ROM; Magnetic tapes; Concepts of Virtual and	4th week December
7	Cache *Software Concepts*: Introduction, types of software - System & Application software; Language translators - Compiler, Interpreter, Assembler; Operating system - Characteristics, bootstrapping, types of operating	Ist ,2nd week December
8	operating system as a resource manager; BIOS; System utilities - Editor, Loader, Linker, File Manager. Concept of GUI, GUI standards. Introduction to Algorithm & Flowcharts, Advantages	3rd ,4th week December
9	**MS-OFFICE:MS-Word** :- Creating a document, font operation, bullet and numbering, find & replace, hyper linking, mathematical operation, Create table and flow chart,	Ist ,2nd week January
10	Macro, Mail merge, Correcting grammar, protect files, difference between doc and docx.**MS-PowerPoint** :- Creating single and multiple slide, Animation,manual and automatic slide show, hyper linking, DFD, shape and style.	3rd week January
11	**MS-Excel**:- Create sheet and rename sheet, table and operation, cells operation, hyper linking, Function(mathematic, logical), sort and data tools	4th week January
12	**Test and revision**	Till Exam

Paper 3.1: Data Communication and Networking

Sr.no.	Topic name	date	
1	Introduction to Computer Communications and Networking Technologies; Uses of Computer Networks; Network Devices	Ist, 2nd week October	
2	Nodes, and Hosts; Types of Computer Networks and their Topologies	3rd,4th week October	
3	Network Architecture and the OSI Reference Model, TCP/IP reference model	1st week November	
4	Analog and Digital Communications: Concept of data, signal, channel.	2nd week November	
5	bid-rate , maximum data-rate of channel, Representing Data as Analog Signals	3rd week November	
6	Representing Data as Digital Signals, Data Rate and Bandwidth, Capacity Baud Rate; Asynchronous and synchronous transmission	4th week December	
7	data encoding techniques, Modulation techniques, Digital Carrier Systems	Ist ,2nd week December	
8	Guided and Wireless Transmission Media; Communication Satellites; Switching and Multiplexing; Dialup Networking; Analog Modem Data Link Layer: Framing, Flow Control, Error Control; Error Detection and Correction	3rd ,4th week December	
9	Media Access Control: Random Access Protocols, Token Passing Protocols; Token Ring; Introduction to Ethernet, FDDI, Wireless LANs. Network Layer and Routing Concepts: Virtual Circuits and Datagram's;	Ist ,2nd week January	
10	Routing Algorithms: Flooding, Shortest Path Routing, Distance Vector Routing; Internetworking.	3rd week January	
11	Transport layer: Elements of Transport protocol: Addressing, Connection Establishment, Flow Control, Buffering, Crash recovery. Internet Transport protocol: UDP: Introduction, Real time Transport protocol, Remote Procedure Call. Application Layer: Domain Name System, Electronic Mail, World Wide Web.	4th week January	
12	**Test and revision**	Till Exam	

Paper 3.2: <u>OBJECT ORIENTED PROGRAMING WITH C++</u>

Sr.no.	Topic name	date
1	Object oriented concepts: Class, Object, Methods, Message Passing, Abstraction	Ist, 2nd week October
2	Inheritance,Polymorphism, Generosity, Overriding, Abstract Class & methods. Generalization, Aggregation,Object modeling techniques: Introduction to object model	3rd,4th week October
3	Dynamic model, Functional Model. Strengths & Weakness of all models	1st week November
4	Introduction to Programming C++: Object-Oriented Features of C++, data types in C++, variables, operators	2nd week November
5	flow control, recursion, array, Pointers and their manipulation, strings, structures, Class and Objects, Data Hiding & Encapsulation Data members and Member functions	3rd week November
6	Inline Functions,Static Data Members and Member Functions, Friend Functions, Preprocessor Directives, Namespace, Comparing C with C++.	4th week December
7	Constructors & Destructors: Roles and types of Constructors, Constructor Overloading	Ist ,2nd week December
8	Roles ofDestructors, Dynamic Memory Allocation: Pointers and their Manipulation, new and delete Operators	3rd ,4th week December
9	this' Pointer. Console I/O: Formatted and Unformatted I/O, Manipulators.	Ist ,2nd week January
10	Compile-Time Polymorphism: Unary and Binary Operators overloading through Member Functions and Friend Functions, Function Overloading.	3rd week January
11	virtual functions, abstract class, virtual class Inheritance: Types of Derivations, Forms of Inheritance, Roles of Constructors and Destructors in Inheritance.	4th week January
12	**Test and revision**	Till Exam

Paper-5.1: <u>Database Management System</u>

Sr.no.	Topic name	date
1	Basic Concepts – Data, Information, Records and files. Traditional file – based Systems-File Based Approach-Limitations of File Based Approach	Ist, 2nd week October
2	Database Approach-Characteristics of Database Approach, Database Management System (DBMS), Components of DBMS Environment	3rd,4th week October
3	DBMS Functions, Advantages and Disadvantages of DBMS	1st week November
4	Classification of Database Management System. Roles in the Database Environment - Data and Database Administrator. Centralized and Client Server architecture to DBMS	2nd week November
5	Database System Architecture – Three Levels of Architecture, External, Conceptual and Internal Levels, Schemas, Mappings and Instances	3rd week November
6	Data Independence – Logical and Physical Data Independence. Data Models: Records- based Data Models, Object-based Data Models, Physical Data Models and Conceptual Modeling	4th week December
7	Hierarchical, network and relational model	Ist ,2nd week December
8	Entity-Relationship Model – Entity Types, Entity Sets, Attributes and keys, Relationship, relationship sets, Role name & recursive relationship and structural constraints	3rd ,4th week December
9	Conceptual design using E-R Diagrams. Relational Data Model:-Introduction, Properties of Relations, Keys, Integrity Constraints over Relations, Views. Relational Database Design: Functional Dependencies, Normalizat io n:1st to 3rd Normal Form	Ist ,2nd week January
10	BCNF, Lossless Join and Dependency preserving decomposition. **SQL**: Types & components of SQL, Data Definition and data types, Data definition commands, Data manipulation commands, Data Control Commands Specifying Constraints(Primary Constraint,. Foreign key, Unique, Not Null) in SQL, Schema, Basic Queries in SQL, Insert, Delete and Update operations. Inbuilt Date, String functions. Commit	3rd week January
11	Rollback, Save points. **Views:** Introduction, Advantages of creating views, Features, Destroying/ Altering table & Views	4th week January
12	**Test and revision**	Till Exam

Paper-5.2: Introduction to Internet and Web Technologies

Sr.no.	Topic name	date
1	Introduction to Internet, Benefits of Internet, WWW, Hardware and software requirement for internet, internet protocols	Ist, 2nd week October
2	applications of internet, Internet Tools- Telnet, FTP,Gopher, Archie, Veronica	3rd,4th week October
3	E-Mail mailing lists, Internet addressing, internet service provider (ISP), internet in India- Shell account, TCP/IP account	1st week November
4	Home page and Web Site, internet accessing, internet terminology, internet security problems and solutions. Overview of Intranet and its applications,	2nd week November
5	Web Browsers, Search Engines, Categories of Search Engines, Searching Criterion, Surfing the Net, Hypertext Transfer Protocol (HTTP), URL	3rd week November
6	HTML: Internet Language, Understanding HTML, Create a Web Page	4th week December
7	Linking to other Web Pages, Publishing HTML Pages, Text Alignment and Lists, Text Formatting Fonts Control, E-mail Links and link within a Page	Ist ,2nd week December
8	Creating HTML Forms.	3rd ,4th week December
9	Creating Web Page Graphics, Putting Graphics on a Web Page, Custom Backgrounds and Colors	Ist ,2nd week January
10	Creating Animated Graphics., Web Page Design and layout,	3rd week January
11	Advanced Layout with Tables, Using Style Sheets	4th week January
12	**Test and revision**	Till Exam