

Syllabus Unitization & Prescribed Books (Session 2022-2023)

Department of CS & IT

Class – MSc (IT)-I Semester

Pattern of Question Paper - Eight questions of equal marks (Specified in the syllabus), two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Subject - Analysis and Design of Embedded Systems

Month wise Division	Syllabus Unitization
September	SECTION–A Embedded systems and their characteristics, challenges and issues in embedded software development, Hardware and electronics fundamentals for software engineers, categories of different processor, microprocessor and micro controller SECTION--B Study of embedded processors and systems like PIC, AVR, micro controller, 68000-series computer, DSP based controller.
October	SECTION--C Operating system services: different categories of operating system, kernel architecture, and root file system contents, storage device manipulations, setting up boot loader SECTION--D Development tools, preliminary programming, determining the requirement, design the system architecture,
November	<u>SECTION–D</u> system integration, commissioning the system, Hardware software co-design, and case studies in different embedded systems.

Prescribed Book

Book Name – Fundamentals of Embedded System

Author – Pritika Mehra

Publisher – Kalyani Publishers

Subject - : Advanced Computer Organization and Architecture

Month wise Division	Syllabus Unitization
September	<u>SECTION-A</u> Paradigms of Computing: Synchronous – Vector/Array, SIMD, Systolic Asynchronous – MIMD, reduction Paradigm Hardware taxanomy: Flynn’s classification Software taxanomy: Kung’s taxanomy, SPMD. Abstract Parallel Computational Models: Combinational circuits, Sorting Network, PRAM Models, Interconnection RAMs.
October	<u>SECTION-B</u> Parallelism in Uniprocessor Systems: Trends in parallel processing, Basic Uniprocessor Architecture, Parallel Processing Mechanism. Parallel Computer Structures: Pipeline Computers, Array Computers, Multiprocessor Systems Architectural Classification Schemes: Multiplicity of Instruction-Data Streams, Serial versus Parallel Processing, Parallelism versus Pipelining. <u>SECTION-C</u> Pipelining : An overlapped Parallelism, Principles of Linear Pipelining, Classification of Pipeline Processors, General Pipelines and Reservation Tables Principles of Designing Pipelined Processors: Instruction Prefetch and Branch Handling, Data Buffering and Busing Structures, Internal Forwarding and Register Tagging, Hazard Detection and Resolution
November	<u>SECTION-D</u> Superscalar and Superpipeline Design: Superscalar Pipeline Design, Superpipelined Design Structures and Algorithms for Array Processors: SIMD Array Processors, SIMD Computer Organizations, Masking and Data Routing Mechanisms, Inter-PE Communications

Prescribed Book

Book Name – Advanced Computer Organization

Author – Dr. Ikvinderpal Singh

Publisher – Khanna Publishers

Subject - Computational Problem Solving Using Python

Month wise Division	Syllabus Unitization
September	<u>SECTION-A</u> Introduction: Process of Computational Problem Solving, Python Programming Language Data and Expressions: Literals, Variables and Identifiers, Operators, Expressions and Data Types <u>SECTION-B</u> Lists: List Structures, Lists (Sequences) in Python, Iterating Over Lists (Sequences) in Python
October	<u>SECTION-B</u> Control Structures: Boolean Expressions (Conditions), Selection Control <u>SECTION-C</u> Functions: Fundamental Concepts, Program Routines Objects and Their Use: Software Objects Modular Design: Modules, Top-Down Design, Python Modules
November	<u>SECTION-D</u> Text Files: Using Text Files, String Processing, Exception Handling Recursion: Recursive Functions, Recursive Problem Solving, Iteration vs. Recursion

Prescribed Book

Book Name – Computational Problem Solving Using Python

Author – Sushil Bhardwaj

Publisher – Kalyani Publishers

Subject - Network Operating System

Month wise Division	Syllabus Unitization
September	<u>SECTION-A</u> Introduction of various Network Operating Systems: MySQL, Unix/Linux OR any other OS. Overview of Network Operating System: Introduction, Architecture, Shell, Kernel, File System, Hardware requirements, Active Directory, Clustering & Load Balancing, Storage Management, Editors, Networking and Communication features, Licensing
October	<u>SECTION-B</u> Disk Management: Terminology and Concepts, Managing Disks, Managing Basic and Dynamic Disks, Disk Quotas, Disk Fragmentation, Remote Storage, RAID and Mirroring. Servers: Managing DHCP, IIS, WINS, DNS and Proxy servers. <u>SECTION-C</u> User, Group and Computer Accounts: Creating and Managing user, Group and Computer Accounts, Managing Access Controls, Troubleshooting Accounts. Performance Monitoring and Security: Task Management, System Monitoring, Performance
November	<u>SECTION-D</u> Logs and Alerts, Monitoring Memory, Network and Process Objects, Auditing Security Events, Audit Policy and Event Viewer. Telnet and FTP, Distributed Systems. Case and Comparative Studies of MySQL, Unix/Linux OR any other OS.

Prescribed Book

Book Name – Network Operating System

Author – Gurjeet Singh

Publisher – Kalyani Publications

Subject - Distributed Computing

Month wise Division	Syllabus Unitization
September	<p><u>SECTION-A</u> Introduction: Motivation, objectives, characterization & classification of distributed systems. Distributed system architecture. Hardware & software issues. Communication: Layered protocols, Client server protocols, RPC, group communication.</p> <p><u>SECTION-B</u> Coordination, synchronization & consistency: Logical clocks, Physical clocks, mutual exclusion, election algorithms, atomic broadcast, sequential consistency transaction distributed consensus,</p>
October	<p><u>SECTION-B</u> Threads: Thread synchronization, implementation issues, and threads vs. RPC.</p> <p><u>SECTION-C</u> Models of distributed computing: Client server and RPC, RPC architecture, exceptions, underlying protocols, IDL, marshalling etc. Group models and peer to peer: Groups for service replication/ reliability, groups for parallelism / performance, client/ server vs. peer-to-peer, multicast, atomic broadcast.</p>
November	<p><u>SECTION-D</u> Distributed file system: Security, Naming/ location transparency, R/W semantics, cache coherence, replication. Distributed shared memory: DSM architecture, consistency models and relation to caching, release consistency, comparison with message passing and RPC. Security: Introduction, security techniques, cryptographic algorithms, authentication and access control</p>

Prescribed Book

Book Name – Distributed System

Author – K.P Singh

Publisher – Kalyani Publisher

Syllabus Unitization & Prescribed Books (Session 2022-2023)

Department of CS & IT

Class – MSc (IT)-III Semester

Pattern of Question Paper - Eight questions of equal marks (Specified in the syllabus), two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Subject - Linux Administration

Month wise Division	Syllabus Unitization
September	SECTION–A - Introduction: Introduction to LINUX, Installing LINUX, Partitions, LILO, Installing software packages. Updating with Gnome, Updating with KDE, Command line installing. File Structure: LINUX files, File structure, File & Directory permission, Operations on a file. SECTION–B - Administering Linux: Creating a user A/C, modifying a user A/C, Deleting a user A/C, Checking Disk Quotas, System Initialization, System start-up & shutdown, Installing & managing H/W devices.
October	SECTION–B - Setting Up A LAN: Understanding LAN, Setting up Wireless LAN, Understanding IP address, Troubleshooting LAN. SECTION–C - Setting Up Print Server: Choosing CUPS, Working with CUPS Pointing, Managing Pointing, Configuring Point Server. Setting Up File Server: Setting up an NFS, SAMBA, Installing & Running send mail. SECTION–D - Setting Up Web Server: Configuring the Apache Server, Starting & stopping the server, Monitoring Server Activities. Setting Up DHCP & NIS: Setting up DHCP Server, Setting up DHCP Client,
November	SECTION–D - Setting up Network Information Service. Troubleshooting: Troubleshooting LINUX in GRUB mode

Prescribed Book

Book Name – Linux Administration

Author – Ikvinderpal Singh

Publisher – Kalyani Publishers

Subject -: Network Protocols

Month wise Division	Syllabus Unitization
September	SECTION–A - Review of networking Technologies & Internetworking Concepts and Architectural Model: Application level and Network level Interconnection, Properties of the Internet, Internet Architecture, Interconnection through IP Routers Internet Addresses, Mapping internet addresses to Physical addresses (ARP) & Determining an internet addresses at Startup (RARP): Universal identifiers, three Primary classes of IP addresses, network and Broadcast Addresses, Limited Broadcast, Dotted decimal Notation, weakness in Internet addressing, Loopback addresses.
October	SECTION–B - Address resolution problem, two types of Physical addresses, resolution through Direct Mapping, Resolution Through Dynamic Binding. address Resolution Cache , ARP to other Protocols. Reverse address resolution protocol, timing RARP transaction, Primary and backup RARP servers. Internet Protocol Connectionless Data Gram Delivery & Internet Protocol: Routing IP SECTION–C - Datagrams: The concepts of unreliable delivery, connectionless delivery system, purpose of the internet protocol. the internet datagram. Routing in an internet, direct and indirect delivery, table driven IP routing, next Hop Routing, default routes, host specific routes, The IP routing Algorithm, handling incoming datagrams, Establishing routing tables Internet Protocol: Error and Control Message(ICMP) & Subnet and Supernet Address Extension: The internet ,control message protocols, Error reporting versus error detection. ICMP message format. Detecting and reporting various network problems through ICMP. Transparent Router, Proxy ARP, subset addressing, implementation of subnets with masks representation, Routing in the presence of subsets, a unified algorithm.
November	SECTION–D - User Datagram Protocol(UDP) : Format of UDP message UDP pseudo header UDP encapsulation and Protocols layering and the UDP checksum computation. UDP multiplexing, De-multiplexing and Ports. Reliable Stream Transport service (TCP) : The Transmission control Protocol, ports, Connections and Endpoint , passive and active opens the TCP segment format . TCP implementation issues.

Prescribed Book

Book Name– TCP-IP Network Administration

Author - Hunt Craig.

Subject - Advanced Web Technologies

Month wise Division	Syllabus Unitization
August - September	<p><u>SECTION-A</u> Fundamentals of Web Development: Introduction to HTML, CSS, JAVA SCRIPT (Client side scripting), Server Site Development using PHP and ASP.NET. , Standard Controls: Display information, Accepting user input, Submitting form data, Displaying images, Using the panel control, Using the hyperlink control.</p> <p><u>SECTION-B</u> Validation Controls: Using the required field validator control, Using the range validator controlusing the compare validator control, Using the regular expression validator control, Using the custom validator control, Using the validation summary controls. Rich Controls: Accepting file uploads, Displaying a calendar, Displaying advertisement, Displaying different page views, Displaying a wizard. Designing Website With Master Pages: Creating master pages, Modifying master page content, Loading master page dynamically.</p>
October	<p><u>SECTION-C</u> SQL Data Source Control: Creating database connections, Executing database commands, Using ASP.NET parameters with the SQL data source controls, Programmatically executing SQL data source commands, Caching database data with the SQL data Source controls. List Controls: Dropdown list control, Radio button list controls, list box controls, bulleted list controls, custom list controls. Grid View Controls: Grid view control fundamentals, using field with the grid view control, Working with grid view control events extending the grid view control.</p>
November	<p><u>SECTION-D</u> Building Data Access Components with ADO.NET: Connected the data access, Disconnected data access, Executing a synchronous database commands, Building data base objects with the .NET framework. Maintaining Application State: Using browser cookies, using session state, using profiles. Caching Application Pages and Data: page output caching, partial page caching, data source caching, data caching, SQL cache dependences.</p>

Prescribed Book

Book Name– Advanced Web technologies using asp.net

Publisher –Kalyani Publishers

Subject -: System Simulation

Month wise Division	Syllabus Unitization
September	SECTION–A Introduction : Concept of a system, stochastic activities, continue and discrete system, system modeling, mathematical modeling, principle used in modeling. Simulation of Systems : Concepts of simulation of continuous systems with the help of two examples; use of integration formulas; concepts of discrete system simulation with the help of two examples, Generation of random numbers, Generation of non- uniformly distributed numbers. SECTION--B Simulation of Queuing Systems : Rudiments of queuing theory, Simulation of Single-Server queue, two-server queue, general queues.
October	SECTION--B Simulation in Inventory Control and Forecasting : Elements of inventory theory, inventory models, Generation of Poisson and Erlang variats, forecasting and regression analysis. SECTION--C Design and Evaluation of Simulation Experiments : Experimental layout and validation Simulation Languages : Continuous and discrete simulation languages, Block-Structured continuous simulation languages, expression based languages,
November	discrete system simulation languages, simscript, GPSS, SIMULA, Simpack, GASP IV, CSIM, factors in selection of a discrete system simulation languages. SECTION–D Case Studies: Analytic Vs Simulation Models, Applications to Operating Systems, Databases, Computer Networks Architectures.

Prescribed Book

Book Name – System Simulation

Author – Narsingh Deo

Publisher – Prentice Hall

Subject - MIT-305: Microprocessor and its Applications

Month wise Division	Syllabus Unitization
September	SECTION–A Introduction: Introduction to Microprocessor, General Architecture of Microcomputer System. Microprocessor Units, Input unit, Output unit, Memory unit and auxiliary storage unit. Architecture of 8086/8088 Microprocessor: Description of various pins, configuring the 8086/8088 microprocessor for minimum and maximum mode systems, Internal architecture of the 8086/8088 microprocessor, system clock, Bus cycle, Instruction execution sequence SECTION–B Memory Interface of 8086/8088 Microprocessor: Address space and data organization, generating memory addresses hardware organization of memory address space, memory bus status code, memory control signals.
October	SECTION–B read/write bus cycles, program and data storage memory, dynamic RAM system SECTION–C Input/Output Interface of the 8086/8088 Microprocessor : I/O interface, I/O address space and data transfer, I/O instructions, I/O bus cycles, Output ports
November	SECTION–C 8255A Programmable Peripheral Interface (PPI), Serial communication interface (USART and UART) – the RS- 232 C interface. SECTION–D Interrupt Interface of 8086/8088 Microprocessor, Types of Interrupt, Interrupt Vector Table (IVT)

Prescribed Book

Book Name – Microprocessor and its Applications

Author – Rachhpal Singh

Publisher – Kalyani Publisher

Department of CS & IT (Session 2022-23)

Class – PGDCA-I Semester

Pattern of Question Paper - Eight questions of equal marks (Specified in the syllabus), two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Subject - PAPER–I: PC COMPUTING-I (MS Office) 2003

Month wise Division	Syllabus Unitization
September	Section–A MS-Word: Introduction to Ms-Office, Ms-Access, Ms Excel. Parts of window of word (Title bar, menu bar, status bar, ruler) , Creation of new documents, opening document ,insert a document into another document. Page setup, margins, gutters, font properties, A!ignment, page breaks, header footer deleting ,moving, replace, editing text in document. Saving a document, spell checker, printing a document. Creating a table, entering and editing, Text in tables. Changing format of table, height width of row or column. Editing, deleting Rows, columns in table. Borders, shading, Templates, wizards, Drawing objects, mail merge
October	Section–B MS-Power Point: Introduction to Ms power point. Power point elements (templates wizard Views, color schemes ,Exploring power point menu (opening & closing menus, working With dialogues boxes), adding text, adding title, moving text area, resizing text Boxes, adding pictures. Starting a new slide, saving presentation, printing slides .Views (slide View slide sorter, notes view, outline view) .Formatting & enhancing text formatting, Choosing transitions. Creating a graph, displaying slide show, adding multimedia .Slide transitions. Timing slide display, adding movies & sounds. Using a pick look Wizards to change format. Section–C MS-Excel: Introduction to Worksheet/Spreads, Features of excel. Describe the excel Window, different functions on different data in excel, creation of graphs, editing it and formatting, changing chart type to 2d chart or 3d chart, creation of worksheet, adding, deleting, moving the text in worksheet. linking different sheets, sorting the data, querying the data, filtering the data (auto and advance filters), What-if analysis, printing a worksheet.
November	Section–D MS-Access: Introduction, Understanding Databases. Creating the tables. entering records in table, deleting table, modifying table fields, linking tables, Queries. Forms, formatting forms, relating a form to tables, Reports(building reports, formatting report. displaying the information of table using reports Adding Graphs to your reports.

Prescribed Book

Book Name – Fundamentals of Computer & Operating Systems

Author – Anshuman Sharma

Publisher –Lakhanpal Publications

Subject - PAPER-IV: DATABASE MANAGEMENT SYSTEM THROUGH

ORACLE-10g & SYSTEM ANALYSIS & DESIGN

Month wise Division	Syllabus Unitization
September	Section-A Basic Concepts: An overview of Database Management, (database, database system, why database, data independence). An architecture for a database system (levels of the architecture, mapping, DBA), Introduction to Relational database systems. Relational Model: Domain and relations, Relational data integrity
October	Section-B System Analysis and Design: System development life cycle, System development tools. ORACLE 10g: SQL. *PLUS Introduction to Oracle 10g SQL- DOL, DML, DCL Section-C ORACLE 10g: SQL. *PLUS Join methods & Sub query, Union, Intersection, Minus, Tree Walking, Built in Functions, Views, Security amongst users, Sequences, Indexing, Object Oriented Features of Oracle 10g 1. Concepts of vector graphics. 2. Color palate, Pasteboard, & Print Page
November	Section-D PL/SQL Introduction to PL/SQL Cursors- Implicit & Explicit Procedures, Functions & Packages Database Triggers

Prescribed Book

Book Name – Database Management System

Author – Anshuman Sharma

Publisher – Lakhanpal Publishers

Subject – PC COMPUTING–II (Professional DTP)

Month wise Division	Syllabus Unitization
September	<u>SECTION–A</u> Photoshop 5.5 1. Introduction to Graphics, Vector Graphics & Bitmaps 2. Understanding Image Size & resolution 3. Relation between resolution, File sizes & output 4. Using menu & Palettes. 5. Concept of Path (Segment, Anchor, Curved, Closed, Open, Subpath) Information Representation, Basic Computer Design
October	<u>SECTION–B</u> Photoshop Tools, Acquiring &. Importing Images, , Concept of Layres Channels & Path, Using navigator & Photo Shop plugins Corel Draw-9 1. Concepts of vector graphics. 2. Color palate, Pasteboard, & Print Page <u>SECTION–C</u> Corel Draw-9 1. Using ruler unit's 2. Corel Tools
November	<u>SECTION–D</u> Corel Draw-9 1. Transformations, Trimming, Wielding, Intersection of Objects, Snapping, Using Object Manager. 2. Giving effects, (Envelope, Adding Perspective, Contours, Blending Image.)

Prescribed Book

Book Name – PC COMPUTING–II

Author – Rachhpal Singh

Publisher – Kalyani Publishers

Subject - Fundamentals of Computer & Operating Systems

Month wise Division	Syllabus Unitization
September	<p><u>SECTION-A</u> Fundamentals of Computer: Introduction, Applications, Components, Input-output devices Secondary storage devices Types of software, Translators, data communication and network.</p> <p>Windows Vista: Parts of window screen start menu, Taskbar settings, application & document window, anatomy of a Window explorer, About desktop icons folder, shortcut creation, setting of screen saver, color settings, wallpaper, changing window appearance.</p> <p><u>SECTION-B</u> Disk Operating System: Meaning of operating system, its functions, batch systems, real systems, multi programming, multitasking, single, multi user systems.</p>
October	<p><u>SECTION-B</u> Define dos, Structure of Ms-Dos , hot & cold booting Internal command, External commands of DOS</p> <p><u>SECTION-C</u> Introduction to Unix: Explain the features of Unix system. Structure of Unix (Kernel, shell), Unix file system (data blocks, list, superblock, bootblock), Types of files (ordinary files, directory, special files), types of users (0-2), Simple commands (cat, ls, ln, chmod, mail, who, who am I, cal, pwd, date, ps, mkdir, cd , rmdir, rm , tput, clear).</p>
November	<p><u>SECTION-D</u> Introduction to Unix: Piping, filters, batch processing, shell programming (Echo, read, case constructs). VI editor (opening it, inserting, modifying, deleting, saving files). Types of shells (bourne, c, r shell. Login & logout of unix session)</p>

Prescribed Book

Book Name – Fundamentals of Computer & Operating Systems

Author – Anshuman Sharma

Publisher –Lakhanpal Publications