COSMOPOLITAN'S VALIA C.L. COLLEGE OF COMMERCE & VALIA L.C. COLLEGE OF ARTS D.N.Nagar, Andheri (West), Mumbai 400 053

BSCIT SEMESTER IV SYLLABUS FOR INTERNAL EXAM

SR.NO.	COURSE	SYLLABUS FOR INTERNAL TEST
1	Core Java	Unit I:
		Introduction:History, architecture and its components,Java Class File, Java Runtime Environment, The Java Virtual Machine, JVM Components, The Java API, java
		platform, java development kit, Lambda Expressions, Methods References, Type
		Annotations, Method Parameter Reflection, setting the path environment variable, Java
		Compiler And Interpreter, java programs, java applications, main(), public, static, void,
		braces and code blocks, variables, variable name Data types; primitive data types.
		Object Reference Types, Strings, Auto boxing, operators and properties of operators,
		Arithmetic operators, assignment operators, increment and decrement operator,
		relational operator, logical operator, bitwise operator, conditional operator. Unit II :
		Control Flow Statements: The IfElse IfElse Statement, The SwitchCase
		Statement Iterations: The While Loop, The Do While Loop, The For Loop, The
		Statement Classes: Types of Classes, Scope Rules, Access Modifier, Instantiating
		Objects From A Class, Initializing The Class Object And Its Attributes, Class Methods,
		Accessing A Method, Method Returning A Value, Method's Arguments, Method
		Overloading, Variable Arguments [Varargs], Constructors, this Instance, super Instance,
		Characteristics Of Members Of A Class, constants, this instance, static fields of a class,
		Static methods of a class, garbage collection
		Inheritance: Derived Class Objects, Inheritance and Access Control, Default Base Class
		Constructors, this and super keywords. Abstract Classes And Interfaces, Abstract
		Classes, Abstract Methods, Interfaces, What Is An Interface? How Is An Interface
		Different From An Abstract Class?, Multiple Inheritance, Default Implementation,
		Adding New Functionality, Method Implementation, Classes V/sInterfaces, Defining An Interface, Implementing Interfaces, Packages, Creating Packages, Default Package
		Importing Packages, Using A Package
2	Introduction to	Unit I:
	Embedded	Introduction: Embedded Systems and general purpose computersystems, history,
	Systems	classifications, applications and purpose of embedded systems
		Core of embedded systems: microprocessors and microcontrollers, RISC and CISC controllers. Big endian and Little endian processors Application specific ICs.
		Programmable logic devices, COTS sensors and actuators communication interface
		embedded firmware, other system components.
		Characteristics and quality attributes of embedded systems: Characteristics, operational
		and non-operational quality attributes.
		Unit II: Embedded Systems Application and Domain Specific: Application specific washing
		machine, domain specific - automotive.
		Embedded Hardware: Memory map, i/o map, interrupt map, processor family, external
		peripherals, memory - RAM, ROM, types of RAM and ROM, memory testing, CRC
		Flash memory.
		Peripherals: Control and Status Registers, Device Driver, Timer Driver - Watchdog
		I Inters.
		The 8051 Microcontrollers: Microcontrollers and Embedded processors, Overview of
		8051 family.8051 Microcontroller hardware, Input/output pins, Ports, and Circuits,
		External Memory.
		8051 Programming in C:
		conversion Programs
		conversion r rograms.

2	C	TT-24 T.
3	Computer Oriented Statistical Techniques	Unit I: The Mean, Median, Mode, and Other Measures of Central Tendency: Index, or Subscript, Notation, Summation Notation, Averages, or Measures of Central Tendency ,The Arithmetic Mean , The Weighted Arithmetic Mean ,Properties of the Arithmetic Mean, The Arithmetic Mean Computed from Grouped Data, The Median, The Mode, The Empirical Relation Between the Mean, Median, and Mode, The Geometric Mean G, The Harmonic Mean H, The Relation Between the Arithmetic, Geometric, and Harmonic Measures of Central Tendency. The Standard Deviation and Other Measures of Dispersion: Dispersion, or Variation, The Range, The Mean Deviation, The Semi Inter quartile Range, The 10–90 Percentile Range, The Standard Deviation, The Standard Deviation, Charlie's Check, Sheppard's Correction for Variance, Empirical Relations Between Measures of Dispersion, Absolute and Relative Dispersion; Variation Variable; Standard Scores, Software and Measures of Dispersion Unit II: Moments, Skewness, and Kurtosis :Moments , Moments for Grouped Data, Relations Between Moments , Computation of Moments for Grouped Data, Charlie's Check and Sheppard's Corrections, Moments in Dimensionless Form, Skewness, Kurtosis, Population Moments, Skewness, and Kurtosis, Software Computation of Skewness and Kurtosis. Elementary Probability Theory: Definitions of Probability, Conditional Probability; Independent and Dependent Events, Mutually Exclusive Events, Probability Distributions, Mathematical Expectation, Relation Between Population, Sample Mean, and Variance, Combinatorial Analysis, Combinations, Stirling's Approximation to n!, Relation of Probability Theory: Statistical Decisions, Sampling Distributions of Distribution of Means, Sampling Distribution of Proportions, Sampling Distributions of Di ff and Sums, Standard Errors, Software Demonstration of Elementary Sampling Theory Unit III: Statistical Decision Theory: Statistical Decisions, Statistical Hypotheses, Tests of Hypotheses Tests, Operating-Characteristic Curves; the Powe
4	Software Engineering	 Unit I: Introduction: What is software engineering? Software Development Life Cycle, Requirements Analysis, Software Design, Coding, Testing, Maintenance etc. Software Requirements: Functional and Non-functional requirements, User Requirements, System Requirements, Interface Specification, Documentation of the software requirements. Software Processes: Process and Project, Component Software Processes. Software Development Process Models. • Waterfall Model. • Prototyping. • Iterative Development. • Rational Unified Process. • The RAD Model • Time boxing Model. Agile software development: Agile methods, Plan-driven and agile development, Extreme programming, Agile project management, Scaling agile methods. Unit II: Socio-technical system:Essential characteristics of socio technical systems, Emergent System Properties, Systems Engineering, Components of system such as organization, people and computers, Dealing Legacy Systems. Critical system: Types of critical system, A simple safety critical system, Dependability of a system, Availability and Reliability, Safety and Security of Software systems. Requirements Engineering Processes: Feasibility study, Requirementselicitation and analysis, Requirements Validations, Requirements Management. System Models: Models and its types, Context Models, Behavioural Models, Data Models, Object Models, Structured Methods. Unit III: Architectural Design: Architectural Design Decisions, System Organisation, Modular Decomposition Styles, Control Styles, Reference Architectures. User Interface Design: Need of UI design, Design issues, The UI design Process, User analysis, User Interface Prototyping. Interface Evaluation

5	Computer	Unit I:
	Graphics and	Introduction to Computer Graphics:
	Animation	Overview of Computer Graphics, Computer Graphics Application and Software,
		Description of some graphics devices, Input Devices for Operator Interaction, Active
		and Passive Graphics Devices, Display Technologies, Storage Tube Graphics Displays,
		Calligraphic Refresh Graphics Displays, Raster Refresh (Raster-Scan) Graphics
		Displays, Cathode Ray Tube Basics, Color CRT Raster Scan Basics, Video Basics, The
		Video Controller, Random-Scan Display Processor, LCD displays.
		Scan conversion – Digital Differential Analyzer (DDA) algorithm, Bresenhams' Line
		drawing algorithm. Bresenhams' method of Circle drawing, Midpoint Circle
		Algorithm, Clipping Lines algorithms– Cyrus-Beck, Cohen-Sutherland.
		Unit II:
		Two-Dimensional Transformations:
		Transformations and Matrices, Transformation Conventions, 2D Transformations,
		Homogeneous Coordinates and Matrix Representation of 2D Transformations,
		Translations and Homogeneous Coordinates, Rotation, Reflection, Scaling, Combined
		Transformation, Transformation of Points, Transformation of The Unit Square, Solid
		Body Transformations, Rotation About an Arbitrary Point, Reflection through an
		Arbitrary Line, A Geometric Interpretation of Homogeneous Coordinates, The Window-
		to-Viewport Transformations.
		Three-Dimensional Transformations:
		Three-Dimensional Scaling, Three-Dimensional Shearing, Three-Dimensional Rotation,
		Inree-Dimensional Reflection, Inree-Dimensional Translation, Multiple
		I ransformation, Rotation about an Arbitrary Axis in Space, Reflection through an Arbitrary Plane, Matrix Paragentation of 2D Transformations, Composition of 2D
		Aroltrary Plane, Matrix Representation of 3D Transformations, Composition of 3D
		Transformations, Affine and Perspective Geometry, Perspective Transformations,
		Comparison of Generating Perspective views, valishing Points, the Perspective
		Oblique Projections
		Unit V.
		Computer Animation:
		Dringinles of Animation Key framing Deformations Character Animation Devoice
		Based Animation, Procedural Techniques, Groups of Objects
		pascu Annhanon, 110ccuurar rechniques, 010ups 01 Objects.