



**SHIVAJI UNIVERSITY, KOLHAPUR**  
(Introduced from June, 2005)  
Structure for Third Year MCA

**TYMCA PART – I**

Code of the subject	Name of the subject	L	T	P	TH	TW	P/O	TOTAL
5SMCA1	E-Commerce	4			100			100
5SMCA2	Client server computing	4		2	100	25		125
5SMCA3	Object based Computing	4		2	100	25	25	150
5SMCA4	Elective – I	4			100			100
5SMCA5	Elective – II	4			100			100
5SMCA6	Software Project Development - I			8		50	75	125
		20		12	500	100	100	700
		<b>Total Load – 32</b>			<b>Total Marks = 700</b>			

**TYMCA PART – II**

Code of the subject	Name of the subject	L	T	P	TH	TW	P/O	TOTAL
6SMCA1	Software Project Development - II					100	100	200
						100	100	200
					<b>Total Marks: 200</b>			

List Of Electives

Elective – I

1. ERP
2. Mobile Computing
3. Distributed Databases
4. AI & Expert Systems

Elective – II

1. Bio informatics
2. Image Processing
3. Nero And Fuzzy Systems
4. Data Warehousing and data mining

**Standard Evaluation scheme for setting question paper:**

1. **Question paper should consists of two sections 50 marks each.**
2. **The questions should consist of 50 % analytical / Exercise nature and 50% of theoretical nature**
3. **Each section should have 4 questions out of which 1 question of 20 marks each section (compulsory), remaining 3 questions 15 marks each (Out of which 2 should be solved)**



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**TYMCA PART – I**

**1 5SMCA1 - E-COMMERCE**

Theory: 4 Hours Per Week

Total Lectures: 40

Theory: 100 Marks

**Section - I**

1. **Internet and World Wide Web:** An overview of the internet, Brief history of the web, Web system architecture, Uniform resource locator, Overview of the hypertext transfer protocol, Hypertext Transfer Protocol (HTTP), Generation of dynamic web pages, cookies, HTTP/1.1, Example
2. **Client-Side Programming:** Important factor in client-side or web programming, web page design and production,, overview of HTML, Basic structure of an HTML document, Basic text formatting, Links, Images, Image Map, Tables, Frames, Form, Cascading style sheets, JavaScript.
3. **Server Side Programming I: Servlet fundamentals:** Revisiting the three- tier model, Common gateway interface (CGI), Active Server Pages (ASP), Overview of Java servlet, Java servlet architecture, Overview of the servlet API, Building the virtual bookstore-step by step, Compilation and execution of servlets, An interactive servlet program example: topics of interest.
4. **Server-side Programming II: Database Connectivity:** Introduction, Relational Database System, JDBC perspectives, A JDBC programme example, simple servlet book query, An advanced book query: ServletBookquerymulti, Advanced JDBC servlet: VBS advance book search engine.

**Section - II**

5. **Server-side programming III: Session Tracking:** Introduction, Traditional session tracking techniques, The servlet session tracking API, A practical case: VBS shopping cart.
6. **Basic Cryptography for Enabling E-Commerce:** Security concerns, security requirements, Encryption, Two basic principles for private key encryption, The key distribution problem, Diffie-Hellman key exchange Protocol, public key encryption, RSA encryption algorithm, Hybrid encryption, Other public key encryption methods, Stream cipher and block cipher, Message digest, Message authentication code, Digital signature, Digital signature standard, Authentication.
7. **Internet Security:** IPSec protocol, setting up security association, the authentication header (AH) service, The encapsulating security payload (ESP) service, Preventing replay attack, Application of IPSec: Virtual private network, Firewalls, Different types of firewalls, Examples of firewall system, Secure socket layer (SSL).
8. **Advanced Technology for E-Commerce:** Introduction to mobile agents, WAP : The enabling technology for mobile commerce, XML (eXtensible Markup Language), Data mining.

**Text Books:**

1. E-Commerce – Fundamentals and Applications – Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang (Wiley)

**TYMCA PART – I**

**2 5SMCA2 - CLIENT SERVER COMPUTING**

Theory: 4 Hours Per Week

Total Lectures: 40

Theory: 100 Marks

Practical: 2Hours / Week

Term Work : 25 Marks

**Section - I**

1. **Java networking model:** networking basics, java & the net, InetAddress, TCP/IP client sockets, URL, URL connection, TCP/IP Server sockets, A caching proxy HTTP Server, Datagrams, Inet4Address & Inet6Address, The URL class
2. **Java Database Connectivity:** The design of JDBC, The structured query language, installing JDBC, Basic JDBC programming concepts, Executing queries, scrollable and updateable result sets, metadata, transactions, advanced connection management.
3. **Remote Method Invocations:** RMI, Setting up RMI, Parameter passing in remote methods, using RMI with Applets, Server object activation, java IDL & CORBA.

**Section - II**

4. **Servlets:** Background, The life cycle of servlet, using Tomcat for Servlet Development, A simple servlet, The Servlet API, The javax.servlet Package, Reading Servlet Parameters, The javax.servlet.http Package, Handling HTTP Requests & responses, using cookies, session tracking, security issue.
5. **JavaBeans:** why Beans?, The Bean – writing process, using Beans to build an application, naming patterns for Bean properties and events, Bean property types, adding custom Bean events, property editors, going beyond naming patterns, customizers, the bean context.
6. **Basic JSP:** JSP syntax overview, Anatomy of JSP file, running JSP examples on Tomcat, Directives, Scripting elements, Action elements, running Tomcat's JSP example, objects in the JSP file, The JSP life cycle, object scope, JSP API's, Precompilation, Error Handling.

Text Books:

1. Core Java 2 – volume II – advanced features  
By Cay S. Horstmann & Gary Cornell
2. Java 2 – complete reference ( fifth edition)  
By Herbert Schidt

Reference Books:

1. Professional JSP ( second edition)  
By Brown, Burdick, Falkner, Galbraith.

**Term Work: Term Work will consist minimum 08 experiments based on above syllabus and should be evaluated internally**

**TYMCA PART – I**

**3. 5SMCA3 - OBJECT BASED COMPUTING**

Theory: 4 Hours Per Week  
Practical: 2Hours / Week

Total Lectures: 40  
Term Work : 25 Marks

Theory: 100 Marks  
Practical / Oral : 25 Marks

**Section – I**

1. **Introduction:** Software distribution, Dynamic Linking, Portability, Encapsulation features & C++, Interfaces & implementation, Abstract based as binary interfaces. Runtime polymorphism, Object extensibility.
2. **Interfaces:** IDL, Methods & results, Interfaces & IDL, Iunknown, Resource management and IUnknown, Type coercion, IUnknown implementation, Using CoM interface pointers, Query Interface optimization, Data types, Attributes, Properties and Exceptions.
3. **Classes:** Interface & implementation, Class objects, Activation, Using SCM, Classes & Services, generalizations, optimization, monitors, compositions, persistence, Service lifetime, Classes & IDL, Class emulation, Component categories.

**Section – II**

4. **Objects:** QueryInterface properties: Symmetric, Transitivity, Reflexivity, Static types, QueryInterface & IUnknown, Uniqueries & identity, Multiple interface and method names, Dynamic, Binary compositions, Containment.
5. **Apartments:** Basic concepts, Cross-apartment Access, In-process marshalling, Helpers, Standard marshalling Architecture, Life cycle management & marshalling, Custom marshalling, Free threaded marshaler.
6. **Applications:** Inprocess Activation pitfalls, Activation & SCM, Application IDS, COM and security, Programmatic security, Access control, Token management, Pointers & memory, Arrays, Dynamic Vs static invocation.

Text Books:

1. Essential COM ---- Don Box. (Addison – Wesley (LPE))

Reference Books:

1. MFC Programming Unleashed (Techmedia)
2. COM/DCOM Unleashed (Techmedia)
3. COM /CORBA side by side ----J. Pritchard (Pearson Education)

**Practicals: Practical will consist of minimum 08 programs based on above syllabus.**

**TYMCA PART – I**

**4. SSMCA4 – Elective – I ( ENTERPRISE RESOURCE PLANNING )**

Theory: 4 Hours Per Week

Total Lectures: 40

Theory: 100 Marks

**Section – I**

1. **ERP – Curtain Raiser:** An overview, Accommodating variety, Integrated Management Information, Seamless Integration, Supply Chain Management, Resource Management, Integrated data model, Scope, Technology, Benefits of FRP, Evolution, ERP revised, ERP & Modern Enterprise, problems.
2. **Business Engineering & ERP:** An overview, what is Business Engineering (BE)? Significance of BE, Principles of BE, BPR, ERP & IT, BE with IT, ERP and Management concerns, problems.
3. **Business Modeling for ERP:** An overview, Building the Business Model, problems.
4. **ERP Implementation:** An overview, Role of consultants, vendors & users, customization, precautions, ERP: Post-implementation options, ERP implementation methodology, Guidelines for ERP implementation, problems.

**Section – II**

5. **ERP and the Competitive Advantage:** An overview, ERP & competitive strategy, problems.
6. **The ERP domain:** An overview, MFG/PRO, OFS/Avalon – Industrial & Financial Systems, Baan IV, SAP, SAP R/3 Applications, Examples of as Indian ERP package, The arrival of ERP III, problems.
7. **Making of ERP:** An overview, Market Dynamics & Competitive Strategy, problems.
8. **Case Studies:** An overview, Mercedes-Benz, Kee Hin Industries, Bull Electronics Angers Plant Manufactures, Ameritech, Essar Steel, Jindal Iron & Steel Company Ltd, Godrej Soaps and associates companies, Indian Renewable Energy Development Agency (IREDA), ERP Handles Pressure, Sara ERP case study – Hawkins Cookers Ltd, A wholesome enterprise application, Sara IEMS ( ERP III) case study – Pan Century, Oleochemicals, Malaysia.

**Text Books:**

1. Enterprise Resource Planning – Concepts & Practice (Second Edition) By V. K. Garg & N.K. Venkitakishnan

**Reference Books:**

1. ERPWARE – ERP Implementation Framework By V. K. Garg & N.K. Venkitakishnan

**TYMCA PART – I**

**5SMCA4 – Elective – I –( MOBILE COMPUTING )**

Theory: 4 Hours Per Week

Total Lectures: 40

Theory: 100 Marks

**Section – I**

1. **Introduction:** Applications, A short history of wireless communications, A market for mobile communications, Some open research topics, A simplified reference model, overview, review exercise, references.
2. **Wireless Transmission:** Frequencies for radio transmission, signals, antennas, signal propagation, multiplexing, modulation, spread spectrum, cellular systems, summary.
3. **Medium Access Control:** Motivation for a specified MAC, SDMA, FDMA, TDMA, CDMA, comparisons of S/T/F/CDMA.
4. **Telecommunications Systems:** GSM, DECT, TETRA, UMTS & IMT-2000, summary.

**Section – II**

5. **Wireless LAN:** Infra red vs radio transmission, infrastructure & ad-hoc network, IEEE 802.11, HIPERLAN, Bluetooth, summary.
6. **Mobile Network Layer:** Mobile IP, Dynamic host configuration protocol, Mobile ad-hoc networks, summary.
7. **Overview of the Wireless Application protocol:** The Origins of WAP, overview of the WAP Architecture, Components of the WAP standard, Network Infrastructure services supporting WAP Architecture Design Principles, Relationship to other Standards, conclusion.

Text Books:

1. Mobile Communications (second edition)  
By Jochen Schiller

Reference Books:

1. The Wireless Application Protocol (PEA)  
By Sandeep Singhal, Jari Alvinen

**TYMCA PART – I**

**5SMCA4 – Elective – I - ( DISTRIBUTED DATABASES )**

Theory: 4 Hours Per Week

Total Lectures: 40

Theory: 100 Marks

**Section – I**

1. **Introduction:** Features of distributed Vs centralized databases, uses of distributed databases, Distributed databases management System (DDBMS)
2. **Levels of Distribution transparency:** Architecture for Distributed Databases, Types of Data Fragmentations, Distribution Transparency for update application, Distributed database access primitives, Integrity Constraints in distributed databases.
3. **Distributed Database Design:** A framework for Distributed database design, Design of database fragmentation. The collection of fragmentation.
4. **Transportation of Global Queries to fragmented queries:** Equivalence transformation for queries, Transforming global queries into fragment queries, Distributed Grouping and Aggregate function evaluation, Parametric queries, Framework for query optimization, Join queries, General queries

**Section – II**

5. **The management of distributed transactions:** A framework for transaction management, Supporting atomicity of Distributed Transactions, Concurrency Control for Distributed Transactions, Architectural aspects of distributed transactions.
6. **Concurrency Control:** Foundations of distributed concurrency control, Distributed deadlocks, concurrency control based on time stamps, optimistic methods for distributed concurrency control.
7. **Reliability:** Basic Concepts, Non-blocking commitment: Protocols, Reliability and concurrency control, Determining consistent view of the network, Detection and Resolution of inconsistency, Check points and cold restart.
8. **Distributed database Administration:** Catalog management in distributed databases, Authorization and protection, a distributed database manager based on adaplex, Multibase.

**Text Books:**

1. Distributed Databases – Principles & Systems by Stefano Ceri, Giuseppe Pelegatti (MGH)

**Reference Books:**

1. Database Management System Concepts By Silberschatz, Korth & Sudharshan (MGH)
2. An Introduction to Database Systems By Bipin Deasi (Galgotia Publications)
3. Distributed Computing System By Parkar & Versus ( Academic Press)
4. Distributed Databases - – Principles & Systems by Carl & Pelegatti (MGH)
5. Distributed Systems –Methods & tools- Lecture Notes in Computer Science Vol. 190 (springer Verlag)

**TYMCA PART – I**

**5SMCA4 – Elective I – (AI & EXPERT SYSTEMS)**

Theory: 4 Hours Per Week

Total Lectures: 40

Theory: 100 Marks

**Section - I**

1. **Expert System:** Nature of expertise, Characteristics of expert system, Acquiring & representing knowledge, Controlling reasoning & explanation of solutions.
2. **Knowledge Representation:** Knowledge representation schemes, Power of knowledge, Principles & techniques of knowledge representations STRIPS planner, Operator tables & means-end analysis, Study of subgoaling, Knowledge base control structure & evaluation w.r.t. MYCIN, Languages for knowledge representation
3. **Symbolic computation:** Symbolic representations, Physical symbol systems, Implementing symbol structures in LISP, Data structure & programs in LISP, Functional application & lambda
4. **Rule based systems:** Canonical systems for problem solving, Rules, Working memory, Controlling the behavior of the interpreter, Conflict resolution. Forward & backward chaining, Rules & meta rules.

**Section - II**

5. **Logic Programming , Uncertainty & knowledge acquisition:** Resolution refutation, Proof search in resolution systems, Procedural deduction, Search rule & explicit search control, Sources of uncertainty, Expert systems & probability theory, Certainty factors, Fuzzy sets & logic uncertainty, State of uncertainty, Ontological analysis, Expert system shells, Knowledge acquisition methods, Knowledge elicitation, Knowledge-based knowledge acquisition.
6. **Heuristic classification & constructive problem solving:** Classification of expert system tasks, Heuristic matching, Mapping tools to task, Confidence factors & evaluation, Managing complexity on prototypes, Constrains & reasoning with constrains, Knowledge elicitation, Architecture for planning, Representing & applying design knowledge based backtracking.
7. **Tools for building Expert Systems:** Overview, Shells, Shells to tasks, Inflexibility, Constraints of production rule languages, Multiple paradigm programming environments, Software tools , The blackboard environment, Tracing dependencies using TMS, Non monotonic justification brief functions, Concept only of case based reasoning & hybrid systems.

**Text Books :-**

1. Introduction to Expert Systems - Peter Jackson (Addison Wesley) Pearson Education Asia

**References :-**

1. Expert Systems-Principles & practice A Bonnet, JP Haton, J-M Truong NGOC(Prentice Hall)
2. Decision support & expert systems-Management Support Systems Efrain Turban(Macmillan publishing company)
3. A Practical Guide to Designing Expert System-Sholon M.Weiss & Casimir A Kulikowski (Rowmann Allanheld)

**5SMCA5 – Elective – II – ( BIO-INFORMATICS )**

Theory: 4 Hours Per Week

Total Lectures: 40

Theory: 100 Marks

**Section - I**

1. **Introduction: Biology in the computer age**, How is computing changing biology? Isn't a bioinformatics just about building database? What does informatics mean to biologists? What challenges does biology offers computer scientist? What skills should a Bioinformatician have? Why should biologists use computers? How can configure PC to do bioinformatics research? What information & software are available? Can I learn a programming language without classes? How can I use web information? How do I understand sequence alignment data? How do I write a program to align two biological sequences? How do I predict protein structure from sequence? What questions can bioinformatics answer?
2. **Tools for Bioinformatics**: Biological Research on the web, Using search engines. Finding scientific articles. Public biological databases, Searching biological databases, Depositing data into the public databases, Finding softwares, Judging the quality of information
3. **Sequence Analysis, Pairwise alignment& Database searching**: Chemical composition of biomolecules, Composition of DNA & RNA, Watson & Crick Solve structure of DNA, Development of DNA sequencing methods, Gene finders & feature detection in DNA, DNA translation, Pair wise sequence comparison, Sequence queries against biological databases, Multifunctional tools for sequence analysis.
4. **Multiple sequence Alignments ,Trees & profiles**: The morphological to the molecular, Multiple sequence alignment, Phylogenetic analysis, Profiles & motifs.

**Section - II**

5. **Predicting protein structure & function from sequence**: Determining the structure of the proteins, Predicting the structure of proteins, From 3D to 1D, Feature detection in protein sequences, Secondary structure prediction, Predicting 3D structure.
6. **Tools for Genomic & Proteomics**: From sequencing genes to sequencing genomes, Sequence assembly, Accessing genome information on the web, Annotating and analysing whole genome sequences, Functional genomics new data analysis challenges, Proteomics, Biochemical pathway databases, Modeling kinetics & physiology.
7. **Building biological databases**: Types of databases, Database software, Introduction to SQL, Installing the MySQL DBMS, Database design, Developing web based software that interacts with databases
8. **Visualization And Data Mining**: Preparing your data, Viewing graphics, Sequence data visualization, Networks and pathway visualization, Working with numerical data, Visualization: summary, Data mining & biological information

Text Books:

1. Developing Bio-informatics computer skills – Cynthia Gibas & Per Jambeck ( O'REILLY)

## TYMCA PART – I

## 5 SMCA5 – Elective – II – (IMAGE PROCESSING)

Theory: 4 Hours Per Week

Total Lectures: 40

Theory: 100 Marks

**Section – I**

1. **Image, digitized image and it's properties** :Introduction, steps in digital image processing, Components of an image processing system, image sensing and acquisition, image sampling and quantization, elements of visual perception and its attributes, digitized image – image function, mathematical representation. Image digitization-Sampling and Quantization, Properties – distance, pixel, adjacency, region, background, holes, brightness, segmentation, border, edge, convex hull, histograms, color, noise. Image analysis – level of image data, representation traditional and hierarchical data structures.
2. **Image pre-processing**: Brightness transformation, geometric transformation, local processing, image smoothing and edge detection, introduction to image restoration.
3. **Image enhancement in special domain**: Threshold edge-based segmentation, edge relaxation border tracing, hough transform, region-based segmentation, region merging, region splitting, split and merge.
4. **Image enhancement in frequency domain**: Fourier transform, 1-D, 2-D, DFT, Handmard transform, discrete cosine transforms, introduction to Wavelet transform, application of image transform.

**Section – II**

5. **Color image processing**: Color fundamentals, color models, RGB, CMY-CMYK, HIS color models, Pseudo color image processing – intensity slicing, gray level to color transforms, Color transformation – formulation, color complements, color slicing, tone and color corrections, smoothing and sharpening, noise in color image, color image compression.
6. **Space reorientation and detection**: Region identification, color-based representation, chain codes, B-Spline reorientation, region-based representation, moments, Convex Hull.
7. **Image compression**: Redundancy and fidelity criteria, error free compression, methods of compression, standards binary, continuous tone still, video.
8. **Object recognition**: Patterns and patterns classes, matching, statistical classification, Bayes classifier, Neural networks, Training algorithms, structural methods – matching shape numbers, string matching, automata as string recognizers.

Text Book:

- 1) Computer vision and image processing by Milian Sonaka
- 2) Digital Image Processing by Gonzalez (Addision Wesley)

Reference:

- 3) Digital Image processing by Pratt.
- 4) Fundamental of digital image processing by A. K. Jain.

**TYMCA PART – I**

**5. 5SMCA5 – Elective – II – (NERO & FUZZY SYSTEMS)**

Theory: 4 Hours Per Week

Total Lectures: 40

Theory: 100 Marks

**Section - I**

1. **Introduction:** Biological neuron, Macullah Pitts model, Principles of learning, AND/OR gates simulation by TLU
2. **Perceptron:** Discrete perceptron as a classifier, Decision and discriminate functions, Principle of supervised learning, Linearly non-separable patterns, Perceptron training for two class & multiclass dichotomizer.
3. **Multilayer Networks:** Continuous perceptrons, Widrow - Hoff & Delta rule for training, Training algorithms for two category & multi category classifier, Error back propagation algorithm
4. **Performance:** Performance of feed forward multilayer networks, Accelerating learning process, Design considerations, Adaptive multilayer algorithms.- Merchands, Neural Tree & Titling Algorithms, Multilayer peceptron as a function approximator

**Section - II**

5. **Unsupervised learning:** Hebbian learning, Hamming net & Maxnet for classification, Competitive learning, K means clustering & LVQ algorithms, Adaptive resonance theory, ART1 algorithm, Self organizing Kohonen's map
6. **Associatives Memories:** Auto association & hetero association. Hopefield network, discrete hopefield for classification, storage capacity of hopefield network, continuous hopefield network, gradient hopefield network for optimization, Brain state in a box (BOB) network Hetero association - BAM network.
7. **Optimization Techniques:** Hopefield network for optimization, Traveling salesman problem, Iterated gradient descent techniques, Simulated anneal technique, Random search technique, Genetic algorithm for optimization problems.
8. **Application Of Artificial Neural Network:** Character recognition, speech recognition & signature verification applications, Human face recognition using neural networks.

Text Book :-

- 1) Introduction to Artificial Neural System – Zurada (JAICO)

References :-

- 2) Elements of Artificial Neural Networks - Mehrotra, Mohan, Ranka(PENRAM)
- 3) Introduction To Artificial Neural Netwoks - B. Yegnanarayana (PHI)

**5SMCA5 – Elective – II – ( DATA WAREHOUSING & DATA MINING )**

Theory: 4 Hours Per Week

Total Lectures: 40

Theory: 100 Marks

**Section - I**

1. **Data Mining in Context:** What is Data Mining, What can Data Mining do? The Business Context for Data Mining, The Technical Context for Data Mining, the societal context for Data Mining, four approaches for Data Mining.
2. **Data Mining Methodology:** Two styles of Data Mining, The Virtuous Cycle Of Data Mining, Identifying The Right Business Problem, Transforming Data Into Actionable Results, Acting On The Results, Measuring The Models Effectiveness, What Makes Predictive Modeling Successful?
3. **Data Mining Techniques & Algorithms:** Different Goals For Different Techniques, Three Data Mining Techniques, Automatic Cluster Detection, Decision Trees, Neural Networks
4. **Data, Data Everywhere:** What Should Data Look Like, What Does Data Really Look Like? How Much Data Is Enough? Derived Variables, Case Study: Defining Customers Behavior, Dirty Data

**Section - II**

5. **Building Effective Predictive Models:** Building Good Predictive Models, Working With The Model Set, Using Multiple Models, Experiment.
6. **Taking Control:** Getting Started, Case 1: Building Up A Core Competency Internally, Case 2: Building A New Line Business, Case 3: Building Data Mining Skills On Data Warehouse Efforts, Case 4: Data Mining Using Tessera RME.
7. **System Process & Process Architecture:** Introduction, Typical Process Flow Within A Data Warehouse, Extract & Load Process, Clean & Transform Process, Backup & Archive Process, Query Management Process, Load Manager, Warehouse Manager, Query Managem Detailed Information, Summary Information, Metadata, Data Marting.
8. **Database Schema:** Introduction, Starflake Schemas, Identifying Facts & Dimensions, Designing Fact Tables, Designing Dimension Tables, Designing The Starflake Schema, Query Redirection, Multidimensional Schemas.

Text Books:

Mastering Data Mining – Michael J. A. Berry & Gordon S. Linoff (WILEY publ.)

Reference Books:

Data Warehousing (Pearson Ed.) – Sam Anahory & Dennis Murray

**5SMCA6 –( SOFTWARE DEVELOPMENT PROJECT-I)**

Term Work : 50 Marks

Practical: 8 Hours / Week  
Practical / Oral: 75 Marks

It will be allocated by the department and the students must complete it during the first semester only. The project batches of 2-3 students be formed.



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TYMCA PART – II

**6 SMCA1 –(SOFTWARE DEVELOPMENT PROJECT-II)**

Term Work: 100 Marks

Practical / Oral: 100 Marks

The software development project-II is 6 month project in industry/organization. The evaluation of the term work will be done by the respective guide under whom the project is done in the industry/organization. The final year project viva will be conducted in first week of July of that year.

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SAWANT S. P.

BIRJE SR/ JC