SCHEMES OF EXAMINATION FOR MCA 6 Yrs (BCA I yr) PROGRAMME

MCA (6Yrs.) SEMESTER - I

Code	Subject	L	T	P	C
IC-101	Mathematics – I	3	1	0	4
IC-102	Physics – I	3	1	0	4
IC-103	Fundamentals of programming using C	3	1	0	4
IC-104	English & Communication Skills	3	1	0	4
IC-105	Computer Fundamentals	3	1	0	4
IC-106	C Programming Lab	0	0	4	2
IC-107	Fundamental of computer Lab	0	0	4	2
	Comprehensive Viva	0	0	0	4
					28

MCA (6Yrs.) SEMESTER - II

Code	Subject	L	T	P	C
IC-201	Mathematics – II	3	1	0	4
IC-202	Chemistry & Environmental Science	3	1	0	4
IC-203	Basic Electronics	3	1	0	4
IC-204	Object Oriented Programming Using C++	3	1	0	4
IC-205	French	3	1	0	4
IC-206	Basic Electronics Lab	0	0	4	2
IC-207	Object Oriented Programming Lab	0	0	4	2
	Comprehensive Viva	0	0	0	4
					28

MCA (6Yrs.) SEMESTER - III

Code	Subject	L	T	P	C
IC-301	Probability and Statistics	3	1	0	4
IC-302	Financial Accounting	3	1	0	4
IC-303	Digital Electronics	3	1	0	4
IC-304	Data Structure and Algorithms	3	1	0	4
IC-305	Digital Computer Organization	3	1	0	4
IC-306	Digital Electronics Lab	0	0	4	2
IC-307	Data Structure and Algorithms Lab using C++	0	0	4	2
	Comprehensive Viva	0	0	0	4
					28

MCA (6Yrs.) SEMESTER - IV

Code	Subject	L	T	P	C
IC-401	Data & Computer Communication	3	1	0	4
IC-402	Discrete Mathematics	3	1	0	4
IC-404	Microprocessor and Assembly Language Programming	3	1	0	4
IC-405	Data Base Management Systems	3	1	0	4
IC-406	Mini Project				4
IC-407	Data Base Management System Lab	0	0	4	2
IC-408	Microprocessor Assembly Language Programming Lab	0	0	4	2
	Comprehensive Viva	0	0	0	4
					28

MCA (6Yrs.) SEMESTER - V

Code	Subject	L	T	P	C
IC-501	Internet and Web Programming	3	1	0	4
IC-502	System Programming	3	1	0	4
IC-503	JAVA Programming	3	1	0	4
IC-504	Computer oriented Numerical Methods	3	1	0	4
IC-505	Organization Behavior	3	1	0	4
IC-506	Internet and Web Programming Lab	0	0	4	2
IC-507	JAVA Programming Lab	0	0	4	2
	Comprehensive Viva	0	0	0	4
					28

MCA (6Yrs.) SEMESTER - VI

Code	Subject	L	T	P	C
IC-601	Computer Graphics	3	1	0	4
IC-602	Human Computer Interface	3	1	0	4
IC-603	Unix And Shell Programming	3	1	0	4
IC-604	System Analysis & Design	3	1	0	4
IC-605	Project				4
IC-606	Unix And Shell Programming Lab	0	0	4	2
IC-607	Computer Graphics Lab	0	0	4	2
	Comprehensive Viva	0	0	0	4
					28

MCA (6Yrs.) SEMESTER - VII

Code	Subject	L	T	P	C
IC-701	Design & Analysis of Algorithms	3	1	0	4
IC-702	Computer Architecture	3	1	0	4
IC-703	Advance Java	3	1	0	4
IC-704	Operating System	3	1	0	4
IC-705	Analog Electronics	3	1	0	4
IC-706	Advance Java Lab	0	0	4	2
IC-707	Design & Analysis of Algorithm Lab	0	0	4	2
	Comprehensive Viva				4
					28

MCA (6Yrs.) SEMESTER - VIII

Code	Subject	L	T	P	C
IC-801	Computer Networks	3	1	0	4
IC-802	Theory of Computation	3	1	0	4
IC-803	Advance Database Management Systems	3	1	0	4
IC-804	Software Engineering	3	1	0	4
IC-805	Optimization Techniques	3	1	0	4
IC-806	Computer Network Lab	0	0	4	2
IC-807	Advance Database Lab	0	0	4	2
	Comprehensive Viva				4
					28

MCA (6Yrs.) SEMESTER – IX

Code	Subject	L	T	P	C
IC-901	Object Oriented Analysis and Design	3	1	0	4
IC-902	Compiler Design	3	1	0	4
IC-903	Network and Information Security	3	1	0	4
IC-904	Artificial Intelligence	3	1	0	4
IC-905	Bioinformatics	3	1	0	4
IC-906	Project				4
IC-907	Artificial Intelligence Lab	0	0	4	2
	Comprehensive Viva				4
					30

MCA (6Yrs.) SEMESTER – X

Code	Subject	L	T	P	C
IC-1001	Data Mining and Warehousing	3	1	0	4
IC-1002	Parallel Processing and Distributed Computing	3	1	0	4
IC-1003	Enterprise computing Technique	3	1	0	4
IC-1004	Managerial Economics	3	1	0	4
IC-1005	Elective I	3	1	0	4
IC-1006	Enterprises Computing Technique Lab	0	0	4	2
	Comprehensive Viva				4
					26

Elective I

Multimedia Computing
Software Testing & Quality Assurance
Principal of Programming Language

MCA (6Yrs.) SEMESTER - XI

Code	Subject	L	T	P	C
IC-1101	Wireless and Mobile Computing	3	1	0	4
IC-1102	Enterprise Resources Planning	3	1	0	4
IC-1104	Elective II	3	1	0	4
IC-1105	Research Methodology & Practices	3	1	4	6
IC-1106	Wireless and Mobile Computing Lab	0	0	4	2
	Comprehensive Viva				4
					24

Elective II

Cloud Computing
Design Patterns
Image Processing

MCA (6Yrs.) SEMESTER -XII

Code	Subject	L	T	P	C
IC-1201	Project				24

MCA (6Yrs.) SEMESTER - I

IC-101: Mathematics-I

CO1: Understand basic concepts of Partial differentiation, Maxima & Minima of the function, convergence and divergence of the series.
CO2: Solve mathematical problems based on the course material.
CO3: Develop mathematical skills and methods appropriate for students in the computer science.
CO4: Understand more advanced mathematical courses.

IC-102: Physics-I

CO1: Understand basic concepts of physics such as circuit elements electromagnetic induction, capacitors and some laws related to passive elements.
CO2: Develop and apply knowledge and understanding of physics.
CO3: Develop the knowledge and skills for more advanced learning in physics.

IC-103: Fundamentals of Programming using C

CO1: Develop logic of problem solving and learn basics of programming methodologies.
CO2: Develop the program development logic for the given problem.
CO3: Recognize and understand the syntax and construction of C code.
CO4: Hands on experience of procedural language programming.
CO5: Hands on experience of steps involved in compiling, linking and debugging C code.
CO6: Apply all the concepts that have been covered in the theory course.

IC-104: English & Communication Skills

CO1: Enable students to improve both their ability to communicate and linguistic competence in English language.
CO2: Knowledge of correct usage of English with an emphasis on reading and writing skills.
CO3: Practice writing skills at sentence and paragraph levels with correct grammatical structures.
CO4: Practice and learn English speaking skills to communicate in daily situations effectively.

IC-104: Computer Fundamentals

CO1: Understand basics of computer and its working.
CO2: Knowledge of basic units and model of computer.
CO3: Understand number system for data representation in computer.
CO4: Understand basics of Operating system and DBMS.
CO5: Learn working with MS Office and Internet.

MCA (6Yrs.) SEMESTER - II

IC-201: Mathematics-II

CO1: Understand advanced mathematical concepts and techniques.
CO2: Understand basic concepts of curve tracing, rectification, groups, cosets, homomorphism and isomorphism.
CO3: Solve mathematical problems based on the course material.

CO4: Develop mathematical skills and methods appropriate for students in the computer science.

IC-202: Chemistry & Environment Science

CO1: Learn chemistry of various engineering materials and processes, their importance, properties, testing, structure-property relationship, tailoring and their applications in various technologies.

CO2: Understand and develope aware with various environmental issues and pollution and control studies in modern society for sustainable development

IC-203: Basic Electronics

CO1: Basic concepts of electronics.

CO2: Understand basic components of circuits.

CO3: Understand the use of diodes as power supply rectifiers.

CO4: Understand the operation of transistors as switching circuits.

IC-204: Object Oriented Programming Using C++

CO1: Better understanding of Object Oriented design and program implementation by using Object Oriented language features.

CO2: Understand object-oriented programming features in C++,

CO3: Apply these features to program design and implementation,

CO4: Understand object-oriented concepts and how they are supported by C++,

CO5: Gain some practical experience of C++,

CO6: Understand implementation issues related to object-oriented techniques,

CO7: Build good quality software using object-oriented techniques

IC-205: French

CO1: Knowledge of French language

CO2: Make students understand vocabulary and grammar of French language.

CO3: Introduce some aspects of France, its people and culture.

CO4: Emphasize and develop four linguistics skills.

MCA (6Yrs.) SEMESTER - III

IC – 301 :- Probability and Statistical Methods

CO1: Aware about the Probability and Statistical Methods for research and real life data analysis.

CO2: Understand basic concepts of Probability and Statistical Methods for data analysis.

CO3: Learn Hypothesis testing.

CO4: Learn the application of different tests such as Chi-square, T & F statistic.

IC-302: Financial Accounting

CO1: In-depth knowledge of all business transactions and how they should be recorded, classified & interpreted to get a meaningful judgment of viability & profitability of the industry.

CO1: Prepare a set of financial statements for various forms of businesses and nonprofit entities.

CO2: Develop an ability to apply accounting concepts, principles and practices.

CO3: Hand on experience with the basic tools for analyses of financial statements.

IC-304: Digital Electronics

CO1: Understand basic concepts of digital logic, its operations, principles and applications.
CO2: Understand number systems and codes, and Boolean Algebra
CO3: Understand TTL and CMOS circuit characteristics, followed by logic devices such as flip-flops, code converters, counters, multiplexers, and registers.

IC-305: Data Structures and Algorithms

CO1: develop proficiency in the specification, representation, and implementation of Data Types and Data Structures.
CO2: Write programs using object-oriented design principles.
CO3: Understand data structures such as linear lists, stacks, queues. Choose the appropriate data structure and algorithm design method for a specified application.,
CO4: Be familiar with advanced data structures such as balanced search trees, hash tables, priority queues and graphs.
CO5: Having good understanding of sorting and searching techniques.

IC-306: Digital Computer Organization

CO1: Understand the organization of the computer, and the way the hardware components are connected together to form a computer system, and the development of the hardware for the computer taking into consideration a given set of specifications.
CO2: Understand the various functional units of CPU.
CO3: Study various units of ALU.
CO4: Understand instruction formats and addressing modes.
CO5: Understand interconnection and interfacing of various units of computer system.

MCA (6Yrs.) SEMESTER - IV

IC-401 Data & Computer Communication

CO1: Understand the fundamentals of data communications networks.
CO2: Understand basic data communication components.
CO3: Understand the fundamentals of signaling and data transmission.
CO4: Study data link layer and data link protocols.
CO5: Study Network layer, MAC sub layer, LAN and its standards.

IC-402 : Discrete Mathematics

CO6: Understand mathematical concepts that underline much of computer science, and to help them develop the skills to solve problems using them, whether they are in a more advance course, doing research.
CO7: Enhance mathematical reasoning of students.
CO8: Understand Discrete Mathematics such as sets, permutations, relations, graphs, trees and finite-state machines.
CO9: Enhance algorithmic thinking of students.

IC-404: Microprocessor & Assembly Language Programming

CO1: Understand asic concepts of microprocessor and assembly language programming.

CO2: Develop an understanding of the operation of microprocessors.
CO3: Learn assembly language programming.
CO4: Learn the internal organization of some popular microprocessors.

IC-405: Data Base Management Systems

CO1: Handle large database system and to be able to manipulate it efficiently and carry out analysis to design the database.
CO2: Present necessary concepts for database designing.
CO3: Design conceptual, logical database model and physical model.
CO4: Evaluate set of query using SQL and algebra.
CO5: Concepts of RDBMS, and learn Object oriented modeling.

MCA (6Yrs.) SEMESTER - V

IC-501: Internet and Web Programming

CO1: Knowledge of internet tools and to introduce some of the basic technologies for creating and processing content on Internet web sites.
CO2: Understand the fundamental concepts of working of internet.
CO3: Design, format and link web pages.
CO4: Write dynamic interfaces using JavaScript.
CO5: Link databases to web sites.

IC-504: System Programming

CO1: Enhance the understanding of the concepts of System Programming and to provide a basis for judgment in the design of System Software - Preprocessors, Compilers, Loaders, Debuggers, and Assemblers
CO2: Understand basic concepts of system software and system programming.
CO3: Learn the design of assemblers, compilers and preprocessors.
CO4: Understand the working of loaders, linkers, editors, debuggers and other software tools used in programming development environment.

IC-503 : Java Programming

CO1: Knowledge of Java programming language fundamentals: its syntax, idioms, patterns, and styles with object oriented programming concepts.
CO2: Write programs using the Java language. Basic topics considered are programs and program structure in general, and Java syntax, data types, flow of control, classes, methods, objects, arrays, exception handling, recursion, and graphical user interfaces (GUIs).

IC-504: Computer Oriented Numerical Methods

CO1: Understand basic numerical methods required for typical engineering and business applications.
CO2: Understanding the properties of different numerical methods so as to be able to choose appropriate methods and interpret the results for engineering problems that they might encounter.
CO3: Find numerical approximations to the roots of an equation by Newton method, Bisection Method, Secant Method, etc.
CO4: Use finite differences for interpolation and learn various interpolation methods.
CO5: Understand numerical integration and differentiation.

IC-506: Organization Behavior

CO1: Gain the intricacies of individual behavior in order to function effectively and efficiently in the organization.

CO2: Potential sources of conflicts which will make their careers interesting and enjoyable.

MCA (6Yrs.) SEMESTER - VI

IC-601: Computer Graphics

CO1: Understand the theory and practice of computer Graphics.

CO2: Understanding the basic concepts of Graphics.

CO3: Study of different algorithm of graphics.

CO4: Implementation of rotation, clipping, transformation algorithm etc.

IC-602:Human Computer Interaction

CO1: Explain the capabilities of both humans and computers from the viewpoint of human information processing.

CO2: Describe typical human–computer interaction (HCI) models, styles, and various historic HCI paradigms.

CO3: Apply an interactive design process and universal design principles to designing HCI systems.

CO4: Describe and use HCI design principles, standards and guidelines.

CO5: Analyze and identify user models, user support, socio-organizational issues, and stakeholder requirements of HCI systems.

CO6: Discuss tasks and dialogs of relevant HCI systems based on task analysis and dialog design.

CO7: Analyze and discuss HCI issues in groupware, ubiquitous computing, virtual reality, multimedia, and Word Wide Web-related environments.

IC-603: UNIX Shell Programming

CO1: Understanding of basic concepts of operating system with special reference to UNIX operating system.

CO2: Understand UNIX as operating system.

CO3: Learn to use UNIX shell.

CO4: Learn to use UNIX commands.

CO5: Send and receive electronic mail and learn its real-world limitations

CO6: Learn File handling and shell programming.

IC-604: System Analysis & Design

CO1: Introduce established and evolving methodologies for the analysis, design, and development of an information system.

CO2: Understand system characteristics, project management, prototyping, and systems development life cycle phases.

CO3: Analyze a problem and design an appropriate solution using a combination of tools and techniques.

MCA (6Yrs.) SEMESTER - VII

IC-701: Design & Analysis of Algorithms

CO1: Understand the classic algorithms in various domains, and techniques for designing efficient algorithms.
CO2: Learn to analyze the running time of the algorithms
CO3: Understand the application of algorithms and design techniques to solve problems.
CO4: Learn to analyze the complexities of various problems in different domains and design efficient algorithms.
CO5: Understand asymptotic notation to provide a rough classification of algorithms
CO6: Study algorithms for fundamental problems in computer science and engineering work and compare with one another.
CO7: Understand the problems for which it is unknown whether there exist efficient algorithms or even algorithm.

IC-702: Computer Architecture

CO1: Understand the concepts of design and analysis of the hardware of a computer system and its components such as control unit, arithmetic and logical (ALU) unit, input/output, and memory unit.
CO2: Learn concepts of microprogramming in the design of the central processing unit of a computer system.
CO3: Understand various ways for interconnecting I/O devices to the system.
CO4: Understand basic concepts of parallel processing.

IC-703: Advanced Java

CO1: Understand the enhanced and advanced concepts of Java.
CO2: Design and developing an understanding of the web applications of Java.
CO3: Learn Java programming language with new and enhanced versions.
CO4: Students will capable of making their own GUI, network, security, thread, Servlet and JSP based systems.

IC-704: Operating Systems

CO1: Understand with design of operating systems as resource manager of a computer system.
CO2: Present basic concepts of operating system architecture
CO3: Understand the concepts of processor management and memory management techniques
CO4: Study deadlock handling and inter-process communication
CO5: Study of file systems and device management.

IC-705: Analog Electronics

CO1: Understand operational amplifiers.
CO2: Understand working of amplifiers.
CO3: Understand amplifier circuits, feedback circuits, and oscillator circuits To teach basic numerical methods required for typical engineering and business applications.

MCA (6Yrs.) SEMESTER - VIII

IC-801: Computer Networks

CO1: Understand a theoretical foundation of computer network and equip the students with an in-depth knowledge of fundamental techniques involved in computer

network, which helps the students to understand the actual working of computer network.

CO2: Gain an understanding of the principles of operation of a wide variety of network technologies.

CO3: Develop an appreciation of how network services are developed and knowledge of their uses.

CO4: Apply knowledge of computers, software, networking technologies, and information assurance to an organization's management, operations, and requirements.

CO5: Understand data compression and data security techniques.

IC-802: Theory of Computation

CO1: Understand about the basic concepts of Computation and learn to work with mathematical abstractions of computers called a model of computation.

CO2: Understand regular expressions, which are used to specify string patterns in many contexts, from office productivity software to programming languages.

CO3: Understand finite automata, another formalism mathematically equivalent to regular expressions, Finite automata are used in circuit design and in some kinds of problem- solving.

CO4: Learn Context-free grammars that used to specify programming language syntax.

CO5: Understand computability theory and decision problems.

IC-803: Advanced Database Management System

CO1: Understand learn advanced features of DBMS and build capacity to implement and maintain an efficient database system using emerging trends.

CO2: Understand the master the concepts and design with proficiency databases under the relational model.

CO3: Proficiency in the choice of DBMS platform to use for specific requirements

CO4: Develope proficient with a broad range of data management issues including data integrity and security, transaction processing and others.

CO5: Familiar with the fundamentals of distributed DBMS and object database management, data warehousing and data mining.

IC-804: Software Engineering

CO1: Understand in the discipline of software engineering and its application for the development of and management of software systems.

CO2: Understand the various activities undertaken for a software development project.

CO3: Develop and write a software project proposal

CO4: Develop and write a Software Requirements Specification and design document.

CO5: Learn to work within a team and understand team dynamics

CO6: Be able to effectively communicate the work (Presentation skills)

IC-805: Optimization Techniques

CO1: Understand the organizational behavior of management-process and importance of decision-making in real life situations.

CO2: Understand different techniques of optimization, which help in analyzing the process of decision-making.

CO3: Problem formulation of optimization.

CO4: Realization of methods for optimization.

CO5: The applications of optimization.
CO6: Understand basic concepts of Linear programming and Dynamic Programming.

MCA (6Yrs.) SEMESTER - IX

IC-901: Object Oriented Analysis and Design

CO1: Understand the activities associated to develop projects. And establish the flow of events by making a planning that how software can be shown in its entirety prior to its implementation using Object Oriented Analysis and Design techniques.
CO2: Develop a working understanding of formal object-oriented analysis and design processes.
CO3: Develop the skills to determine which processes and OOAD techniques should be applied to a given project.
CO4: Develop an understanding of the application of OOAD practices from a software project management perspective

IC-902: Compiler Design

CO1: Understand the working of compiler in detail so as to have knowledge of whole spectrum of language processing technology.
CO2: Understand various phases of compilers theoretically as well as practically so as to have the actually feeling of its working.
CO3: Understand some aspects of computation should be covered in course as parsing is of the most important issue in compiler.
CO4: Learn the concepts of symbol table management, syntax-Directed definition and translations along with the code optimization and generation and error handling have to cover to complete the aim.

IC-903: Network and Information Security

CO1: Understand principles and practices of computer system security including operating system security, network security, software security and web security.
CO2: Theoretical foundation of computer network and security and equip the students with an in-depth knowledge of fundamental techniques involved in computer network and security, which helps the students to understand the actual working of computer network and security tools.
CO3: Gain an understanding of the principles of operation of a wide variety of network security technologies.

IC-904 : Artificial Intelligence

CO1: Understand techniques of representing knowledge required to build intelligent machines capable of taking decision like human beings.
CO2: Understand techniques of solving problems that need human intelligence.
CO3: Understand to formulate Artificial Intelligence problems
CO4: Heuristic techniques to solve the AI problem.

IC-905: Bio-Informatics

CO1: Develop an understanding of the basic principles of molecular and cell biology.

CO2: Become familiar with existing tools and resources for computational analysis of biological data, including sequences, phylogenies, microarrays, ontologies, and bio- molecular interactions.
CO3: Understand basic abstractions and computational approaches used for analysis including data warehouses, data mining, programming languages.

MCA (6Yrs.) SEMESTER - X

IC-1001: Data Mining and Warehousing

CO1: Understand data warehouses and data mining with recent trends and development and trends in the field.
CO2: Understand basic concepts of data warehousing and data mining.
CO3: On Line Analytical Processing (OLAP)
CO4: Data mining techniques and understand various algorithms.
CO5: Develop familiarities with data mining tools and ETL tools.

IC-1002: Parallel Processing & Distributed Computing

CO1: Understand the concepts of design hardware of Parallel systems and its components.
CO2: Learn concept of parallel processing.
CO3: Understand various model of parallel computing.
CO4: Understand distributed computing systems.

IC-1003: Enterprise Computing Technique

CO1: Understand the concepts of EJB and build web-based and/or enterprise-based applications that incorporate EJB technology.
CO2: Implement business-tier functionality using EJB technology
CO3: Learn the concepts and implementation of RMI and JNDI
CO4: Get an overview of EJB fundamentals.
CO5: Learn the concepts and implementation of Entity and Session beans

IC-1004: Managerial Economics

CO1: Understand the economic theory that will have application in their professional life.
CO2: Management students are expected to understand and apply the concept of economics, especially for decision making of firm, with reference to various functional area of modern management.

Elective I

IC-1005: Multimedia Computing

CO1: Critically analyse and synthesise the key components of multimedia technologies including text, graphics, voice, video and animation;
CO2: evaluate the role of multimedia technologies in the online and web environment;
CO3: be able to define the characteristics of each media type and describe their application;
CO4: develop, edit and improve interactive web pages that incorporate a variety of digital media such as graphics, voice, animation and video;
CO5: critically evaluate the implications of copyright in the use of multimedia;

CO6: Research and analyse the protocols, standards and representation techniques used for storage and transmission of multimedia information.

CO7: Hands on Experience on latest development in the field of Multimedia and related fields

CO8:

IC- 1005: PRINCIPLES OF PROGRAMMING LANGUAGES

CO1: describe syntax and semantics of programming languages data, data types, and basic statements.

CO2: Understand call-return architecture and ways of implementing them.

CO3: Understand object-orientation, concurrency, and event handling in programming languages develop programs in non-procedural programming paradigms.

IC1005: Software Testing & quality Assurance

CO1: Understand software testing process, planning, strategy, criteria and testing method, as well as software quality assurance concept & control process.

CO2: Study of software testing and quality control concepts, principles, methodologies, management strategies and technique

CO3: Understand test models, test design technique (black box and white box testing techniques), testing strategies and advance testing techniques.

MCA (6Yrs.) SEMESTER - XI

IC-1101: Mobile & Wireless Computing

CO1: Acquire solid knowledge on mobile networks and mobile computing

CO2: acquire experience and capability to team work

CO3: select components and networks for particular application

CO4: creatively analyze mobile and wireless networks

CO5: critically analyse security issues of mobile and wireless computing systems

IC-1102: Enterprise Resource Planning

CO1: Develop the knowledge and skills to address the challenges of successful implementation of ERP.

CO2: Learning skills of re-engineering business process to fit the ERP, risk factor associated with managing ERP systems.

CO3: Provide foundation for e-business etc.

Elective II

IC-1104: Cloud Computing

CO1: Understand basic concepts of cloud computing, its tools and Identify appropriate applications.

CO2: Select and define appropriate technology and parameters.

CO3: Demonstrate knowledge of market based cloud computing ;

CO4: Perform the reviews of different clouds applications.

IC- 1004: Design Pattern

CO1: Strengthen the knowledge of Object Oriented Design and development by understanding various design patterns for object oriented reusable Software.

CO2: Understand the concept of Design patterns and its importance.

CO3: Understand the behavioral knowledge of the problem and solutions

CO4: Relate the Creational, Structural , behavioral Design patterns

CO5: Apply the suitable design patterns to refine the basic design for given context.

IC- 1004: Image Processing

CO1: Explain how digital images are represented and manipulated in a computer, including reading and writing from storage, and displaying.
CO2: Write a program which implements fundamental image processing algorithms.
CO3: Be conversant with the mathematical description of image processing techniques and know how to go from the equations to code.

IC-1105: Research Methodology & Practice

CO1: Understand basic concepts of research, its methodologies and Identify appropriate research topics.
CO2: Select and define appropriate research problem and parameters.
CO3: Demonstrate knowledge of research processes (reading, evaluating, and developing);
CO4: Perform literature reviews using print and online databases.

MCA (6Yrs.) SEMESTER – XII

IC-1201: Project