

**OUTLINES OF TESTS,
SYLLABI AND COURSES OF READINGS
CHOICE-BASED CREDIT SYSTEM**

**FOR
MCA (MASTER OF COMPUTER APPLICATIONS)
(SEMESTER SYSTEM)**

**MCA-III (Vth & VIth Semester)
[For the Session 2018-19]**

**MATA GUJRI COLLEGE
SRI FATEHGARH SAHIB-140406**

MATA GUJRI COLLEGE, SRI FATEHGARH SAHIB

(An Autonomous College)

SYLLABUS**MASTER OF COMPUTER APPLICATIONS****OUTLINE OF PAPERS AND TESTS****MCA -III (FIFTH SEMESTER) EXAMINATIONS****For the Session 2018-19**

CODE NO.	TITLE OF PAPER	Schedule of Teaching (Hours/Week)			Total Hours	Credits	Marks	
		L	T	P			Internal	External
MCA-351	Theory Of Computation	4	1	0	5	4	50	50
MCA-352	Programming with Python	4	1	0	5	4	60	40
MCA-353	*Choice based Course-V	4	1	0	5	4	50	50
MCA-354	Programming Lab-IX based on MCA-353 (Elective)	0	0	5	5	2.5	60	40
MCA-355	Big Data Analysis using HADOOP	4	1	0	5	4	60	40
MCA-356	Minor Project	0	0	10	10	4.5	60	40
	Total	16	4	15	30	23	340	260

***Choice based Course-V: Any one of the following papers:**

1.	MCA-353C1 PHP (PHP Hypertext Preprocessor)	MCA-354C1 Programming Lab-IX based on MCA-353E1 and minor project
2.	MCA-353C2 Mobile Application Development using Android	MCA-354C2 Programming Lab-IX based on MCA-353E2 and minor project
3.	MCA-353C3 Advance Java	MCA-354C3 Programming Lab-IX based on MCA-353E3 and minor project
4.	MCA-353C4 Mobile Application Development using iOS	MCA-354C4 Programming Lab-IX based on MCA-353E4 and minor project

The breakup of marks for the Continuous assessment for theory paper will be as under:

i.	Two Tests will be conducted during the semester. Both the tests will be considered for assessment.	:	60% of the marks allotted for continuous assessment
ii.	Assignment/Presentations	:	20% of the marks allotted for continuous assessment
iii.	Attendance , Class Participation& behaviour	:	20% of the marks allotted for continuous assessment

The minimum number of marks required to pass the examination shall be 40% in each paper in aggregate, provided the candidates gets:

- i) Minimum 33% of the marks in the continuous assessment in each paper.
- ii) Minimum 33% of the marks in the semester examination.

MCA-351 Theory Of Computation

Maximum Marks: 100

Internal Assessment:50

External Examination:50

Minimum Pass Marks: 40%

Maximum Time: 3 Hrs.

Lectures to be delivered: 45-55

The syllabus and course learning objectives are:

1. Provide the basic knowledge to the students to understand the relationship between the automata and regular expressions.
2. To make students aware regarding the role of context free grammar, simplification of grammar and parsing.

A) Instructions for paper-setter

The question paper will consist of three units I, II and III. Unit I and II will have four questions from the each unit of the syllabus and will carry 10 marks each. Unit III will consist of questions from whole syllabus and will be of 2 marks each.

B) Instructions for candidates

1. Candidates are required to attempt two questions each from unit I and II . Unit III is compulsory.
2. Use of scientific calculator is allowed.

UNIT-I

Theory of Automata: Finite Automata, Deterministic finite Automata, Non deterministic finite Automata, Transition System, Equivalence of NFA and DFA, Finite Automata with Null-moves. 2-Way Finite Automata, Crossing sequences, Moore and Mealy Machine, Inter Conversion of Moore and Mealy Machine, Application of finite automata i.e. Lexical Analyzers, text editors.

Minimization of finite Automata, construction of minimum automation, Formal languages, **Chomsky Hierarchy of Languages:** Recursive and recursively-enumerable languages sets, Language and their relation, Languages and automata.

Regular Expression and Languages: Regular expression, Equivalence of finite Automata and Regular expressions, Conversion between regular expressions and finite automata: Application of Regular Expressions: Regular Expression in UNIX, Lexical analysis, Finding pattern in text.

UNIT-II

Regular Languages and Regular sets: Pumping lemma for regular sets, Applications of pumping lemma. Closure properties of regular language,

Context free Grammar and Languages : Context free Grammars : Derivation Trees, Leftmost and rightmost derivations, Ambiguity, Parsing techniques for parsing of general CFG's-Early's, Properties of Context free Languages- Normal forms for context free grammars,

Pushdown Automata: Pushdown Automata: Deterministic Push down Automata; Equivalence of Push Down Automata and Context free grammar. Linear Bounded Automata (LBA): Power of LBA, Closure Properties.

Turning Machine (TM): One Tape, multitape, the notions of time and space complexity in terms of T.M. Construction of simple problems. Computational complexity.

Text Books:

1. J.E. Hopcroft, R. Motwani and J.D. Ullamn, "Introduction to Automata Theory, Languages and Computation", Pearson Education Asia, 2nd Edition.
2. K.L.P Mishra and N. Chandrasekaran," Theory of Computer Science",Prentice-Hall of India Pvt.Ltd. 3rdEdition"

References:

1. Daniel I.A. Cohen, "Introduction to Computer Theory", Wiley, Second edition.
2. B. M. Moret, "The Theory of Computation", Pearson Education Asia.
3. H.R. Lewis and C.H. Papa dimitriou, "Elements of the theory of Computation", Pearson Education Asia 2nd Edition.

MCA-352 Programming with Python

Maximum Marks: 100*
Minimum Pass Marks: 40%

Maximum Time: 3 Hrs.
Practical units to be conducted: 45-55

The syllabus and course learning objectives are:

1. The contents learnt under this course will enable students to learn a new programming language which has high demand in industry.
2. Students are expected to use Dictionary, Functions in effective manner in order to create a reliable and user friendly application.

UNIT-I

Introduction to Python: Python Interpreter, Using Python as calculator, Python shell, Python IDLE, Indentation, Atoms, Identifiers and keywords, Literals.

Operators: Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment and Decrement operator

Creating Python Programs: Input and Output Statements, Control statements (Branching, Looping, Conditional Statement, Exit function, Difference between break, continue and pass.),

Strings and Lists: String as a compound data type, Length, Traversal and the for loop, String slices, String comparison, A find function, Looping and counting, List values, Accessing elements, List length, List membership, Lists and for loops, List operations, List deletion. Cloning lists, Nested lists.

UNIT-II

Tuples and Dictionary: Update and delete tuples, basic tuples operation, indexing and slicing tuples, Update and delete dictionary, properties of dictionary keys.

Functions: arguments, parameter pass by reference, default arguments, variable length arguments, return argument, scope of variables, Recursion, Stack diagrams for recursive functions, Anonymous function

Object Oriented Programming: Introduction to Classes, Objects and Methods, Standard Libraries.

Exceptions: Handling an exception, except Clause use, try-finally Clause use, Raising an Exception

*The splitting of marks is as under

- Maximum Marks for Continuous Assessment : 60
- Maximum Marks for External(Practical) Examination : 40

References :

1. T. Budd, Exploring Python, TMH, 1st Ed, 2011
2. How to think like a computer scientist : learning with Python / Allen Downey, Jeffrey Elkner, Chris Meyers. 1st Edition – Freely available online.
 1. <http://docs.python.org/3/tutorial/index.html>
 2. <http://interactivepython.org/courselib/static/pythonds>

MCA-353C1 PHP (PHP Hypertext Preprocessor)

Maximum Marks: 100

Maximum Time: 3 Hrs.

Internal Assessment:50

External Examination:50

Minimum Pass Marks: 40%

Lectures to be delivered: 45-55

The syllabus and course learning objectives are:

1. Students will be able to create Web applications and web sites after completing this course.
2. Students will learn to handle Relational database using queries embedded in PHP functions.

A) Instructions for paper-setter

The question paper will consist of three units I, II and III. Unit I and II will have four questions from the each unit of the syllabus and will carry 10 marks each. Unit III will consist of questions from whole syllabus and will be of 2 marks each.

B) Instructions for candidates

1. Candidates are required to attempt two questions each from unit I and II . Unit III is compulsory.
2. Use of scientific calculator is allowed.

UNIT-I

Introduction to PHP for Web Development & Web Applications, History& Future Scope of PHP

Installation of tools for working in PHP like XAMPP, LAMP, WAMP for PHP Apache & MySQL.

Introduction to Language constructs : Variables, constants, Data types, Comments

Outputting Data to the Browser: print(), echo(), printf(), sprintf()

Arrays: Introduction to Array, use of array, Numeric Array, Associative Array, Multi-Dimensional Array

PHP Functions: User Defining functions, Passing parameter & return value.

Built-in Functions: Math functions, String functions, Array Functions.

Date & time functions, Date formats, Include, Require.

Strings and Regular Expressions: Regular Expression Syntax (POSIX), Brackets, Quantifiers, Predefined Character Ranges

Form Handling:Creating Forms using HTML, GET/POST/REQUEST.

State Management:Using Session and Cookies.

Object-Oriented PHP: Classes, Objects, Constructor & Destructor, Access Specifier, Inheritance, Overloading.

UNIT-II

Introduction of phpMyAdmin(Mysqli) , types of server used for mysql.

Database queries – insert, select, update, delete, alter table, Primary Key, Foreign Key.

Select query with where, Having, Group by, Order by, like, in, not in, between, joins.

Connection – mysqli_connect, mysqli_select_db.

Queries – mysqli_query, mysqli_fetch_array , mysqli_fetch_assoc , mysqli_fetch_row , mysqli_fetch_object, mysqli_insert_id()

PHP Advance: Uploading files to server, Sending Email/ Email Script.

AJAX: Introduction to AJAX, AJAX Model, Implementation of Ajax.

PHP Framework: Introduction to PHP Framework, Types of Frameworks, Difference Between CMS and MVC.

WordPress: Introduction to wordpress, Use and Benefits of Wordpress, Installing Wordpress, WordPress Administration Dashboard & Bar.

Wordpress Setting: General Setting, Writing Setting, Reading Setting, Discussion Settings, Media Settings, Privacy Settings, Permalinks.

Pages and Posts: Difference Between Pages and Posts, Creating Posts, Creating Pages, Creating Child Pages.

Textbooks:

1. PHP and MYSQL web development (5th Edition) by Luke Welling & Laura Thomson.
2. PHP for Beginners by Ivan Bross.

Reference Books:

- 1.PHP: The Complete Reference by Steven Holzner
2. PHP Pocket Reference by PHP Pocket Reference.
3. PHP- MySQL Development by Laura Thomson and Luke Welling
4. Head First PHP and MySQL byBeighley

MCA-353C2 Mobile Application Development Using Android

Maximum Marks: 100

Maximum Time: 3 Hrs.

Internal Assessment:50

External Examination:50

Minimum Pass Marks: 40%

Lectures to be delivered: 45-55

The syllabus and course learning objectives are:

1. Students will be able to create Android based Mobile applications like camera, telephony apps.
2. Students will learn to handle SQLite database using Android and will also be able to create and use web services for handling remote databases.

A) Instructions for paper-setter

The question paper will consist of three units I, II and III. Unit I and II will have four questions from the each unit of the syllabus and will carry 10 marks each. Unit III will consist of questions from whole syllabus and will be of 2 marks each.

B) Instructions for candidates

1. Candidates are required to attempt two questions each from unit I and II . Unit III is compulsory.
2. Use of scientific calculator is allowed.

UNIT-I

Working with IDE: Introduction to Android Studio

Introduction To Mobile Application Development: Different Kinds of Mobile Applications and their needs
History of Mobile Applications and Its Features, Architecture of Android and IOS, Comparison of Android and IOS, Overview of Android Stack

Activity handling: Activity lifecycle, Communicating data among activities, The manifest file

Intents: Implicit and Explicit intents

Building UI: Views, layouts: Absolute layout, relative layout, linear layout, table layout

Advanced UI: Selection components (GridView, ListView), Adapters, Custom Adapters, Images and Media, Time and Date, Menus: Context menu and option menu

Notifications: Toast, Dialogs, Status bar Notifications

Styles And Themes: Creating and Applying simple Style

Multimedia in Android: Playing Video & Audio

Camera: Taking pictures, Media Recorder

UNIT-II

Telephony Services: Making calls, alarms, Sending messages

Networking: WiFi Connectivity, Bluetooth, GPS

Receiving System Broadcast: Understanding Broadcast action, category and data, Registering Broadcast receiver through code and through XML, Receiving Broadcast

Services: Overview of services in Android, Implementing a Service, Service lifecycle.

Data Storage: Shared Preferences, Internal storage, External storage

SQLite: Introducing SQLite, creating a database, Opening and closing a database, Working with Inserts, updates & deletes.

Content Provider: introduction to content providers, accessing built in content providers

Textbooks:

1. Android in Action 3rd Edition by W.Frank Ableson .Manning Publications.
2. Android 4 Application Development. By Reto Meier .Wrox Publications.

References:

1. Hello, Android. 3rd Edition. By Ed Burnette.PragemeticBookshell Publications.
2. IOS 8 App Development Essentials - Second Edition by Neil Smith.Kindle Edition

MCA-353C3 Advance Java

Maximum Marks: 100

Internal Assessment:50

External Examination:50

Minimum Pass Marks: 40%

Maximum Time: 3 Hrs.

Lectures to be delivered: 45-55

The syllabus and course learning objectives are:

1. Students will be able to create Web applications in java after learning this course.
2. Students will learn to handle database using java.
3. Students are expected to become able to create Web Services using java.

A) Instructions for paper-setter

The question paper will consist of three units I, II and III. Unit I and II will have four questions from the each unit of the syllabus and will carry 10 marks each. Unit III will consist of questions from whole syllabus and will be of 2 marks each.

B) Instructions for candidates

1. Candidates are required to attempt two questions each from unit I and II . Unit III is compulsory.
2. Use of scientific calculator is allowed.

UNIT-I

Working with IDE: Introduction to Netbeans IDE.

Working with Servers: Apache Tomcat, Glassfish Server.

Core Java: Collection framework and its benefits. JavaBeans:Getter and Setter in java beans .JDBC: JDBC architecture, making connection, JDBC-ODBC bridge driver, Prepared Statements.

Introduction to JavaEE: The Need for JavaEE, Overview on the JavaEE Architecture, 1 tier, 2 tier, 3 tier, N tier, MVC Architecture.

SERVLETS: Servlet Overview, Life cycle of Servlet, GenericServlet, HttpServlet, working of servlets, Handling Client HTTP Request & Server HTTP Response.Servlet Collaboration: RequestDispatcher, sendRedirect. Session Tracking: Cookies, Hidden Form Field, URL Rewriting, HttpSession.

UNIT-II

Filter: Introduction to Filter, Authentication Filter.

JSP: Life cycle of JSP, JSP architecture. Scripting elements in jsp: scriptlet tag, expression tag, declaration tag. Implicit Objects in jsp-out, request, response, application, session, page.

Directive Elements in jsp: page directive, include directive, taglib directive. Action Elements in jsp jsp:forward , jsp:include, jsp:useBean, jsp:setProperty, jsp:getProperty

JSTL :Introduction to Custom Tag, Custom Tag API, Attributes.

JavaMailAPI: Sending Email, Sending email through Gmail server, Receiving Email.

FRAMEWORKS- Struts: Struts Architecture, Struts Components, Validation Framework, Error Handling, Data Base Connectivity.

Hibernate: Introduction to Hibernate, Hibernate Architecture and Configuration.

Textbooks:

1. The Complete reference java 7th Edition by Herbert Schildt..Mc Graw Hill
2. Introduction to java Programming:Comprehensive Version 8th Edition by Y.Daniel Liang. Pearson Publications

References:

1. Advanced java 2 Platform How to Program by Harvey M.Deitel.Prentice Hall Publications.
2. Java Server Pages. By Hans Bergsten.O'reilly& Associates Publications

MCA-353C4 Mobile Application Development Using IOS

Maximum Marks: 100

Maximum Time: 3 Hrs.

Internal Assessment:50

External Examination:50

Minimum Pass Marks: 40%

Lectures to be delivered: 45-55

The syllabus and course learning objectives are:

1. Students will be able to create Mobile applications for iOS platform.
2. Students will learn to handle SQLite database using objective C.
3. Students will also learn to handle remote database using different parsing techniques.

A) Instructions for paper-setter

The question paper will consist of three units I, II and III. Unit I and II will have four questions from the each unit of the syllabus and will carry 10 marks each. Unit III will consist of questions from whole syllabus and will be of 2 marks each.

B) Instructions for candidates

1. Candidates are required to attempt two questions each from unit I and II . Unit III is compulsory.
2. Use of scientific calculator is allowed.

UNIT-I

Introduction To Mobile Application Development: Different Kinds of Mobile Applications and their needs
History of Mobile Applications and Its Features, Architecture of Android and IOS, Comparison of Android and IOS,
iOS environment Setup: iOS – Xcode Installation, Interface Builder , iOS Simulator. Basics of Objective- C:
Interface and Implementation, Object Creation, Methods, Important Data Types in Objective C.
Printing Logs, Control Structures, Properties, Categories, functions, mutable arrays, immutable Arrays , mutable
Dictionary, immutable Dictionary. Creating iOS applications: Introduction with iOS application, main.m,
AppDelegate.h, AppDelegate.m,
Interface Builders: Main.storyboard. XIB.
UIViewControllers classes: NSObject, UIViewController, UIScrollView, UICollectionViewController,
UITableViewController, UIWebViewController.

UNIT-II

Actions and Outlets: Steps involved in creating actions, outlets Delegates, and data sources. UI Elements: Adding UI
Elements, Text Fields, Buttons, Label, Toolbar, Status Bar, Navigation Bar, Tab Bar, Image View, Split View, Text
View, View Transition, Pickers, Switches, Sliders, Alerts view.

Camera Management: Accessing camera for taking pictures and image views, Navigation Controller, File Handling:
Reading and writing, removing, moving and copying files, SQLite and Core Data Database: working with
DBManager. **Data Parsing:** JSON and XML parsing.

Textbooks:

1. iOS 8 App Development Essentials - Second Edition by Neil Smith. Kindle Edition

References:

1. iOS Programming with Swift by Michael Dippery.
2. Programming iOS 9 by Matt Neuburg.

**MCA-354C1 Programming Lab-IX
(BASED ON MCA-353C1-PHP)**

Maximum Marks: 100*
Minimum Pass Marks: 40%

Maximum Time: 3 Hrs.
Practical units to be conducted: 45-55

The syllabus and course learning objectives are:

1. Students will be able to create Web applications and web sites after completing this course.
2. Students will learn to handle Relational database using queries embedded in PHP functions.

This laboratory course will mainly comprise of exercises on what is learnt under the paper MCA-353E1-PHP.

*The splitting of marks is as under

- Maximum Marks for Continuous Assessment : 60
- Maximum Marks for University Examination : 40

**MCA-354C2 Programming Lab-IX
(BASED ON MCA-353C2-Mobile Application Development Using Android)**

Maximum Marks: 100*
Minimum Pass Marks: 40%

Maximum Time: 3 Hrs.
Practical units to be conducted: 45-55

The syllabus and course learning objectives are:

1. Students will be able to create Android based Mobile applications like camera, telephony apps.
2. Students will learn to handle SQLite database using Android and will also be able to create and use web services for handling remote databases.

This laboratory course will mainly comprise of exercises on what is learnt under the paper MCA-353E2-MOBILE APPLICATION DEVELOPMENT USING ANDROID.

*The splitting of marks is as under

- Maximum Marks for Continuous Assessment : 60
- Maximum Marks for University Examination : 40

**MCA-354C3 Programming Lab-IX
(BASED ON MCA-353C3 –Advance Java)**

Maximum Marks: 100*
Minimum Pass Marks: 40%

Maximum Time: 3 Hrs.
Practical units to be conducted: 45-55

The syllabus and course learning objectives are:

1. Students will be able to create Web applications in java after learning this course.
2. Students will learn to handle database using java.
3. Students are expected to become able to create Web Services using java.

This laboratory course will mainly comprise of exercises on what is learnt under the paper MCA-353E3-
ADVANCE JAVA.

*The splitting of marks is as under

- Maximum Marks for Continuous Assessment : 60
- Maximum Marks for University Examination : 40

**MCA-354C4 Programming Lab-IX
(BASED ON MCA-353C4-Mobile Application Development Using iOS)**

Maximum Marks: 100*
Minimum Pass Marks: 40%

Maximum Time: 3 Hrs.
Practical units to be conducted: 45-55

The syllabus and course learning objectives are:

1. Students will be able to create Mobile applications for iOS platform.
2. Students will learn to handle SQLite database using objective C.
3. Students will also learn to handle remote database using different parsing techniques.

This laboratory course will mainly comprise of exercises on what is learnt under the paper MCA-353E4-MOBILE APPLICATION DEVELOPMENT USING iOS.

*The splitting of marks is as under

- Maximum Marks for Continuous Assessment : 60
- Maximum Marks for University Examination : 40

MCA-355 Big Data Analysis using HADOOP

Maximum Marks: 100*
Minimum Pass Marks: 40%

Maximum Time: 3 Hrs.
Practical units to be conducted: 45-55

The syllabus and course learning objectives are:

1. This workshop will enable the students to manage very large amount of data in a database effectively.
2. Students will learn to store and retrieve data on distributed computers in a network.

UNIT-I

Introduction to Big Data: Rise of Big Data, Current vs Traditional Scenario, Why it is in a place, How to deal with

Introduction to Hadoop: What is Hadoop, Core components of Hadoop, Hadoop Master-Slave Architecture, Learning about NameNode, DataNode, Secondary Node, Understanding HDFS Architecture, Understanding MapReduce Architecture, JobTracker and TaskTracker

Hadoop Configuration: Installation of Hadoop, Hadoop Modes, Configuration of Hadoop Files, Architecture of Clusters, Cluster Configuration, Setup of Nodes, Hadoop Terminal Commands

HDFS: Introduction to HDFS, Configuration of HDFS, HDFS read/write operation, Replication to multiple nodes, HDFS Admin configuration

MapReduce: Introduction to MapReduce, Data Flow in MapReduce, Configuration of the MapReduce, Process of Job Tracker & Task Tracker, Anatomy of MapReduce Program, MapReduce internals, Understanding Input Format, Understanding Output Format, Mapper/Reducer Class, Driver code, Understand Combiner and Partitioner, Writing Map and Reduce in Java, Joining Multiple datasets in MapReduce

UNIT-II

Pig: Introduction to Pig, PIG vs MapReduce, Installation & Configuration, PIG Architecture & Data types, PIG Latin Relational Operators, PIG Latin Join and CoGroup, Pig Data Types & Model

Hive: Introduction to Hive, Hive Installation & configuration, Hive Architecture & Components, Difference between Hive and RDBMS, Hive Data types & model, Hive QL, Create/Show Database, Create/Show/Drop Tables, Load Files & Insert Data, Select, Filter, Join, Group By, Data Manipulation and Queries

Sqoop: Intro to Sqoop, Installation & Configuration, How Sqoop works, Sqoop Architecture

*The splitting of marks is as under

- Maximum Marks for Continuous Assessment : 60
- Maximum Marks for External(Practical) Examination : 40

MCA-356 Minor Project

Maximum Marks: 100*
Minimum Pass Marks: 40%

Maximum Time: 3 Hrs.
Practical units to be conducted: 45-55

For the minor projects a team of maximum size three will be allowed and the team will submit joint project report. The student team members must highlight their role and/or contributions in the joint project report.

The course learning objectives are:

1. Students will create an application (either web or mobile) in a technology learnt under Elective subjects.
2. To enable students to plan, manage and create project that support organization's or an individual's strategic goals.
3. The objective is to give an experience for creating minor applications that can be used in real life.

*The splitting of marks is as under

- Maximum Marks for Continuous Assessment : 60**
- Maximum Marks for University Examination : 40**

**** For Semester Examination the evaluator will distribute the marks for the minor project work according to the following guidelines:**

Demonstration of Project	50% of the marks allotted for University Examination
Presentation and Viva Voce	25% of the marks allotted for University Examination
Project Report Document	15% of the marks allotted for University Examination
Source Code	10% of the marks allotted for University Examination.

MATA GUJRI COLLEGE, SRI FATEHGARH SAHIB

(An Autonomous College)

SYLLABUS**MASTER OF COMPUTER APPLICATIONS****OUTLINE OF PAPERS AND TESTS****MCA -III (SIXTH SEMESTER) EXAMINATIONS****Session 2018-19**

CODE	TITLE OF PAPER	MAXIMUM MARKS			
		Semester Examination	Continuous Assessment	Total Marks	Credits
MCA-361	PROJECT	200	200	400	27

MCA-361 Project in a Computer Organisation/University Computer Centre/Dept. of Computer Science, etc., as decided by the Head of the Department

To be carried out under the supervision of official of industry/company where he/she is doing the project. Evaluation and viva-voce is to be done on the completion of Project.

Final Project Viva: 200 Marks

- The evaluation committee will distribute these marks for seminar/viva/project report and for any other activity, which the committee thinks to be proper.
- Joint projects will be allowed (maximum two students) but student should submit separate project report that should highlight their contributions/module in the project.

Committee for Evaluation of project report/work:

- Head of the Department
- Internal Guide (if any)
- One or two nominee(s) of Dean, Academic Affairs
- External Examiner

Quorum will be of any three members.