Solapur University, Solapur
B.Sc. Part-III (Entire Computer Science)
Semester pattern Syllabus
w. e. f. June-2015
Semester-V

Paper Code	Paper Name	Theory/ Practical	Marks
ECS501	Data communication and networking-I	Theory	50
ECS502	Database Management System-I	Theory	50
ECS503	Core Java	Theory	50
ECS504	Theory of Computer Science	Theory	50
ECS505	Web Technology and E-Commerce-I	Theory	50
ECS506	Visual Programming and Application Software - I	Theory	50
Lab VIII	Based on paper ECS503, ECS506, ECS603 and ECS606	Practical	-
Lab IX	Based on paper ECS502,ECS505, ECS602 and ECS605	Practical	-
Lab X	Project Work	Practical	-

Semester-VI

Paper Code	Paper Name	Theory/ Practical	Marks
ECS601	Data communication & networking-II	Theory	50
ECS602	Database Management System-II	Theory	50
ECS603	Advanced Java	Theory	50
ECS604	Compiler Construction	Theory	50
ECS605	Web Technology and E-Commerce-II	Theory	50
ECS606	Visual Programming and Application Software-II	Theory	50
Lab VIII	Based on paper ECS503, ECS506, ECS603 and ECS606	Practical	100
Lab IX	Based on paper ECS502,ECS505, ECS602 and ECS605	Practical	100
Lab X	Project Work	Practical	100

Paper- ECS501
Data Communication and Networking - I

Unit 1. Introduction to Data Communication & Networking (6)

Data Communication: Internet: History of Internet, The ARPANET, NSFNET, Internet usage Architecture of the internet, Components, Data Representation, Data Flow, Communication Model.

Computer Network: Introduction of Network, Uses of a computer network, Network Criteria, Network Topologies, Types of Networks, Inter-networking, Applications of Internet.

Unit 2. Network Models (6)

Protocols & Standards, Protocol Hierarchies, Design Issues of Layers, Services Primitives, Connection oriented and connection less services Reference Model: ISO-OSI reference model, TCP/IP reference model.

Unit 3. Physical layer (14)

Signals: Analog & Digital Signals, Period, Frequency, Phase, Amplitude, Bandwidth, Bit Rate, Bit Length, Fourier analysis. Transmission Impairment: Attenuation, Distortion, Noise, Nyquiest Theorem, Shannon Capacity Theorem. Transmission Media: Guided Media-Magnetic Media, Twisted Pair, Coaxial Cable, Fiber Optic Cable, Unguided Media- Wireless-Radio Waves, Microwaves, Infrared, Satellite Communication

Analog Transmission: Modem, Telephone System, RS232C, Modulation - Amplitude Modulation, Frequency Modulation, Phase Modulation

Digital Transmission: Pulse Code Modulation, Manchester & Differential Manchester Coding. Transmission Mode: Parallel, Serial, Synchronous Transmission, Asynchronous Transmission. Multiplexing- Frequency Division Multiplexing, Time Division Multiplexing, Wavelength Division Multiplexing. Switching- Circuit Switching, Message Switching, Packet Switching.

Unit 4. Data link layer (10)

Data link layer Design issues,

Error Detection & Correction: Types of Errors, Hamming Distance, Error Detection: Parity Check, Cyclic Redundancy Check, Checksum Check

Error correction, Data Link Control: Framing, Flow & Error Control, Protocols: Simplex, Stop and Wait, Stop and Wait ARQ, Go Back N ARQ, Selective repeat ARQ. Multiple Access Protocol: ALOHA, CSMA, CSMA/CD, CSMA/CA Channelization, FDMA, TDMA, CDMA

Unit 5. Network layer (8)

Network layer Design issues, Routing Algorithm: Optimality Principle, Shortest Path Routing, Distance Vector Routing, Link State Routing, Broadcast Routing, Multicast Routing

Congestion Control Algorithm: General principle of congestion control, Congestion prevention policies, Congestion Control in Virtual-Circuit Subnets, Congestion Control in Datagram Subnets

Reference Books:
1. Computer Networking by Tannenbaum.
2. Data communication and networking by William Stallings
3. Data communication and networking by B A Forouzan
4. Data communication and networking by Jain

Paper- ECS502
Database Management System-I
Unit 1: Introduction to database system (6)

Definition, Limitations of traditional file system, Advantages of DBMS
Components of DBMS, Database Architecture, Database Users

Unit 2: Data Models (8)

Schemas and instances, 2 tier and 3 tier architecture, Database languages, Types of data models- Network, Hierarchical, E-R model: E-R Diagram, entities, attributes and its types, Relationship and relationship sets, Cardinality, Degree, Generalization, Specialization, Aggregation

Unit 3: Relational Model and Database design (10)

Relation, Domain, Tuples, types of keys, relational integrity rules, Codd's rules, Relational Algebra operations:- Select, Project, Cartesian Product, Union, Set difference, Natural Join, Outer Join, dependencies and its types, Normalization and its types-1NF,2NF,3NF,BCNF, lossless joins, Data dictionary.

Unit 4: SQL-   Relational database language (12)

Simple Queries, Expressions, Conditions and Operators, Functions, Group by having, Where clause, Joins, Sub queries, Views, indexes, sequences.

Unit 5: Data Storage and File Organization (8)

Storage Devices, File organization, Operations on File, Primary Key Retrieval, Indexing and method of indexing, Hashing.

Reference Books:
1) Database System Concepts By Korth Silberschetz
2) Fundamentals of Database Systems by Elmsari, Navathe
3) Teach Yourself SQL in 14 Days by Jeff Parkins and Bryan Morgan
4) Client Server Computing for Dummies
5) An Introduction to Database Systems by Bipin Desai

Paper ECS503
Core JAVA

Unit 1. Features of Java **[4]**
Object Oriented Concepts, Platform Independencies, Secure over C++, Introduction to Java Environment

Unit 2. Language Fundamentals **[4]**
Writing a simple Java program, Class concept and modularity, Data members, methods, constructor syntax, The "this" References, Static and non static data members and methods, Static block, Parameter passing in Java, Array, Garbage collection, Scope specifier's public, private and package

Unit 3. Inheritance **[6]**
Super, Access/Scope specifiers protected, Method overriding, Abstract keyword, Final keyword, Object class and methods in Object class

Unit 4. Interfaces **[4]**
Comparison with inheritance, Interfaces and runtime polymorphism, Wrapper classes

Unit 5. Exception handling **[4]**
Try catch finally-flow, Throw and throws keywords, User defined exceptions

Unit 6. Multithreading **[6]**
Concept, Life cycle of a thread, Thread class, Runnable interface, Methods in thread class-sleep, interrupt, join, priority etc., Sharing data, Synchronization, Usage of wait and notify()

Unit 7. IO programming **[6]**
Concept, Binary and text IO, IO streams and Reader / Writers, Console I/O, Data input and data Output usage
File I/O, Object Stream and Serializable interface

Unit 8. Event Handling: **[10]**
Event Model, Event Classes, Event Listener Interfaces, Adapter and Inner Classes, Working with windows, graphics and text, using AWT controls, Layout managers and menus, handling Image, animation, sound and video, Java Applet.

Unit 9. Networking: **[4]**
Basics, networking classes and interfaces, using java.net package, doing TCP/IP and Datagram Programming.

Reference Books
1) "Java-2 the complete Reference" by Patrick Naughton and Herbertz Schidt.
2) "Programming with Java" by E Balaguruswamy.
3) Horstmann, "Computing Concepts with Java 2 Essentials", John Wiley.
4) Decker & Hirshfield, "Programming.Java", Vikas Publication.

Paper ECS504
Theory of computer science

Unit 1. Preliminaries [02]

Basic Definitions, Sets, Various ways of describing a Set, Subsets, operations on Sets, Infinite Sets Relations, Properties of relations, Equivalence of relations

Unit 2. Finite Automata [12]

Introduction, Deterministic Finite Automata, Non Deterministic Finite Automata, The Equivalence of DFA's and NFA's, Finite Automata with €-Moves, Equivalence of NFA with € Transitions and NFA without € Transitions, Finite Automata with output , Moore Machine, Melay Machine, Equivalence of Moore and Melay Machine

Unit 3. Regular Expression and Properties of Regular Sets [12]

Regular Expression

Operations on set of strings, Regular Expression, Regular Sets, Equivalence of finite automata and regular expression

Properties of Regular Sets

Closure properties, The pumping lemma of regular sets, Application of pumping lemma.

Unit 4. Regular and Context Free Grammars [08]

Context Free Grammars (CFG)

Derivation and Language generated by grammar, Derivation Trees, Ambiguity of CFG, Simplification of CFG, Normal forms of CFG

Regular Grammars

Equivalence of regular grammars and finite automata

Closure properties of CFG

Unit 5. Pushdown Automata [06]

Introduction, Definitions, Equivalence of acceptance by final state and empty stack, Definition of DPDA and NPDA their correlation and examples of NPDA,CFG(in GNF) to PDA: Method and example, Closure properties of Regular language, Application of PDA

Unit 6. Introduction of Turing Machine [04]

Turing Machine model and definition of TM, Language accepted by TM, Design of TM and examples

Reference books:

1) J.P. Hopcroft, Rajeev Motwani, J.D. Ullman, Introduction to Automata Theory, Languages and Computation, II Edition, Pearson Education, 2001.
2) John Martin, Introduction to Languages and Theory of Computation, Tata McGraw Hill, 2003.
3) Daniel I.A., Cohen, Introduction to Computer Theory, 2 nd Edition, John Wiley and Sons, Inc, 2000.

Paper ECS505-
Web Technology and E-Commerce-I

Unit 1: Introduction to ASP.Net **(6)**

Introduction & diff. between ASP & ASP.Net 1.1 & 2.0 Application, Web Architecture Model, Introduction to Visual Studio for Web Application

Unit 2: Application and Page Frameworks **(10)**

Application Location Options-Built-In Web Server, IIS, FTP, Web Site Requiring FrontPage Extensions.

The ASP.NET Page Life Cycle, the ASP.NET Page Structure Options- Inline Coding, New Code-Behind Pages.

ASP.NET 2.0 Page Directives-@Page, @Master, @Control, @Import, @Implements, @Register, @Assembly, @PreviousPageType, @MasterType, @OutputCache, @Reference.

ASP.NET Page Events, Dealing with PostBacks-Cross-Page Posting, ASP.NET Application Folders- \App_Code Folder, \App_Data Folder, \App_Themes Folder, \App_GlobalResourcesFolder,\App_LocalResources, \App_WebReferences, \App_Browsers, Compilation, Global.asax.

Unit 3: ASP.NET Server Controls and Validation Controls **(8)**

ASP.Net Server Controls, Understanding Validation, Client-Side versus Server-Side Validation,ASP.NET Validation Server Controls- Validation Causes, The RequiredFieldValidator Server Control, The CompareValidator Server Control, The RangeValidator Server Control, The RegularExpressionValidator Server Control, The CustomValidator Server Control, The ValidationSummary Server Control.

Turning off Client-Side Validation, Using Images and Sounds for Error Notifications, Working with Validation Groups

Unit 4: Introduction to electronic commerce **[8]**

Electronic commerce- The scope of electronic commerce ,definition of electronic commerce, Electronic commerce and the trade cycle, electronic markets, electronic data interchange, internet commerce, e-Commerce Perspectives.

Unit 5: Business strategies in an electronic Age. **[12]**

The Value chain-Supply Chains, Porter's Value chain Model, Intel Organizational value chains.

Competitive Advantages-Competitive Strategies, Porter's Model, First Mover Advantages, Sustainable Competitive Advantages using e-Commerce.

Business strategy-Introduction to business strategy, Strategic Implication of IT-Technology, Business Environment, Business capability, Exiting business strategy, Strategy formulation and Implementation planning, E-Commerce Implementation, E-Commerce Evaluation.

Case Study: e-Commerce in Passengers air Transport- Airline Booking system, Booking system.

Reference books:
1. Professional ASP.NET 2.0 – Wrox Publication by Bill Evjen, Scott Hanselman, Farhan Muhammed, Sirnivasa Sivakumar, Devin Rader.
2. E-Commerce by David Whitley Tata McGraw-Hill
3. Microsoft ASP.NET 2.0 Step by Step - Microsoft Press By George Shepherd.

Paper ECS506
Visual Programming and Application Software – I

Unit 1: .NET Architecture (6)

Block diagram of .net framework, The Common Language Runtime, Advantages of Managed Code, A Closer Look at Intermediate Language & Assemblies-Support for Object Orientation and Interfaces, Distinct Value and Reference Types, Strong Data Typing, Garbage Collection

Unit 2: C# Basics (8)

Compiling and Running the Program, Variables, Data Types, Flow Control, Enumerations, Namespaces-The using Statement, Namespace Aliases, The Main() Method-Multiple Main() Methods, defining & using functions & its scope, Passing Arguments to Main(), Parameter passing technique.

Unit 3: Objects and Types (6)

Classes and Structs, Class Members- Data Members, Function Members read-only Fields, properties and indexer, The Object Class-System, Object Methods, The ToString() Method

Unit 4: Inheritance and Polymorphism (8)

Introduction-Types of Inheritance, Implementation Inheritance- Abstract Classes and Functions, Sealed Classes and Functions, Constructors and its types, Destructor, Interfaces-Defining and Implementing Interfaces, Derived Interfaces, Polymorphism - Method overloading, Operator overloading.

Unit 5: Exception Handling (4)

Try, catch, and throw, finally, Nested try, Custom exception

Unit 6: Threading (4)

Introduction- Applications with Multiple Threads, Thread Priorities, Synchronization, Life Cycle.

Unit 7:File I/O and Streams (4)

Stream Classes, Console I/O, File Stream and Byte-Oriented File I/O, Character based File I/O.

Unit 8: Reflection (4)

Custom attributes-writing custom attributes, Refection-System.Type Class, Assembly Class

Reference books:
1. Professional C# – Wrox Publication by Simon Robinson, Christain Nagel, Karli Watson, Jay Glynn, Morgan Skinner, Bill Evjen.
2. Inside C# - Microsoft Press by Tom Archer, Andrew Whitechapel.
3. Programming Microsoft Visual C# 2005 - The Language (Microsoft Press) by Donis Marshall

Paper ECS601-
Data Communication and Networking - II

Unit 1: Transport, Session, Presentation & Application layers (10)
Elements of Transport Protocols-Addressing, Connection establishment, Connection Release, Flow Control & Buffering, TCP/IP protocol suite-Transmission Control Protocol, User Datagram Protocol, IP, Real Time Transport Protocol, FTP, DNS, TelNet, SMTP, POP, HTTP, WWW, SNMP, ARP, RARP etc., Data Compression-Audio Compression, Video Compression

Unit 2. Network Security (10)
Introduction about Network security, Security Techniques- Encryption & decryption, Digital Signatures, Cryptography, Firewall
Security Services, Authentication Mechanisms– Passwords, Smart Card, Biometrics.

Unit 3. Network Devices & Services (10)
Network Devices-Hubs, Switches, Repeaters, Bridges, Routers, Gateways
Network Services-VPN, Virtual LAN, Wi-Fi Network, Remote Sensing, GPS
GPRS, GSM, Bluetooth, Video Conferencing.

Unit 4. Web Security (8)
SSL Encryption, TLS, SET, E-mail Security, PGPs / MIME, IP Security,

Unit 5. CASE study: Linux (6)
Installing client & server, Roles & responsibility of Network Administrator
Server Management-Login Script, Ftp Server, News & search server, Web Server, Samba Server, Mail Server, Proxy Server, Print Server, User & group management

References Books :
1. Computer Networking by Tannenbaum.
2. Network Security Essentials by William Stallings
3. Dorothy E. Denning, "Cryptography and Data Security", Addison-Wesley
4. Data communication and networking by William Stallings
5. Complete Reference Red Hat Enterprise Linux & Fedora Edition by Petersen Haddan

Paper ECS602
Database Management System-II

Unit 1 : Transaction Management   (10)

    Introduction, properties, transaction states, scheduling, conflict and view serializability, three problems of concurrency control.

Unit 2 : Concurrency Control   (10)

    Introduction, log based protocols, timestamp based protocol, deadlock, deadlock handling, failure classification.

Unit 3 : Database recovery and Atomicity   (12)

    Introduction, recovery algorithms, log base recovery, shadow paging, recovery with concurrent transaction, checkpoints or syncpoints or savepoints

Unit 4 : PL/SQL   (12)

    Blocks, Conditional statement and loops, Cursors and types, procedures and functions, packages, trigger, Exception Handling.

Reference Books:
1) Database System Concepts By Korth Silberschetz
2) SQL and PL/SQL Programming by Ivan Bayross
3) Fundamentals of Database Systems by Elmsari, Navathe
4) Teach Yourself SQL in 14 Days by Jeff Parkins and Bryan Morgan
5) Client Server Computing for Dummies
6) An Introduction to Database Systems by Bipin Desai

Paper ECS603
Advanced Java

Unit 1 Event handling (4)

Event handling mechanism, Event delegation model, Event classes
Event listener interfaces, Adapter classes

Unit 2 Introduction to Swing Technology (4)

JApplet, JFrame and JComponent, Icons and Labels, Handling Threading issues, Text fields, Buttons - The JButton class, Check Boxes, Radio buttons, Combo boxes, Tabbed panes, Scroll panes, Tree, Table.

Unit 3. Working with databases: (6)

Connecting to databases, Driver types, Handling Exceptions, Creating and Using Statement Objects, Using Statements to Insert, Update, Delete Data into a Database, Using the ResultSet Class, Data navigation, Prepared Statements, Callable Statements

Unit 4. Servlets (8)

HTTP and Server Programs, Request Methods, The Servlets Model and HTTPServlets- Basic Servlet Design, A Servlet That Responds to POST Requests, The Request Object, The Response Object, Deployment Descriptors, Servlet Lifecycle, Event Logging in Servlets, Multithreading in Servlets, Session Management- Creating and Using Session, Using Cookies in Place of Sessions, Filter- Implementing the Filter Interface, Modifying the Deployment Descriptor to Use a Filter, The MVC Architecture

Unit 5. JavaServer Pages (10)

Introduction to JSP- JSP Development, Basic JSP Lifecycle, JSP Elements, Creating and Deploying a JSP Web Application, Using Implicit Objects- The Request Object, The Response Object, The Out Object-The Session Object, The config Object, The Exception Object, The Application Object, Using Standard Actions and Implicit Objects in JSP Pages, Translation and Compilation, Handling Error and Exceptions-Dealing with Exceptions through the Page Directive, Dealing with Exceptions in the Deployment Descriptor, Adding Exception Handling in JSP Pages, Including and Forwarding from JSP Pages- Expression Language, Custom Actions and Tag Handlers
JSP Standard Tag Library (JSTL)

Unit 6. EJB Fundamentals and Session Beans (12)

Understanding EJBs, The Three kinds of EJBs, The Anatomy of a session Bean, Developing Session Beans, How entity Beans works with Session Beans, The Anatomy of an Entity Bean, The Entity Bean Class, Container-Managed Persistence, The entity manager Interface-Primary keys, Bean Manage Persistence, Developing CMP Entity Beans, Developing BMP Entity Beans, The EJB Query Language, EJB SQL Queries, Building and Deploying the EJB QL Queries Application, Running the EJB QL Queries Application, Reviewing the Session Bean Find Methods.

References
1. Java The complete Reference by Herbert Schildt
2. Java Servlet Programming by Jasan Hunter
3. Beginning Java EE5 from Novice to Professionals by K. Makhar & C. Zelenk
4. Java Server Programming by Bayross & Shah
5. Thinking in java by Brucel

Paper ECS604

Compiler Construction

Unit 1. Introduction to compiling [04]

Compiler ,self compiler, cross compiler, boot strapping , phases of compiler, compiler construction tools , a simple one pass ,two pass and multi pass compiler, factor affecting pass structure of compiler

Unit 2. Lexical Analysis [06]

Role of lexical analyzer, input buffering, specification and recognition of tokens, finite automata implications, designing a lexical analyzer generator.

Unit 3. Syntax Analysis [08]

Role of Parser ,writing grammars for context free environments , top down parsing , recursive descent and predictive parsers (LL) , Bottom-up parser , Operator precedence Parsing, LR,SLR and LALR parsers

Unit 4. Syntax Directed Translation [06]

Syntax directed definitions, construction of syntax tree, bottom-up evaluation of S-attributed definitions, L-attributed definitions, Top-down translation and Bottom – up evaluation of inherited attributes, analysis of syntax directed definitions.

Unit 5. Run time environments [04]

Source language issues, storage organization and location strategies, parameter passing, symbol table organization and generation, dynamic storage allocation.

Unit 6. Intermediate code generation [04]

Intermediate languages, declarations, assignments statements and Boolean expressions, case statements, back patching, procedure calls.

Unit 7. Code generation [06]

Issues in design of a code generator and target machine, run time storage management ,basic blocks and flow graphs, next use information and simple code generator, issue of register allocation, assignment and basic blocs, code generation from DAG and the dynamic code generation algorithm.

Unit 8. Code optimization [06]

Source of optimization, peephole optimzation and basic blocks loop in flow graphs, data flow analysis and equations, code improving transformation and aliases, data flow analysis and algorithms, symbolic debugging of optimized code.

Reference books:
1. Compilers-Principle, Techniques, Tools by Aho, Lam, Sethi and Ullman
2. Compiler Design by Wilhelm, Maurer
3. Compiler Design: Theory, Tools and Examples by Bergamann

Paper ECS605
Web Technology and E-Commerce-II

Unit 1: Working with Master Pages (8)

Introduction, the Basics of Master Pages, Coding a Master Page, Coding a Content Page-Mixing Page Types and Languages, Specifying Which Master Page to Use, Working with the Page Title, Working with Controls and Properties from the Master Page, Specifying Default Content in the Master Page, Programmatically Assigning the Master Page, Nesting Master Pages, Master Page Events, Themes and Skins.

Unit 2: ASP.Net State Management (8)

Application State, Session State, Client & server storing, View state, Cache, Hidden Variable, Session object, Profiles, Overview of HTTP Handler & Modules.

Unit 3: ASP.NET web security (8)

Authentication & Authorization-Windows & forms, User.identity, User.IsInRoles, Using Data Adapter, Debugging & error Handling, ASP.Net tracing-Page Level, Application Level, Debugging - Start Debugging session, Client side debugging, Exception Handling-On page, HTTP status code.

Unit 4: Data Access with ADO.NET (8)

ADO.NET Overview, Using Database Connections, Commands-Executing Commands, Calling Stored Procedures, Fast Data Access: The Data Reader, Data Adapter.

Unit 5: Business to Business Electronic commerce [12]

Inter-organizational Transactions- Inter-organizational Transactions, The credit Transaction Trade cycle, A Variety of Transactions, Electronic markets-Markets, Electronic markets, Usages of electronic markets, Advantages and disadvantages of electronic markets-Future of electronic markets, Electronic data interchange (EDI)-Introduction to EDI, EDI Definition, The benefits of EDI, EDI Example, The Elements of e-commerce- Elements, E-visibility, The e-shop, Online Payments, Delivering the goods, After sales service, Internet e-commerce security, A web site evaluation Model, E-Business-Introduction, Internet bookshops, Grocery supplies and support, Electronic newspapers, Internet banking, Virtual Auctions, Online share dealing, Gambling on the Net, E-Diversity

Reference Books:
1. Professional ASP.NET 2 by Bill Evjen, Scott Hanselman, Farhan Muhammed, Srinivasa Sivakumar, Devin Rader.
2. E-Commerce by David Whitley Tata McGraw-Hill
3.
4. HTML, HTML, Java script, CGI, Perl by Ivan Bayross
5. ASP.NET Black book

Paper ECS606
Visual Programming and Application Software – II

Unit 1: Delegates and Events **(8)**

Delegates-Types of Delegates, Events- The Receiver's View of Events, Generating Events

Unit 2: Windows base application **(10)**

Creating a Windows Form Application, Standard Controls and Components, Properties and Events of the controls, Forms-Form Class, Multiple Document Interface (MDI), Custom Controls (user Controls)

Unit 3: LINQ **(8)**

LINQ introduction, LINQ to SQL, Simple query, Filter value, Sort result, Group result

Unit 4: Crystal Reports **(8)**

Simple report, Conditional report

Unit 5: Assemblies and deployment **(10)**

Introduction, Types of assemblies, Component of assemblies, Creating assemblies, Deployment of application

References:
1. Professional C# by Simon Robinson, Christain Nagel, Karli Watson, Jay Glynn, Morgan Skinner, Bill Evjen.
2. Inside C# - Microsoft Press by Tom Archer, Andrew Whitechapel.

3. Programming Microsoft Visual C# 2005 - The Language (Microsoft Press) by Donis Marshall

Assignments on Database Management System – I and II

1. Consider the following table and solve the following queries:

Table Name: Employee

Column_name	Datatype	Constraint	Description
Eno	Varchar2(6)	Primary key	Starts from 'E' character
Ename	Varchar2(20)	Not Null	
Eaddr	Varchar2(20	Not Null	
Edob	Date	Not null	
Edname	Varchar2(20)	Not null	Dept name must be from sales, purchase, production, research, marketing
Emgr	Varchar2(20)	Not null	
Ejob	Varchar2(12)	Not null	
Edoj	Date	Not null	Date of joining must greater than edob
Esal	Number(9,2)	Not null	Default 5000.00

1. Insert at least 10 records.
2. Display all the employees working in 'sales' dept.
3. Sort the employee list according to joining date.
4. Increase 5% salary whose experience is more than 2 years.
5. Display the names of employees in ascending order of employee name.
6. Find out employee who are either working as 'Analyst' or salary greater than 5000.
7. List the department name, no. of employees in each department
8. Find out the employee who is getting maximum salary.
9. Remove the employees who work as 'clerk' or 'account'.
10. Raise the salary of all 'salesman' by 20%.
11. Display the names of employees whose age is greater than 50.
12. Display the all details of employees who are not manager.
13. Display the names of employees having experience more than 5 years in the company.
14. Display the names of employees whose salary is greater than employee 'ramesh' but less than 'sunil'.
15. Display the depart names who are having more than 3 employees.
16. Display the job names whose total salary is greater than 40000 for each job.
17. Display the names of employees who are getting highest salary.
18. Display the names of employees who are getting 5 digit salary.

19. Write a query to list the employees who jave joined in the last seven days
20. List all the employees whose names are having 'R' as last character.
21. Find all the employees who joined the company before their manager.
22. Display the department where there are no employees.
23. Display those emp whose salary is odd value.

1. Write a PL/SQL block to display the details of given emp_no.
2. Write a PL/SQL block of code to calculate the area of a circle for a value of radius & store calculated area in a table.
3. The HRD manager has decided to raise the salary for all the employees working as salesman by 0.05%. Whenever such raise is given to the employees, record for the same is maintained in the emp_raise table. It includes emp_no, date when the raise was given & actual raise. Write a PL/SQL block to update salary of each employee & insert a record in the emp_raise table.
4. Define cursor that will accept acc_no & update the balance amount (bal_amt) by 3% as intrest if bal_amt>1,00,000 from the Acc_Master(acc_no, name, city, bal_amt).
5. Consider the tables salespeople(snum, sname, city, commission).Write a PL/SQL block to increase commission of a particular salesperson by the given increment value.
6. Consider the following entities & their relationship.
   Employee(empno, empname, joiningdate, sex, salary, commission, deptno)
   Department(deptno, deptname, location)
      1. Display names of all employees working in the 'Accoutns' department .
      2. Display names of all employees alongwith their salary and department name.
      3. Display names of all departments alongwith no. of employees working in that department.
8. Consider the following entities & their relationships.
      Company(company_name, address,city, phone, share_value)
      Person(per_name, per_city)
      Comp_per(company_ name, per_name, no_of_shares)
      Company & person are related with many-to-many relationship.
   1. Write a PL/SQL block to transfer the shares owned by 'Mr.Kale' to 'Mr. Joshi'.
      2. Write a PL/SQL block to print name of persons alogwith their total invested values in various companies.

Assignment on Web technology

1. Write a JavaScript for Addition, Subtraction, Division, and Multiplication of two numbers.
2. Design Webpage for employee registration form using all HTML controls and CSS.
3. Design web page for simple calculator
   - By using class.
   - Command name property.
   - Button event.
4. Design web page of online shopping form which used textbox, label, buttons, and all type list controls.
5. Design Application for cross page posting.
6. Design This year calendar with all holidays in red color.
7. Design web page for image map by using Both method.
8. Design Advertisement web page.
9. Design web page which uses
   - Multiview & View control.
   - Wizard control.
   - File upload control
10. Design web page for all validation control & validation Groups.
11. Create nested master pages.
12. Design web site which uses all site navigation Control.
13. Design web page which shows list of employees in selected dept.
14. Create XML & it's styles Sheet file.
15. Create Master Detail Form.

Assignments on Core Java and Advanced Java

1. Write a program to check whether given number is prime or not.
2. Write a program to sort an array.
3. Write a program to find area of rectangle by using multiple classes.
4. Write a program for matrix operations like :--
   a) Addition b) Subtraction c) Multiplication.
5. Write a program for use of command line argument.
6. Write a program to check parameter passing technique in Java.
7. Write to overload constructor.
8. Write a program which uses objects as a parameter.
9. Write a program which uses function return object.
10. Write a program for method overloading & overriding.
11. Write a program for that will demonstrate use of final ,
    Finalize & finally.
12. Write a program on multilevel inheritance.
13. Write a program for which demonstrates use of dynamic method dispatch technique.
14. Write a program that will demonstrate package inheritance.
15. Write a program to create multithreading program by using object of thread class.
16. Write a program on thread priorities.
17. Write a program to read the file student's result & compute &
    Print total & percentage.
18. Write an applet to make simple applet and print hello message.
19. Write a applet to draw following shapes
    a)   Cone.   b) Cylinder.   c) Cube.   d) Square.
20. Write programs on following utility classes.
    a]. Vector. b] Array list. c] Hash map. d] Hash table.
    e] Tree map. f] Properties. g] Resource bundle.
    h] String tokenizer. i] Gregrian calendar.

Assignment on Visual Programming

1. Write a menu driven of a]Face value b]Armstrong c]Palindrome.
2. Write a program that implement features of cross language support.
3. Write a program that implements the fallowing string operations-
       a] substring b]split c]replace d]insert e] padleft.
4. Write a program to overload method.
5. Write a program that method should return object, Array.
6. Write a program for destructor.
7. Write a program for static constructor.
8. Write a program for static class.
9. Write a program for partial class.
10. Write a program for static property.
11. Write a program for indexer.
12. Write a program to implement inheritance.
13. Write a program on nesting of a namespace.
14. Write a program to overloading operator.
15. Write a program that implement interface.
16. write a program that implement hash table.
17. write a program that implement arraylist by using windows application.
18. write a program that implement data structure by using windows application.
19. Write a program for delegate.
20. Write a program for Reading/Writing file by using byte stream class.
21. Write a program for copy one file to another file.
22. Write a program for Random file.
23. Write a program creating files & directories & display the following attribute-
    1]Name   2]Size   3]Getcreationtime   by   using   windows application.
24. Write a program for thread .

Project Work

The project work and comprehensive viva will be evaluated for 100 marks for the examination conducted by the university. Maximum two students will be allowed in one project group

Nature of Practical Examination

1. No. of sections   : 02
2. Total Duration   : 4 hours
3. Each section contains 04 questions
4. Each question carries 20 marks
5. Attempt two questions from each section   : 80 marks
6. Viva   : 10 marks
7. Journal   : 10 marks

   Total Marks   : 100 marks