**B.TECH 4th SEMESTER CSE**

**Discipline : CSE**

**Semster : 4th**

**Subject : Computer Network**

**Lesson Plan Duration : 15 Weeks**

**Work Load(Per week) : 4 Hours/Week & 1 Practical**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Week | Theory | | Practical | |
|  | Lecture Day | Topic | Practical Day | Topic |
| 1 | 1 | Introduction to CN, Uses | 1 | Study of OSI Model. |
| 2 | Topologies |
| 3 | Reference Model |
| 2 | 4 | Network devices | 2 | Study of TCP-IP Model. |
| 5 | Test of Unit 1 |
| 6 | Need of Data Flow |
| 3 | 7 | Stop and wait, Selective repeat protocol | 3 | Study of Network Topologies. |
| 8 | Go back N Protocol |
| 9 | Framing protocol |
| 4 | 10 | Error detection and correction mechanism | 4 | Study of Various Network Devices. |
| 11 | Pure and slotted aloha |
| 12 | Carrier sense |
| 5 | 13 | Splitting and controlled access | 5 | Study of types of Communication. |
| 14 | Multiple excess algorithm |
| 15 | Lan Standards |
| 6 | 16 | Ethernet | 6 | Study of different technologies to improve communication. |
| 17 | Bluetooth |
| 18 | Wireless lan |
| 7 | 19 | Problems of unit 2 | 7 | Study of various Routing Algorithms. |
| 20 | Test of unit 2 |
| 21 | IPV4 |
| 8 | 22 | IPV6 | 8 | Implementation of Routing Algorithms. |
| 23 | IP addressing |
| 24 | Subnetting |
| 9 | 25 | ARP | 9 | Study of different Routes to create interconnect nodes |
| 26 | Introduction to routing |
| 27 | Administrative distance |
| 10 | 28 | Types of routing | 10 | Study of Stop and wait Protocol |
| 29 | Default routing, static routing |
| 30 | IGP & EGP |
| 11 | 31 | Mobile IP | 11 | Study of various Protocols like Sliding Window. |
| 32 | Congestion control algorithm |
| 33 | Introduction to voice over IP |
| 12 | 34 | Test of unit 3 | 12 | Analysis of throughput and efficiency of a network |
| 35 | Connection Management |
| 36 | Flow control & Multiplexing |
| 13 | 37 | Internet transport protocol | 13 | Study of Security related issues |
| 38 | Network Management, Remote monitoring |
| 39 | SNMP, Applications |
| 14 | 40 | DNS,FTP,TELNET | 14 | Study of Network model using network simulator |
| 41 | HTTP, SMTP |
| 42 | Electronic mail, WWW |
| 15 | 43 | Multimedia | 15 | Internal Viva |
| 44 | Revision of unit 4 |
| 45 | Test of unit 4 |

**B.TECH 4th SEMESTER CSE**

**Discipline : CSE**

**Semster : 4th**

**Subject : Computer Architecture & Organization**

**Lesson Plan Duration : 15 Weeks**

**Work Load(Per week) : 4 Hours/Week**

|  |  |  |
| --- | --- | --- |
| Week | Lecture Day | Topic |
| 1 | 1 | Boolean algebra and Logic gates |
| 2 | Combinational logic blocks (Adders, MUX) |
| 3 | Encoders and Decoders |
| 2 | 4 | Flip Flops |
| 5 | Registers and Counters |
| 6 | Flynns Classification of Computers |
| 3 | 7 | Multilevel Viewpoint of Machine |
| 8 | Micro Architecture and Operating Systems |
| 9 | Performance Metrics |
| 4 | 10 | CPU Architecture Types |
| 11 | Assignment and Problems of 1st Unit |
| 12 | Stored Program Concept |
| 5 | 13 | Instruction Codes |
| 14 | Timing and Control Circuits |
| 15 | Types of Instructions |
| 6 | 16 | Basics of Logic Design |
| 17 | Microprogrammed Control |
| 18 | Micro Instructions |
| 7 | 19 | Implementation of Control Unit |
| 20 | Assignment and Problems of 2nd Unit |
| 21 | Instruction Set Architecture |
| 8 | 22 | RISC and CISC |
| 23 | Addressing Modes |
| 24 | Operations in the Instruction Set |
| 9 | 25 | Types of Interrupts |
| 26 | Introduction to parallelism |
| 27 | Goals of Parallelism |
| 10 | 28 | Amdahl’s Law |
| 29 | Instruction Level Parallelism |
| 30 | Pipeling |
| 11 | 31 | Processor Level Parallelism |
| 32 | Assignment and Problems of 3rd Unit |
| 33 | Memory Hierarchy |
| 12 | 34 | Need of Memory Hierarchy |
| 35 | Locality of Reference |
| 36 | Cache Memory |
| 13 | 37 | Main Memory and Secondary Memory |
| 38 | Memory Parameters |
| 39 | RAM and ROM Organization |
| 14 | 40 | Cache Memory Organizations Techniques |
| 41 | Input Output Interface |
| 42 | DMA |  |
| 15 | 43 | Assignment and Problems of 4th Unit |  |
| 44 | Problems Discussion of Syllabus |  |
|  | 45 | Test of Complete Syllabus |  |

**B.TECH 4th SEMESTER CSE**

**Discipline : CSE**

**Semster : 4th**

**Subject : DBMS and Lab**

**Lesson Plan Duration : 15 Weeks**

**Work Load(Per week) : 4 Hours/Week& 1 Practical**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Week | Theory | | Practical | |
|  | Lecture Day | Topic | Practical Day | Topic |
| 1 | 1 | Overview of Database | 1 | To Create Tables in SQL |
| 2 | File System vs Database |
| 3 | Characteristics of Database Approach |
| 2 | 4 | Advantages and Disadvantages of database | 2 | To Create Database in SQL |
| 5 | Database Users |
| 6 | Responsibility of Database Administrator |
| 3 | 7 | Data Models | 3 | Add a Record in the Database |
| 8 | Schemas and Instances |
| 9 | DBMS Architecture |
| 4 | 10 | Views of data | 4 | Modify Records in the Database |
| 11 | Data Independence and Data languages |
| 12 | Assignment and Problems of 1st Unit |
| 5 | 13 | E- R Data Model | 5 | Delete Records in the Database |
| 14 | Entity Types and Attributes |
| 15 | Relationships |
| 6 | 16 | Roles and Structural Constraints | 6 | Generate Reports in SQL. |
| 17 | Mapping of E-R Diagram into Tables |
| 18 | Relational Data Model |
| 7 | 19 | Relational Algebra | 7 | List all the records of database |
| 20 | Relational calculus |
| 21 | Assignment and Problems of 2nd Unit |
| 8 | 22 | Basics of SQL | 8 | Execute various set operations |
| 23 | DDL Operations |
| 24 | DML Operation |
| 9 | 25 | DCL Operations | 9 | Study of Cursors |
| 26 | Nested Queries |
| 27 | Integrity Constraints |
| 10 | 28 | Functional Dependencies | 10 | Execute various types of Joins |
| 29 | Decomposition of Relations |
| 30 | Normalizations ( 1NF, 2NF) |
| 11 | 31 | 3rd Normal Form and BCNF | 11 | Execution of different Aggregate Functions |
| 32 | Assignment and Problems of 3rd Unit |
| 33 | DBMS Design Issues |
| 12 | 34 | Replication and Fragmentation Techniques | 12 | Implementing Triggers in SQL |
| 35 | Concurrency |
| 36 | ACID Properties of Transaction |
| 13 | 37 | Locking Techniques | 13 | Implementing Cursors in SQL. |
| 38 | Time Stamp Ordering |
| 39 | Multi Version Techniques |
| 14 | 40 | Deadlock Recovery | 14 | Implementing Procedures in SQL. |
| 41 | Assignment and Problems of 4th Unit |
| 42 | Problems Discussion of Complete Syllabus |
| 15 | 43 | Problems Discussion Continued | 15 | Internal Viva |
| 44 | Test of Two units |
| 45 | Test of 3 and 4 units |

**B.TECH 4th SEMESTER CSE**

**Discipline : CSE**

**Semester : 4th sem**

**Subject : Java Programming**

**Lesson Plan Duration : 15 Weeks**

**Work Load(Per week) : 4 Hours/Week& 1 Practical**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| WE  E  K | Theory | | Practical | |
| Lecture Day | Topic | Practical day | Topic |
| 1 | 1 | Programming Introduction and Evolution | 1 | Introduction to Java Programming and sample Java programs using OOPS concepts |
| 2 | Programming Languages: Machine Language |
| 3 | Assembly Language and High Level Languages |
| 2 | 4 | Object Technology: Object, Methods, Classes, Instantiation | 2 | Implementation of stack and queue classes using Java Package and Java Doc comments |
| 5 | Reuse, Messages and Methods Calls |
| 6 | Data-types and Instance Variables |
| 3 | 7 | Abstraction, Encapsulation, Inheritance | 3 | Implementation of basic operations on complex numbers and a method to return the number of active objects |
|  | 8 | Polymorphism |
|  | 9 | Java Development Environment: Creating and Running a Program (understanding all phases), |
| 4 | 10 | Main Method, Comments,Identifiers and Their Rules | 4 | Develop an applet that receives an integer in one text field, and computes its factorial Value and returns it in another  text field, when the button named Compute” is clicked |
| 11 | Common Escape Sequences, Packages, Classes and Methods, Anatomy of a Java Program. |
| 12 | Decision Making and Overloading |
| 5 | 13 | Java Tokens (Keywords, Identifiers, Literals, Operators (Arithmetic Operators, Relational Operators | 5 | Design and Demonstration of dynamic polymorphism |
| 14 | Logical Operators, Assignment Operators, Increment and Decrement Operators etc.) |
| 15 | Separators, JVM (Java Virtual Machine) |
| 6 | 16 | Control Statements (Decision Making and Branching) | 6 | Design a Java Interface for ADT stack using array and linked list with necessary exception handling |
| 17 | Looping Statements (Decision Making and Looping) |
| 18 | Jumping Statements, Objects Declaration |
| 7 | 19 | Classes Declaration and Use, User Defined Methods | 7 | A Java program for extracting substring using file concepts |
| 20 | Visibility Controls, Constructors and Its Types, Constructors Overloading |
| 21 | Methods Overloading, Method Overriding |
| 8 | 22 | Static Members, Abstract Methods and Classes | 8 | Designing graphical primitives using menus and buttons |
| 23 | Inheritance, Interfaces, Packages and GUI |
| 24 | Inheritance: Single Inheritance, Multilevel Inheritance, |
| 9 | 25 | Hierarchical Inheritance and Hybrid Inheritance | 9 | Write a Java program that handles all mouse events and shows the event name at the center of the window when a mouse event is fired. |
| 26 | Interfaces: Defining, Extending and Implementing |
| 27 | Packages: Putting Classes Together, Java API Packages |
| 10 | 28 | Using System Packages, Creating and Accessing a Package | 10 | Writea java program to create an abstract class named Shape that contains two integers and an empty method snamed printArea(). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method printArea() that prints the area of the given shape |
| 29 | Adding a class to a package, Hiding Classes |
| 30 | Introduction to GUI Programming: Displaying a Message |
| 11 | 31 | Graphics Class, Lines and Rectangles, | 11 | Implementation of multithreaded producer-consumer application that uses thread-safe queue class |
| 32 | Circle and Ellipses, Java Applets. |
| 33 | Multithreading, Exception and File Handling |
| 12 | 34 | Creating a Thread, Extending the Thread Class, | 12 | Implementation of multithreading concept for prime and Fibonacci series using pipes |
| 35 | run Method, Stopping and Blocking a Thread |
| 36 | Life Cycle of a Thread, |
| 13 | 37 | Thread Methods, Thread Exceptions | 13 | Writea Java program that implements a multithread application that has three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number |
| 38 | Thread Priority, Synchronization, |
| 39 | Exception: Types of Errors |
| 14 | 40 | Run-Time Error, Try, Catch, Multiple | 14 | Write a Java program that connects to a database using JDBC and does add, delete, modify and retrieve operations |
| 41 | Catch, Finally Statement, |
| 42 | Throwing User Defined Exception, |
| 15 | 43 | Stream Classes Concept, Byte Stream Classes (Input and Output Stream Classes) | 15 | Write a Java program that simulates a traffic light. The program lets the  user select one of three lights: red, yellow, or green with radio buttons. On selecting a button, an appropriate message with “Stop” or “Ready” or “Go” should appear above the buttons in selected color. Initially  there is no message shown |
| 44 | Character Stream Classes (Reader and Writer Stream Classes), Creation of Files. |
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**B.TECH 4th SEMESTER CSE**

**Discipline : CSE**

**Semester : 4th**

**Subject : Principles of Software Engineering**

**Lesson Plan Duration : 15 Weeks**

**Work Load(Per week) : 4 Hours/Week**

|  |  |  |
| --- | --- | --- |
| Week | Lecture | Topics |
| 1 | 1 | Introduction to Software and Software Engineering, the process |
| 2 | Software products, Phases of software development |
| 3 | Software engineering paradigms, software characteristics |
| 2 | 4 | Role of software engineer and software project manager |
| 5 | Software project management plan (SPMP), Metrics for project size estimation |
| 6 | Software cost estimation, Project scheduling, personnel planning |
| 3 | 7 | Organization and team structure |
| 8 | Revision + Assignment |
| 9 | Test of unit-1 |
| 4 | 10 | Requirement Engineering process,Software Requirements |
| 11 | Guidelines for software requirements |
| 12 | Software Requirement Specification |
| 5 | 13 | Characteristics of SRS, structure of SRS |
| 14 | Structured Analysis, Tools of structured analysis- Data Flow Diagrams |
| 15 | Decision tables, Decision trees, Data dictionary |
| 6 | 16 | Structured charts, Object Oriented Analysis, Data modelling, Behavioural Modelling |
| 17 | Revision + Assignment |
| 18 | Test of unit-2 |
| 7 | 19 | Software Configuration Management, Software Risks |
| 20 | Risk Management, Software Design fundamentals, Design principles |
| 21 | Module level Concepts |
| 8 | 22 | Design methodology |
| 23 | Structured design |
| 24 | Object Oriented Design |
| 9 | 25 | Design Documentation, User Interface Design |
| 26 | Coding standards and Guidelines |
| 27 | Code verification techniques, Code documentation |
| 10 | 28 | Computer Aided Software Engineering (CASE) tools, characteristics and advantages of CASE tools |
| 29 | Revision + Assignment |
| 30 | Test of Unit- 3 |
| 11 | 31 | Testing fundamentals, Test Plan, Test Case design |
| 32 | Levels of Software Testing-Unit Testing, Integration Testing-Top down Integration and Bottom up Integration Testing |
| 33 | Regression Testing, Smoke Testing, System Testing-Recovery testing, security Testing, Stress Testing |
| 12 | 34 | Performance Testing, Acceptance Testing-Alpha Testing, Beta Testing |
| 35 | Testing Techniques-White box Testing and Black Box testing. |
| 36 | Software Quality concepts, ISO9126, mccall’s Quality factors |
| 13 | 37 | SQA, SQA activities |
| 38 | Software Reviews-Review process |
| 39 | Walkthroughs, Formal Technical Review (FTR) |
| 14 | 40 | Defect amplification Model |
| 41 | ISO 9000 Quality standards |
| 42 | Capability Maturity Model (CMM) |
| 15 | 43 | Software Reliability, Software Maintenance, Software Re-engineering |
| 44 | Previous papers discussions |
| 45 | Test of complete Syllabus |