

**A.VEERIYA VANDAYAR MEMORIAL SRI PUSHPAM COLLEGE  
(AUTONOMOUS),  
POONDI, THANJAVUR DIST.**

**Question Pattern for UG and PG Programmes for students to be  
admitted during 2014 – 2015 and afterwards.**

**Total Marks: 75**

**QUESTION PATTERN**

**SECTION – A  
(Question 1 to 10)**

**10 x 2 = 20 Marks**

1. Short Answer Questions.
2. Two Questions from each unit (All are answerable)

**SECTION – B  
(Question 11 to 15)**

**5 x 5 = 25 Marks**

1. 5 Paragraph type questions with "either / or" type choice.
2. One question from each unit of the Syllabus.
3. Answer all the questions.

**SECTION – C  
(Question 16 to 20)**

**3 x 10 = 30 Marks**

1. 5 Essay type questions – any three are answerable.
2. One questions from each unit of the Syllabus.

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
<b>I</b>	<b>14U1CAT1</b>	$\sqrt{\mathfrak{R}} \mid \zeta \vdash \sqrt{\mathfrak{R}} \mid B \Delta$ $(\chi \mid \leftrightarrow \Sigma \mid f, E \rightarrow \mid \mid >, \Sigma \zeta f \mid \Delta,$ $\sqrt{\mathfrak{R}} \mid B \kappa \leftrightarrow \vdash \zeta \rightarrow)$	<b>6</b>	<b>3</b>

$\{ \rightarrow: 1 \quad \neg \otimes \Phi \infty \perp$

...  $\Sigma \leftrightarrow \Delta: 18$

1.  $\sqrt{\leftrightarrow} \zeta: . o \equiv \mid \partial \mid \mid \zeta \mid \square \mid \vdash \kappa \mid \otimes \wp \zeta \square \mid \zeta \otimes E \heartsuit \neg \wp \vdash \tau > \Delta$

$(\vdash \kappa o > \zeta B \Delta \quad \xi \vdash \kappa \mu \Delta)$

2.  $\Sigma \zeta: . \mathfrak{R} \mid \_ \mid \sigma \Theta \vdash \square > \tau \infty \uparrow \dots > [$

$(\wp \mid \kappa \uparrow \square \mid > \lambda [ E \oplus \heartsuit A)$

3.  $\wp \zeta \leftrightarrow \vdash B \zeta \vdash \square \bullet > \subseteq \vdash \heartsuit \wp \zeta f \_ \mid \perp$

$(\bullet > \subseteq \vdash \heartsuit \neg \wp \vdash \therefore, \bullet > \subseteq \vdash \heartsuit \wp \lambda \vdash \bullet > \subseteq \vdash \heartsuit \uparrow > \zeta \mid \Delta,$

$\bullet > \subseteq \vdash \leftrightarrow \dots > \sigma \lambda [ \mu])$

4.  $\wp \zeta \leftrightarrow \vdash > \zeta \otimes [ \square T \leftrightarrow \uparrow > \zeta \Phi$

5.  $\wp \otimes \mid \mathfrak{R} \dots \mid \zeta \otimes \mid f \mid \_ B \zeta \square \bullet \subseteq \leftrightarrow \Delta \square \Sigma \zeta \mid$

$(\diamond \equiv \dots \mid \chi \mathcal{J} \mid \therefore \diamond [ \Sigma \zeta \dots f, \diamond \equiv \mid \perp \Sigma \zeta \mid (> \tau \infty \Sigma \zeta \mid, \gamma \subseteq \vdash \leftrightarrow \zeta \Sigma \zeta \mid,$

$\mid [ \spadesuit f \Sigma \zeta \mid, \therefore \vdash B \zeta (< \Sigma \zeta \mid))$

6.  $\mid \kappa \leftrightarrow \xi \uparrow \mu \square \mid \sigma \leftrightarrow \zeta \leftrightarrow [ \mid \mid > (\mid \zeta \vee \rightarrow \Delta \mid \sigma \Theta \angle \Delta \therefore \neg \heartsuit \wp \_ \mid \vdash)$

$\{ \rightarrow: 2 \quad \chi \mid \leftrightarrow \Sigma \mid f$

...  $\Sigma \leftrightarrow \Delta: 18$

1.  $\dots \mid \otimes \mid \sigma \square \sqrt{\leftrightarrow} \zeta \mid \wp \zeta \kappa \Delta (1 \xi > \_ 15 \kappa \mid \leftrightarrow)$

2.  $\dots \mid \otimes \mid \sigma \square \wp B \square \equiv \mid \perp \neg > \zeta f \vdash \Delta$

$\{ \rightarrow: 3 \quad E \rightarrow \mid \mid >$

...  $\Sigma \leftrightarrow \Delta: 18$

1.  $\dots \mid \otimes \mid \sigma \square \zeta \leftrightarrow \_ \neg \mid \zeta \mid \mathfrak{R} \zeta \Delta \kappa \zeta \spadesuit \Delta \wp \zeta \mid (1 \xi > \_ 10 \kappa \mid \leftrightarrow)$

2.  $\dots \mid \otimes \mid \sigma \square \therefore \dots \spadesuit \zeta \leftrightarrow \Rightarrow E > \Delta \xi \vdash \kappa \mu \Delta$

---


$$\{ \rightarrow: 4 \ \Sigma_{\zeta} f | \Delta$$

$$\dots \Sigma \leftrightarrow \Delta: 18$$

$$\zeta. \neg \kappa. \wp \zeta \lceil \bullet \heartsuit \div \leftrightarrow \therefore \backslash B[ \square \neg | \langle \rangle \therefore A \uparrow \rangle \lceil$$


---

$$\{ \rightarrow: 5 \ \sqrt{\Re} | B \ \kappa \leftrightarrow \lceil \zeta \rightarrow$$

$$\dots \Sigma \leftrightarrow \Delta: 18$$

$$E \rightarrow || \rangle, A ] \spadesuit \Delta, \Sigma_{\zeta} f | \Delta, | \sigma | \rangle, \chi | \leftrightarrow \Sigma | f$$


---

Semester	Subject Code	Title Of The Paper	Hours Of Teaching/ Week	No. of Credits
<b>I</b>	<b>14U1CAE1</b>	<b>PART – II ENGLISH PROSE, POETRY AND COMMUNICATION SKILLS</b>	<b>6</b>	<b>3</b>

**Objective**

- To initiate the Students to understand English through Prose, Poetry and Basic Communicative Grammar

**Unit – I**

- 1) The Running Rivulets of Man,
- 2) Parliament is Marking Time,
- 3) The Lady in Silver Coat,
- 4) Mr. Applebaum at Play.

**Unit – II**

- 1) The Feigning Brawl of an Impostor,
- 2) Thy Life Is My Lesson,
- 3) Solve The Gamble,
- 4) The Stoic Penalty.

**Unit – III**

- 1) Nobility In Reasoning,
- 2) Malu the Frivolous Freak,
- 3) Bharath! Gird Up Your Loins!
- 4) Honesty is the Cream Of Chastity

**Unit – IV**

John Milton – On His Blindness.  
Oliver Goldsmith – The Village Schoolmaster.  
William Wordsworth – The Daffodils.  
P.B.Shelley – Ozymandias.  
Keats – La Belle Dame Sans Merci.  
Hopkins – Thou Art Indeed, Just Lord.

**Unit – V**

Parts of Speech, Nouns, Pronouns, Conjunctions, Adjectives, Articles, Verbs, Adverbs, Interjection – sentence.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>I</b>	<b>14U1CAC1</b>	<b>PROBLEM SOLVING AND PROGRAMMING TECHNIQUE</b>	<b>6</b>	<b>5</b>

**COURSE OBJECTIVES:**

- To understand the basic concepts of problem solving approaches and develop optimal program structure using conditional and iterative control structures and functions.
- To design, implement, test, and apply the basic C programming concepts.
- Apply the techniques of structured (functional) decomposition to break a program into smaller pieces and describe the mechanics of parameter passing.

---

**UNIT I INTRODUCTION TO COMPUTER PROBLEM SOLVING**

**Hrs 20**

Introduction – The Problem Solving aspect – Top down design – Implementation of algorithm – Program Verification – The efficiency of algorithm – The analysis of algorithm.

---

**UNIT II PROGRAMMING, ALGORITHMS AND FLOWCHARTS**

**Hrs15**

Programs and Programming – building blocks for simple programs -Programming life cycle phases – pseudo code representation – flow charts - Algorithm - Programming Languages - compiler – Interpreter, Loader and Linker - Program execution – Classification of Programming Language - Structured Programming Concept.

---

**UNIT III BASICS OF 'C', INPUT / OUTPUT & CONTROL STATEMENTS**

**Hrs 15**

An overview of C - data types and sizes - declarations - variables - constants – Operators - Expressions - Storage classes - Program control structures - Loop control structures – C formatted Input/Output - Arrays - Strings.

---

**UNIT IV**

**Hrs 20**

Function - Function Arguments - Function prototype - Recursion - Structure – Unions – Bit Manipulations and Enumerations – Self-Referential Structures – Dynamic Memory Allocation.

---

**UNIT V**

**Hrs 20**

Pointers – Introduction – Pointer and Arrays – Pointers and Strings – Pointer and Structures – Pointers and Data structures- File processing.

---

**REFERENCES:**

1. E. Balagurusamy, 'Programming in ANSI C', Tata McGraw Hill. 4<sup>th</sup> Edition, 2008.
2. Deitel & Deitel, "C How to program", Third Edition, Pearson Education Asia.
3. Yashavant Kanetkar, "Understanding Pointers In C", 4th Revised & Updated Edition, 2008, Bpb Publications
4. Cormen, Leiserson, Rivest, Stein, "Introduction to Algorithms", McGraw Hill, Publishers, 2002
5. Peter Norton, "Introduction to Computers", Sixth Edition, Tata McGraw Hill Publications, 2007.
6. Reema Thareja, "Programming in C", Oxford University Press, 2011.
7. How to solve it by computer, R.G.Dromey, Pearson education, fifth edition 2007.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>I</b>	<b>14U1CACP1</b>	<b>Software Lab-I C Programming</b>	<b>3</b>	<b>3</b>

**Objective**

- ❖ To Understand programming techniques in C
- 

**C Programming**

**I Control structures**

1. Fibonacci Series
2. Prime number
3. Quadratic equation–switch statement
4. NCR

**II Arrays**

5. Sorting

**III Matrix**

6. Addition and Subtraction
7. Multiplication

**IV Using Structure and file**

8. E.B. Bill
9. Pay Bill
10. Mark List

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>I</b>	<b>14U1CAMAA1</b>	<b>Allied – I Numerical Analysis and Statistical Methods</b>	<b>5</b>	<b>3</b>

---

**Unit I****Hrs 15**

**Algebraic & Transcendental equations:** Bisection Method. Newton Raphson Method. Iteration method – Finite differences Forward, Backward differences – Newton's forward & backward difference interpolation formulae. Lagrange's interpolating polynomial.

---

**Unit II****Hrs 15**

Numerical differentiation – Numerical Integration using Trapezoidal rule and Simpson's first & second rules (proof not needed) – Solutions to Linear Systems – Gaussian Elimination Method – Jacobi & Gauss Seidel iterative methods – Simple problems only.

---

**Unit III****Hrs 15**

**Numerical solution of ODE:** Solution by Taylor Series Method. Euler's Method, Runge – Kutta 2<sup>nd</sup> order method – Adam's Predictor Corrector Method and Milne's Predictor Methods.

---

**Unit IV****Hrs 15**

Mean, Median, Mode. Standard Deviation – Expectation – Variance and Covariance – Correlation and Regression – Properties of Simple correlation and regression coefficients Simple Numerical Problems only.

---

**Unit V****Hrs 15**

**Distributions : Discrete & Continuous distributions:** Binomial, Poisson, Normal distribution – Properties of normal distributions – Relation between Binomial, Poisson, Normal distributions.

---

**Text Books:**

- [1] S.S.SASTRY, Numerical Analysis (Unit 1, 2, 3)
- [2] Gupta.S.C & Kapoor, V.K. Fundamentals of Mathematical Statistics, Sultan Chand & sons, New Delhi – 1994. (Units 4 & 5 ).

**References:**

- [1] M.K.Jain.S.R.K. Iyengar and R.K. Jain. Numerical Methods for Scientific and Engineering Computation. New Age International Private Limited, 1999.
- [2] C.E. Froberg. Introduction to Numerical Analysis, II Edn., Addison Wesley. 1979.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>I &amp; II</b>	<b>14U2CMAA2</b>	<b>Allied – II DISCRETE MATHEMATICS</b>	<b>3 + 3</b>	<b>-</b>

**Unit – I**

**Set Theory:** Basic concepts – Natural numbers – Notation – Inclusion and equality- Power set

---

**Unit – II**

Operations – Venn Diagrams - identifiers Cartesian products – relations and ordering – Functions - composition – inverse binary and n – array operation.

---

**Unit – III**

**Mathematical Logic :** statements and notation – connectives – negation conjunction – disjunction –Statement formulas and truth tables – conditional and bi- conditional - well formed formulae - Tautologies - equivalence of formulae - duality law - disjunctive normal form - conjunctive Normal form.

---

**Unit – VI**

Graphs – Sub-graphs – connected graphs – operations on graphs – paths - Circuits. Euler graphs - Hamiltonian paths Traveling salesman problem.

---

**Unit – V**

Trees – properties of trees - pendent vertices - distance and centers in a Tree- Rooted and Binary Trees - Spanning Trees - Fundamental circuits - spanning Trees and weighted graphs - Shortest spanning trees - Kruskal algorithm

---

**Text Books:**

1. J.P.Tremblay, R.Manohar, "Discrete Mathematical structure with Applications to Computer Science" McGraw Hill International Editions Revised) Unit 1.2& 3)
2. Nauring Deo "Graph Theory with Applications to Engineering and Computer Science". PHI. Private Ltd., (Latest Edition) Unit 4 & 5

**References:**

1. Bernard Kolman & Robert C. Busby "Discrete Mathematical Structure for Computer Science" (Revised) PHI
2. F. Hamary "Graph Theory" Addison Wesley Publishing company (Revised Edition).





$$\{\rightarrow: 5 \quad \sqrt{\mathfrak{R}} \mid \square \kappa \leftrightarrow \lceil \zeta \rightarrow$$

$$\dots \Sigma \leftrightarrow \Delta: 18$$

$$\sqrt{\mathfrak{R}} \mid \square \kappa \leftrightarrow \lceil \zeta \rightarrow \square > \tau \propto \uparrow \mu \mid \oplus \neg \kappa \neq \Xi \mid.$$

Semester	Subject Code	Title Of The Paper	Hours Of Teaching/ Week	No. of Credits
<b>II</b>	<b>14U2CAE2</b>	<b>PART – II ENGLISH EXTENSIVE READERS AND COMMUNICATIVE SKILLS</b>	<b>6</b>	<b>3</b>

**Objective**

- To impart language and communicative skills through short stories, one act plays and communicative grammar

**Unit – I**

K.A.Abbas – The Sparrows  
O’Henry – The Cop and the Anthem.  
Guy de Maupassant – The Necklace.  
R.K.Narayan – Engine Trouble.

**Unit – II**

Anton Chekov – The Proposal  
O’Henry – While the Auto Watts

**Unit - III**

Saki – The Death Trap  
Mahesh Dattani –The Girl who touched the stars  
Claudia I.Haas – The Cellphone Epidemic

**Unit – IV**

Tense, Question Tag, Dialogue Writing, Paragraph Writing, Adjectives, Adverb

**Unit – V**

Voices, Degress of Comparison, Direct and Indirect

**Book Prescribed:**

Unit IV & V – Communicative grammar by the Department of English

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>I</b>	<b>14U2CAC2</b>	<b>C++ and Data Structures</b>	<b>6</b>	<b>5</b>

**Objective**

- To Understand programming Techniques in C++
- To understand various data structures and their capabilities

---

**UNIT-I**

**Hrs 18**

Introduction to OOPs – Introduction to C++ – Programming constructs and Decision making – Arrays – Pointers – Functions.

---

**UNIT-II**

**Hrs 18**

Classes and Objects – Inheritance – Virtual functions and Polymorphism – Files and templates.

---

**Unit III**

**Hrs 18**

Introduction – How to create programs – Ordered list – Arrays – Representation of arrays – Sparse matrices – Stacks and queues – Evaluation of expressions.

---

**Unit IV**

**Hrs 18**

Linked lists: Singly linked lists – Polynomial addition – Double and circular linked lists.

---

**Unit V**

**Hrs 18**

Trees: Binary trees – Binary tree representations – Binary tree traversal – Threaded binary trees.

---

**References:**

1. "Object Oriented Programming with ANSI & Turbo C++", Ashok N.Kamthane, First, Indian print-2003, Pearson Education.
2. E. Balagurusamy, 'Programming in ANSI C++', Tata McGraw Hill, Third Edition, 2005.
3. Herbert schidt, " C++ The Complete Reference" , Tata McGraw Hill, Fourth Edition, 2003.
4. Fundamentals of Data structures by Ellis horrowitz, Sartaz sahani, Galgotia Publications. 1976.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>II</b>	<b>14U2CACP2</b>	<b>Software Lab-I C ++ PROGRAMMINGLAB</b>	<b>3</b>	<b>3</b>

### **C++ PROGRAMMING WITH DATA STRUCTURES LAB**

1. Create a simple program using class and object
2. Write a C++ program to illustrate the use of the following concepts  
i) Default arguments and ii) Reference variable
3. Develop an object oriented to add two times. Assume that the time consists of the members hours, minutes and seconds. Use objects as arguments
4. Develop a C++ program to create two classes "class1" with data member number 1 and "class 2" with data member number 2. Develop inline functions to get values for data members and use friend function to add number 1 and number2.
5. Write a C++ program to define a class employee with data members with relevant details and calculate DA, MA, HRA net pay (DA = 71% of basic pay, MA= 10, HRA = 0.5% of basic pay). Create arrays of objects for 10 employees.
6. Write a overload function to multiply two matrices and for multiplying all the elements of the matrix by a constant
7. Write a C++ program to read the following information from the keyboard.  
i) Reg. No.  
ii) Name of the Student  
iii) Mark 1  
iv) Mark 2  
v) Mark 3  
Use default, parameterized and copy constructor to initialize the objects and display the same.
8. Write a program in C++ using pointer for the following  
a) To copy the contents of one string to another string  
b) To concatenate the given two strings into a one string
9. Design a base class 'person' with data members empcode, name. Derive two classes "account" with data members pay and "admin" class with data member experience. The class "master" derives information from both "account" and "admin". Write a C++ program to create and display the information contained in "master" object using virtual functions
10. Write a C++ program using all types of inheritance
11. Write C++ program using own Manipulators (example setw, setfill etc.)
12. Write a program in C++ to read a file and to  
a) Display the contents of the file into the screen  
b) Display the number of characters and  
c) The number of line in the files
13. Write C++ program using command line arguments.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>I &amp; II</b>	<b>14U2CMAA2</b>	<b>Allied – II DISCRETE MATHEMATICS</b>	<b>3 + 3</b>	<b>4</b>

**Unit – I**

**Set Theory:** Basic concepts – Natural numbers – Notation – Inclusion and equality- Power set

---

**Unit – II**

Operations – Venn Diagrams - identifiers Cartesian products – relations and ordering – Functions - composition – inverse binary and n – array operation.

---

**Unit – III**

**Mathematical Logic :** statements and notation – connectives – negation conjunction – disjunction –Statement formulas and truth tables – conditional and bi- conditional - well formed formulae - Tautologies - equivalence of formulae - duality law - disjunctive normal form - conjunctive Normal form.

---

**Unit – VI**

Graphs – Sub-graphs – connected graphs – operations on graphs – paths - Circuits. Euler graphs - Hamiltonian paths Traveling salesman problem.

---

**Unit – V**

Trees – properties of trees - pendent vertices - distance and centers in a Tree- Rooted and Binary Trees - Spanning Trees - Fundamental circuits - spanning Trees and weighted graphs - Shortest spanning trees - Kruskal algorithm

---

**Text Books:**

3. J.P.Tremblay, R.Manohar, "Discrete Mathematical structure with Applications to Computer Science" McGraw Hill International Editions Revised) Unit 1.2& 3)
4. Nauring Deo "Graph Theory with Applications to Engineering and Computer Science". PHI. Private Ltd., (Latest Edition) Unit 4 & 5

**References:**

3. Bernard Kolman & Robert C. Busby "Discrete Mathematical Structure for Computer Science" (Revised) PHI
4. F. Hamary "Graph Theory" Addison Wesley Publishing company (Revised Edition).

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>II</b>	<b>14U2CAMAA3</b>	<b>Allied - III OPERATION RESEARCH</b>	<b>5</b>	<b>3</b>

**Unit I****Hrs 15**

Operation Research: Introduction – Basics of OR–OR & decision making – Role of Computers in OR–Linear programming formulations & graphical solution of two variables – Canonical & standard forms of LPP.

---

**Unit II****Hrs 15**

Simplex Method: Simplex Method for  $<$ ,  $=$ ,  $>$  constraints – Charne's method of penalties – Two phase Simplex method.

---

**Unit III****Hrs 15**

Transpiration problem: Transportation algorithm – Degeneracy algorithm– Degeneracy in Transportation Problem, Unbalanced transportation problem – Assignment algorithm – unbalanced Assignment problem.

---

**Unit VI****Hrs 15**

Sequencing problem: Processing of  $n$  jobs through two machines – Processing of  $n$  jobs through 3 machines – processing of two jobs through  $m$  machines.

---

**Unit V****Hrs 15**

Networks: Network – Fulkerson's rule – measure of activity – PERT computation – CPM computation.

---

**Text Book:**

- [1] Manmohan Sing and Gupta, Problems in Operation Research, Sultan Chand Publishers, New Delhi.

**References:**

- [1] Prem Kumar Gupta and D.S.Hira. Operations Research: An Introduction: S. Chand and Co., Ltd., New Delhi.  
[2] Hamdy A. Taha, Operations Research (7<sup>th</sup> Edn.), McMillan Publishing Company, New Delhi. 1982.

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
<b>III</b>	<b>14U3CAT3</b>	$ _{\zeta \heartsuit \div B \equiv   \perp,   \textcircled{R}   \leftrightarrow   \perp, \sqrt{  \Re  } B \kappa \leftrightarrow   \zeta \rightarrow}$	<b>6</b>	<b>3</b>

$\{ \rightarrow: 1 \quad |_{\zeta \heartsuit \div B \equiv | \perp} 1$

... $\Sigma \leftrightarrow \Delta: 18$

1.  $E[ \heartsuit \wp ] |_{\zeta \leftrightarrow \Delta} \square A |_{\zeta} ( \Re |_{\zeta} f \Delta \square |_{\zeta \spadesuit} \_ \kappa )$

2.  $\therefore \setminus \dots \therefore || \lceil \square \therefore \lceil ( \kappa \spadesuit \Delta A \Re | \quad |_{\zeta} | >$

3.  $( \kappa | \ E \subseteq \zeta \therefore \setminus \square \sigma \therefore \lceil B \lceil \sqrt{ \Delta \wp | \Delta}$

4.  $| \Delta \wp \leftrightarrow \zeta \therefore \zeta B \square \Delta \square \bullet \subseteq \leftrightarrow |_{\zeta} f \Delta \square ( f_{\zeta} \therefore \setminus \heartsuit \wp f \lceil \Delta ( 84 \wp \zeta f \_ | \perp )$

$\{ \rightarrow: 2 \quad |_{\zeta \heartsuit \div B \equiv | \perp} 2$

... $\Sigma \leftrightarrow \Delta: 18$

1.  $\neg \wp \setminus B \ A \leftrightarrow \zeta \square \Delta \square \sqrt{ \langle B_{\zeta} [ \zeta | \quad \therefore \zeta \oplus \Sigma \zeta B \spadesuit \zeta \lceil \ A \leftrightarrow \zeta \square \Delta ( 27 \wp \zeta f \_ | \perp )$

2.  $\Sigma ( \neg \kappa \lceil \wp \zeta \square \bullet B \Delta \kappa \leftrightarrow |_{\zeta} f \Delta ( \xi > \_ 20 \wp \zeta f \_ | \perp )$

3.  $\dots > \Delta \wp \zeta \kappa \setminus \square \Sigma \zeta \textcircled{R} | \heartsuit \wp f \lceil \Delta ( \xi > \_ 10 \wp \zeta f \_ | \perp )$

4.  $( \oplus \zeta \heartsuit A \leftrightarrow \zeta \square \Delta \square \sigma \lceil \zeta > \uparrow \mu \Re |_{\zeta} f \Delta \square \Sigma \div \partial \kappa > \zeta \leftrightarrow \heartsuit \wp f \lceil \Delta ( \xi > \_ 10 \wp \zeta f \_ | \perp )$

$\{ \rightarrow: 3 \quad | \textcircled{R} | \leftrightarrow \uparrow \neg > \zeta \zeta \heartsuit A$

... $\Sigma \leftrightarrow \Delta: 18$

$| \textcircled{R} | \leftrightarrow \uparrow \neg > \zeta \zeta \heartsuit A \square > \tau \alpha \uparrow \mu | \oplus \neg \kappa \neq \Xi |$

$\{ \rightarrow: 4 \quad \neg \wp \zeta \mu \Re | \textcircled{R} | \leftrightarrow, \neg \therefore \zeta \alpha \neg \wp B \lceil \heartsuit A \heartsuit \wp \lambda \vee E$

... $\Sigma \leftrightarrow \Delta: 18$

1.  $\sqrt{ \lceil > \tau \alpha \Re | \textcircled{R} | \leftrightarrow | \textcircled{C} \Delta, | | > \equiv | \textcircled{C} \Delta \square A \lceil \kappa \lceil \therefore \zeta \dots \wp \div \otimes \dots \leftrightarrow \zeta \leftrightarrow \zeta, \wp \zeta | \kappa \wp \heartsuit \neq \dots | \uparrow [ |$

$| \textcircled{R} | \leftrightarrow \heartsuit \wp \lambda \vee E \square 10 \therefore ] \heartsuit \neg \wp \lceil$

$\neg \therefore \zeta \alpha \neg \wp B \lceil \heartsuit A \heartsuit \wp \lambda \vee E \square 5 \therefore ] \heartsuit \neg \wp \lceil$



$$||\ulcorner\Downarrow\lrcorner\otimes\varsigma\lrcorner\urcorner\varsigma\Re|\Delta$$


---

$$\{\rightarrow:5$$

$$\dots\Sigma\leftrightarrow\Delta:18$$

$$\partial.\sqrt{\Re}\rceil B\kappa\leftrightarrow\urcorner\varsigma\rightarrow$$

$$\wp\Re]\sqrt{\Re}\rceil B\equiv|\bot\ \square\ |\varsigma\heartsuit\div B\sqrt{\Re}\rceil B\equiv|\bot\ \square\ \text{Eu}\urcorner\Re\rceil B\equiv|\bot$$


---

Semester	Subject Code	Title Of The Paper	Hours Of Teaching/ Week	No. of Credits
<b>III</b>	<b>14U3CAE3</b>	<b>PART – II ENGLISH SHAKESPEARE, EXTENSIVE READERS AND COMMUNICATIVE SKILLS</b>	<b>6</b>	<b>3</b>

**Objective**

- To introduce the language of the world renowned dramatist and novelist to enhance the vocabulary and communicative skills of the learners.

**Unit – I**

Funeral Oration – Julius Caesar

Trial for a Pound of Flesh – The Merchant of Venice

**Unit – II**

He Kills Sleep – Macbeth

A Real Love at First Sight – Twelfth Night

**Unit – III**

When the Moor Kills, "So Good a wife" – Othello

In Love is a "Midsummer Madness" – Tempest

**Unit – IV**

The Mayor of Casterbridge (Abridged) – Thomas Hardy

**Unit – V**

Note making, Hints Developing, Expansion of Ideas and Proverbs, Sequence of Sentences Synonyms, Antonyms.

**Book Prescribed:**

Unit-I : II & III: Selected scenes from Shakespeare.

Unit IV: The Mayor of Casterbridge Abridged by E.F.Dodd

Unit V : Communicative Grammar.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
<b>III</b>	<b>14U3CAC3</b>	<b>Core- JAVA PROGRAMMING</b>	<b>6</b>	<b>6</b>

**Objective**

- ❖ To understand Programming concepts in Java

---

**Unit I**

**Hrs 18**

Object Oriented Fundamentals and Java Evolution: Object oriented programming – encapsulation – inheritance – polymorphism – java genesis – characteristics – java programming techniques – reserved words – identifiers – literals – operators– separators – variables – types – arrays – operator precedence.

---

**Unit II**

**Hrs 18**

Flow Control And Classes: If – else – Break – switch – Return Statements – Looping – While – do while – For – Comma statements – Declaration – Object reference – Instance – variables – new operators – method declaration – method calling – this operators – Constructor – Method over loading – Inheritance – Super class – Dynamic method dispatch – Final – Static – Abstract classes.

---

**Unit III**

**Hrs 18**

Packages and Interfaces: Packages – The package statement– Import statements – Interface statement – implement statement – Constructor – String creation – String concatenation – Character Extraction.

---

**Unit IV**

**Hrs 18**

Exception Handling: Exception Handling Fundamentals – The java Thread model priorities – synchronization – Runnable – The synchronized statements – Dead lock – Thread API Summary.

---

**Unit V**

**Hrs 18**

Abstract Windowing Tools & Applets: Events – listeners – Events handling methods – Inheritance hierarchy control classes – Labels – Layouts – Windows and frames – Menus – dialogs – Mouse events – Adaptor classes – Inner classes. Applets – HTML Applet Tag – Order of Applet Initialization.

---

**References:**

1. PATRICK NAUGHTON, "The JAVA Hant Book" , Tata MC\_Graw Hill Publishers Company Pvt. Ltd, 1996.
2. KENNY CHU – "The Complete Reference Java", Tata McGraw Hill Publishers company Pvt. Ltd, 1997.
3. Herbert schildt, "The Complete Reference Java 2" , Tata McGraw Hill Publishers company Pvt. Ltd, Fifth Edition.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>III</b>	<b>14U3CACP3</b>	<b>Software Lab-III Java Programming</b>	<b>3</b>	<b>3</b>

**Objective**

- ❖ To apply the features of the Java.
- ❖ To apply web technology concepts.

---

**Java Lab**

1. Write a java program that will accept command line arguments and print the same in order (ascending & descending)
2. Write a java program that will print details about the current date, time, month, year, day of month & day of week
3. Write a java program
  - a.test equality between two strings
  - b.concatenate the two strings
  - c.find the length of the string
  - d.replace the 'i' in the string with'z'
  - e.convert one of the string to upper & lowercase
4. Create an integer array to contain ten numbers. using random access file,write the array into a file called randl.dat.The program show read the contents of the rand.dat file backwards.Make use of try,catch & finally clauses
5. Create a subpackages called child whose base package is called parent.This should contain a class c1.class a contains a method called disp() to display a message "Inside sub package child- c1 class",create a class called parenttest, which imports this subpackage and calls the disp() method of the c1 class.
6. Write a java program to accept parameters on the command lin. If there are no command line arguments entered, the program should print error message and exit. The program should check if the first file exists and if it is an ordinary file. If it is so contents of the first file should be copied to the second file, In case the first parameter is a directory, print message accordingly and exit. Appropriate message should be displayed at all points.
7. Create applet to accept in integer as parameter and display name message as" Are You year old?" the age should be displayed in the blank space the default age should be 60.
8. Create applet to display string "I am in the center" in courier font, with size 30 and style bold and italic this text should be centered both horizontally and vertically.
9. Create an applet that lets the user adjust its background color, provided three scrollbars in your applet, one each for the three base colors red, green and blue.
10. Using html tag to create the college website (minimum 15 to 20 tag used)

Semester	Subject code	Title of the course	Hours of Teaching / Week	No.of Credits
III	14U3CABAA1	Allied – ORGANIZATIONAL BEHAVIOUR	5	3

**Objective**

- ❖ To understand the concepts of organizational behaviour.

---

**UNIT 1**

**Hrs 15**

**Nature of Organizational Behaviour:** Concept of Organization –concept of organization behaviour-challenges and opportunities for organizational behaviour – Applying OB knowledge to management practices.

**Foundations of organizational Behaviour:** Classical Approach – Neoclassical approach-modern approach-Organizational behaviour models.

---

**UNIT II**

**Hrs 15**

**Nature of Human Behaviour:** Concept of behaviour – Process of behaviour – Individual differences-Models of Man. **Personality:** Concept of Personality - Personality measurement. **Perception:** Concept of Perception-Interpersonal perception –Developing Perceptual Skills.

---

**UNIT III**

**Hrs 15**

**Learning:** Concept of Learning – Learning theories – Reinforcement-organizational behaviour modification-Learning organization-Knowledge management. **Interpersonal Behaviour:** Nature of Inter personal behaviour –Transactional Analysis. **Group Dynamics:** Concept of group dynamics-Formal groups-Informal group or organization – Group behaviour-Group decision making – Intergroup behaviour.

---

**UNIT IV**

**Hrs 15**

**Power and Politics:** Concept of Power -Politics. **Leadership:** Concept of Leadership – Leadership theories-Leadership styles – Leadership styles in Indian organizations- Contemporary issues in Leadership.

---

**UNIT V**

**Hrs 15**

**Communication:** Concept of Communication – Communication symbols-Communication network- Barriers in communication- Making communication effective-Communication pattern in Indian organization. **Conflict Management:** Concept of conflict- Individual level conflict –Group level conflict- Organizational level conflict-Managing conflict- Negotiation.

---

**Text Book:**

1. L.M.Prasad "Organizational Behaviour" Sultan Chand & Sons Educational Publishers, New Delhi, Fifth Edition 2011.

**References:**

1. Fred Luthans "Organizational Behaviour" McGraw Hill Publishers.
2. Hoge J. Arnold, Daniel C.Feldman "Organizational Behaviour" McGraw Hill Publishers.
3. Stephen P.Robbins , Nancy Langton "Organizational Behaviour " Pearson Education series.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>III &amp; IV</b>	<b>14U4CABAA2</b>	<b>ORGANIZATIONAL DYNAMICS TRAINING LAB</b>	<b>3+3</b>	<b>-</b>

**Objective**

- ❖ The course aims at providing practical experience for the complete personality development.

- 
1. Developing interpersonal behavior to know themselves – Goal setting, Time management.
  2. Understanding group discussion.
  3. Developing leadership attributes.
  4. Improving communication.
  5. Practicing controls.
  6. Adopting to change management.

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
<b>IV</b>	<b>14U4CAT4</b>	$\otimes \equiv   \sqrt{\mathcal{R}}   B \Delta - \partial \oplus \sqrt{\mathcal{R}}   B \Delta -$ $\neg \otimes \Delta \neg \therefore \varsigma \alpha - \sqrt{\mathcal{R}}   B \kappa \leftrightarrow \lceil \varsigma \rightarrow$	<b>6</b>	<b>3</b>

$\{ \rightarrow : 1$

$\dots \Sigma \leftrightarrow \Delta : 18$

$\zeta \rightarrow \subseteq \neg \rightarrow \zeta |$

1.  $\zeta \Rightarrow E \square \dots \rightarrow \varsigma \alpha \{ v \rightarrow (\wp \varsigma. \blacklozenge. : 1)$  2.  $\xi \_ | \lceil \square \neg \otimes \sigma o \uparrow \rightarrow \varsigma \Phi \{ v \rightarrow (\wp \varsigma. \blacklozenge. 167)$

3.  $\therefore \rfloor \triangleright \Delta \square \triangleright | \lceil \sigma \{ v \rightarrow (\wp \varsigma. \blacklozenge. 181)$  4.  $\neg \Sigma \Phi \triangleright \_ \square \triangleright | \lceil \sigma \{ v \rightarrow (290)$

5.  $\wp \zeta | \lceil \square \triangleright | \lceil \kappa [ \{ v \rightarrow (347)$

$\Sigma v | \square$

1.  $\zeta \Rightarrow E \square (\wp \varsigma. \blacklozenge. 1)$  2.  $\xi \_ | \lceil \square (\wp \varsigma. \blacklozenge. 69)$  3.  $\therefore \rfloor \triangleright \Delta \square (\wp \varsigma. \blacklozenge. 70)$

4.  $\neg \Sigma \Phi \triangleright \_ \square (\wp \varsigma. \blacklozenge. 74)$  5.  $\wp \zeta | \lceil \square (\wp \varsigma. \blacklozenge. 79)$

$| o \uparrow \neg \rightarrow \zeta |$

1.  $\wp \zeta | \lceil \square (\wp \varsigma. \blacklozenge. 2)$  2.  $\zeta \Rightarrow E \square (\wp \varsigma. \blacklozenge. 37)$

$\partial | \Sigma \zeta \lceil \rightarrow$

1.  $\wp \zeta | \lceil \square (\wp \varsigma. \blacklozenge. 5)$  2.  $\therefore \rfloor \triangleright \Delta \square (\wp \varsigma. \blacklozenge. 6)$

$\{ \rightarrow : 2$

$\dots \Sigma \leftrightarrow \Delta : 18$

$v \equiv \zeta \rightarrow \pm \rightarrow$

$\zeta \Rightarrow E \square \zeta [ \oplus \mathcal{R} \zeta \oplus \kappa [ \wp \uparrow \mu$

$A \oplus \Sigma \zeta \lceil \rightarrow$

$\wp \zeta f \_ \blacklozenge J | \perp 4, 30, 34, 47, 112, 165, 186, 191, 192, 242$

$\wp ] v \rightarrow \heartsuit \wp \uparrow \mu$

$\vee \leftrightarrow J f \varsigma \Delta \wp \uparrow \mu \wp \zeta f \_ \blacklozenge J . 4 (\Omega \lceil \Delta, \aleph \lceil , \kappa \neq , \sigma \bullet \Delta A)$

$\wp \backslash \wp \zeta f \_$

$\wp \uparrow \triangleright \varsigma \Delta \wp \zeta f \_ \square | \kappa | B$

$\{ \rightarrow : 3$

$\dots \Sigma \leftrightarrow \Delta : 18$

$\wp \textcircled{R} | \spadesuit \heartsuit \wp \zeta | \lceil$

$\xi \neg \kappa \mu \Delta$

$] \mathcal{R} \zeta \oplus \perp$

1.  $\therefore \rfloor \subseteq \mu$  2.  $\approx \mathcal{R} | \xi | f | \therefore$  3.  $\chi \omega \Upsilon$

$\{ \rightarrow : 4$

$\dots \Sigma \leftrightarrow \Delta : 18$

$\neg \otimes \Delta \neg \therefore \varsigma \alpha \kappa \leftrightarrow \lceil \varsigma \rightarrow$

$$\neg \therefore \zeta \alpha \sqsubseteq \sigma(\mathfrak{R} \mid \Delta \sqsubseteq \neg \therefore \zeta \alpha \mathfrak{R} \zeta \mid \Delta \wp \equiv \mid \perp \sqsubseteq \chi \mid \downarrow \neg \otimes \Delta \neg \therefore \zeta \alpha \mid \perp \sqsubseteq \sqrt{\subseteq} \mathbf{B} \downarrow \neg \otimes \Delta \neg \therefore \zeta \alpha \mid \perp \sqsubseteq \neg \otimes \Delta \neg \therefore \zeta \alpha \uparrow \triangleright \zeta \mid \perp \sqsubseteq \kappa \mid \leftrightarrow \mathbf{B} \mid \oplus \mid \perp \sqsubseteq \kappa \zeta \downarrow \Delta \triangleright \tau \alpha \downarrow \neg \otimes \Delta \neg \therefore \zeta \alpha \sqsubseteq \neg \triangleright \zeta \mid \therefore \sqsubseteq \triangleright \tau \alpha \mid \mathbf{E} \oplus \heartsuit \mathbf{A} \mid \perp \sqsubseteq \triangleright \tau \alpha \downarrow \neg \otimes \Delta \neg \therefore \zeta \alpha \pm \_ \mid \perp$$


---

$$\{ \rightarrow : 5$$

$$\dots \Sigma \leftrightarrow \Delta : 18$$

$$\partial. \sqrt{\mathfrak{R}} \mathbf{B} \kappa \leftrightarrow \lceil \zeta \rightarrow$$

$$\otimes \equiv \mid \sqrt{\mathfrak{R}} \mathbf{B} \equiv \mid \perp, \wp \mid \neg \spadesuit \mathbf{J} \sqsubseteq \infty \mathfrak{R} \mid \sqsubseteq \mathfrak{R} \zeta \pm \_ \mid \perp$$


---



Semester	Subject Code	Title of The Paper	Hours of Teaching/ Week	No. of Credits
<b>IV</b>	<b>14U4CAE4</b>	<b>PART – II ENGLISH ENGLISH FOR COMPETITIVE EXAMINATIONS</b>	<b>6</b>	<b>3</b>

**Objective**

- To prepare the learners for competitive examinations and to know the fundamentals of practical communication.

**Unit – I**

**Grammar** – Number, Subject, Verb, Agreement, Articles, Sequence of Tenses, Common Errors.

**Unit – II**

**Word Power** - Idioms & Phrases, one word substitutes, Synonyms, Antonyms, Words we often confuse, foreign words & phrases, spelling.

**Unit – III**

Reading & Reasoning – Comprehension, Jumbled Sentences.

**Unit - IV**

**Writing Skills** – Paragraph, Precis Writing, Expansion of an idea, Report Writing, Essay, Letters, Reviews (Film & Book)

**Unit – V**

**Speaking**- Public speaking, Group Discussion, Interview, Spoken English.

**Prescribed Text:**

1. V.Saraswathi, English for Competitive Examinations, Chennai, Emerald Publishers, 2000.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
<b>IV</b>	<b>14U4CAC4</b>	<b>Core – DATABASE MANAGEMENT SYSTEMS</b>	<b>5</b>	<b>6</b>

**Objective:**

**To know about concepts and techniques to design DBMS.**

---

**Unit I**

**Hrs 15**

Introduction: Purpose of data base systems- View of data-Data models-Database Users and Administrators-Database Languages-Database Architecture-E-R Model:Basic concepts-Design issues-Constraints- Keys-ER-Diagrams-weak Entity set-Extended E-R features-Reduction to E-R schema

---

**Unit II**

**Hrs 15**

Relational model: structure – Relational Algebra: Fundamental, Additional & Extended operations Modification – View - Other Relational Database - Tuple Relational Calculus -Domain Relational Calculus.

---

**Unit III**

**Hrs 15**

SQL-Basic Structure-Set operation-aggregate Functions- null values- nested sub queries-Derived Relations-view-modification of database-join relations-Advanced SQL-Embedded SQL-Advanced SQL Features.

---

**Unit IV**

**Hrs 15**

Advanced SQL: Domain Constraints-Referential integrity-assertion-Application Design and Development-triggers-RDB design-Decomposition using Functional Dependency-Normalization Units-F.D,M.D,J.D.

---

**Unit V**

**Hrs 15**

Indexing & Hashing-Basic concepts -Ordered indices-B++ tree index files-B tree index files-Static Hashing-Multiple Key Access-Comparison of ordered indexing and hashing-index definition in SQL.

---

**Text Books:**

1. "Database System concepts", Abraham Silber Schatz, Henk F.Korth, S.Sudarsan, Fifth Edition, 2006, McGraw Hill.

**General References:**

1. Fred Mc Fadden, Jeffery A Hoffer, Mary B.prescott, "Modern Database Management", 5 Edition, Addison Wesley, 2000.
2. Elmasri, Navathe, "Fundamentals of Database System", Third Edition, Addison wesley, 2000.
3. Jefrey D.Ulman, Jenifer widomj, "A First Course in Database System", pearson Education Asia, 2001
4. Bipin c Desai, "An Introduction to Database System", Galgotia publications Pvt Limited, 2001.
5. Database System Concepts, C.J. Date. Seventh Edition, 1993.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>IV</b>	<b>14U4CACP4</b>	<b>DATABASE MANAGEMENT SYSTEM AND ACCOUNTING PACKAGE</b>	<b>4</b>	<b>3</b>

**Objective**

- ❖ To apply the concepts of RDBMS and solving accounting problems using accounting package.

1. Library information processing.
2. Students mark sheet processing.
3. Telephone directory maintenance.
4. Gas booking and delivering system.
5. Electricity bill processing.
6. Bank transaction (SB)
7. Pay roll processing.
8. Inventory.
9. Question database and conducting quiz.
10. Purchase order processing.

**Accounting Package:**

1. Journalising, Ledger posting.
2. Preparation of Trial Balance.
3. Preparation of Balance Sheet.
4. Preparation of cash Book.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>III &amp; IV</b>	<b>14U4CABAA2</b>	<b>ORGANIZATIONAL DYNAMICS TRAINING LAB</b>	<b>3+3</b>	<b>3</b>

**Objective**

- ❖ The course aims at providing practical experience for the complete personality development.

- 
1. Developing interpersonal behavior to know themselves – Goal setting, Time management.
  2. Understanding group discussion.
  3. Developing leadership attributes.
  4. Improving communication.
  5. Practicing controls.
  6. Adopting to change management.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>IV</b>	<b>14U4CABAA3</b>	<b>Allied – III FINANCIAL ACCOUNTING</b>	<b>5</b>	<b>4</b>

**Objective**

- ❖ To understand the design of computer architecture

---

**Unit I**

**Hrs 15**

Meaning of accounting- Meaning and object of book Keeping – Accounting-concepts and conventions-Principles of double entry- kinds of accounts-Journal and ledger accounts.

---

**Unit II**

**Hrs 15**

Subsidiary books – Purchase book, sales book, purchase returns Book, bills receivable book, bills payable book, cash book, Analytical petty cash book and journal proper – bank reconciliation statement.

---

**Unit III**

**Hrs 15**

Trial balance – Preparation – errors disclosed and Errors not disclosed by its suspense account – rectification of errors.

---

**Unit IV**

**Hrs 15**

Preparation of final accounts – trading account, profit and loss account, Balance sheet – adjusting and closing entries. Methods of Depreciation (Fixed Percentage on Original Cost Method and Diminishing Balance Method only)

---

**Unit V**

**Hrs 15**

Bills of exchange – bill transactions, discounting, endorsement, Sending bill for collection, nothing of a bill, renewal of a bill – Insolvency of acceptor.

---

**Text Book:**

1. "Principles of Accountancy, by N. Vinayakam, P.L.Mani, K.L. Nagarajan, EURASIA Publishing House (PVT) Ltd. Ram Nagar, New Delhi 110 055.

**Reference:**

1. "Advanced Accountancy" by Jain & Narang, KALYANI publishers, New Delhi.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>V</b>	<b>14U5CAC5</b>	<b>Core – OPERATING SYSTEM</b>	<b>6</b>	<b>6</b>

**Objective**

- ❖ To know about design principles of Operating System.

---

**Unit I**

**Hrs 18**

**Introduction and Process Concepts :** Definition of OS – Early History – History of DOS and UNIX operating system – definition of process – process states – process state transition – Interrupt processing – Interrupt classes – context switching – semaphores – Deadlock and Indefinite postponement.

---

**Unit II**

**Hrs 18**

**Storage Management: Real Storage:** Real storage management strategies – Contiguous Vs non – contiguous storage allocation – Single user contiguous storage allocation – Fixed partition multiprogramming – Variable partition multiprogramming – Multiprogramming with storage swapping. **Virtual Storage :** Virtual storage management strategies – page replacement strategies – Working sets – Demand paging – Page size.

---

**Unit III**

**Hrs 18**

**Processor Management:** Job and Processor Scheduling: Preemptive Vs No preemptive scheduling – Priorities – Deadline scheduling – FIFO – RR – Quantum size – SJF – SRT – HRN.

---

**Unit IV**

**Hrs 18**

**Device Management:** Disk Performance Optimization: Operation of moving head disk storage – Need for disk scheduling – Seek optimization – FCFS – SSTF – SCAN – RAM Disks – optical disks.

---

**Unit V**

**Hrs 18**

**Case Study: DOS:** Memory Management – Overlaying – Extended and Expanded memory – Memory allocation – File system and allocation method – Internal and External common Memory management commands – File management commands.

---

**Reference:**

1. H.M. Deital, "An introduction to operating system", Addison Wesley Second edition, 1998.
2. Andrew S.Tanenbaum "Modern Operating System", Prentice – Hall of India, Second Edition, 1996.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
<b>V</b>	<b>14U5CAC6</b>	<b>Core – COMPUTER NETWORKS</b>	<b>6</b>	<b>6</b>

### **Objective**

- To know about various layers of computer network architecture.

---

### **Unit I**

**Hrs 18**

**Introduction To Networks And Communication Media:** Uses - Network Hardware - Net work software - Reference Models - Example Network - Network standardization. Basis for data communication - Transmission media - Wireless Transmission - Telephone system - Satellite Communication.

---

### **Unit II**

**Hrs 18**

**The Data Link Layer:** Data Link Layer design issues - Error Detection and Correction Methods - Elementary Data Link protocols - sliding Window protocols - Verification Methods Channel Allocation- Multiple Access protocols- IEEE 802 Standards.

---

### **Unit III**

**Hrs 18**

**The Network Layer:** Network Layer design issues - Routing algorithms- Congestion Control algorithms - Internetworking - Network Layer in Internet.

---

### **Unit IV**

**Hrs 18**

**The Transport protocols:** Transport Service - Transport protocols - Internet Transport protocols UDP-TCP-performance issues.

---

### **Unit V**

**Hrs 18**

**The Application Layer:** Application Layer design issues- Domain Names System - Electronic Mail - word wide web - Multimedia - other Application- Network Security- Basic Cryptography-DES-RSA.

---

### **Reference:**

1. Andrews S.Tanenbaum, "Computer Network", prentice Hall of India private Limited,(4Edition),2003.

### **General Reference**

1. Leon Garcia and Widjaja, "Communication Networks - Fundamental Concepts and key architecture", Tata McGraw Hill, 2001.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
<b>V</b>	<b>14U5CACP5</b>	<b>Lab V- OPERATING SYSTEM AND WEB DESIGN</b>	<b>6</b>	<b>6</b>

**Objective**

- ❖ To apply O.S concepts using Linux Programming.
- ❖ To apply web technology concepts.

1. Write a shell program to create a menu for copy, edit, rename and delete a file.
2. Write a shell program to generate menu creation.
3. Write a shell program to prepare the E.B.Bill.
4. Write a LINUX program to for file handling.
5. Write a shell program for merging a file.
6. Write a LINUX program to find a given word in the specific file.
7. Write a shell program for file checking and formatting and difference between two files.
8. Write a shell program to perform sorting and unsorting the file name.
9. Write a shell program for sorting the file depends upon the primary key.
10. Write a LINUX program to find whether the given number is palindrome number or not.
11. Write a shell program for counting words, lines and characters in a file.
12. Write a LINUX program to convert the Upper case to lowercase and lowercase to Uppercase.
13. Write a shell program to generate a Fibonacci series.
14. Write a LINUX program to find out the sum of digits.
15. Write a shell program to generate the use of pipeline and tree command.
16. Write a shell program to demonstrate the use of grep command.
17. Write a LINUX program for finding whether the number is Armstrong or not.
18. Write a program to find the given number is prime or not.
19. Write a shell program for various type of list using menu creation.

**❖ Asp Exercises**

- 1) HTML Page - BIODATA
- 2) Design calculator using VB Script.
- 3) Have a database to enter and retrieve student details (Add, Edit, Update, Delete)
- 4) Cookies in asp
- 5) Produce Adrotator
- 6) Session in ASP
- 7) Password Encryption and Decryption
- 8) Retrieve Database Detail in table format
- 9) Address book using VBScript (Add, Edit)
- 10) Server variables in ASP.



Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
<b>V</b>	<b>14U5CAEL1A</b>	<b>Major Elective - I E-BUSINESS</b>	<b>4</b>	<b>4</b>

**Objective:**

To understand the use of Internet for business processes.

**Unit-I**

**Hrs 12**

Linking Today's Business with Tomorrow's Technology –Defining e-Business: Structural Transformation-Challenging Traditional Definitions of Value-Engineering the End-to-End value stream-Business webs-Harvesting the partnerships-Business Core competencies-Creating the New Techno enterprises: Integrate, Integrate, Integrate-Needed: A new Generation of E-Business Leaders-Trends driving e-Business-Customer-Oriented Trends-e-Service-Organizational Trends-General Technology Trends-What these 20 trends have in common

**Unit-II**

**Hrs 12**

e-Business pattern :The structural foundation-The e-Channel pattern-The click – and-Brick pattern-The e-portal pattern-The e-Market marker pattern-The pure-E” Digital Products” Pattern-The race to create novel e-Business designs-Step1:self-Diagnosis-Step2:Reverse the value chain –Step3:Choose a focus-Step4 Executive flawlessly – Lessons from e-Business design.

**Unit-III**

**Hrs 12**

Trends driving e-Business Architecture –Problem caused by Lack of integration – The New era of cross-functional apps-e-Business architecture -Integrated application frameworks.

**Unit-IV**

**Hrs 12**

The Basics of customer relationship management-The New CRM architecture: Organizing around the customer-Integration requirements of the Next-Generation CRM infrastructure-Next generation CRM trends-A roadmap for managers-The basics of selling –chain management-Business forces driving the needed for selling-Chain management-Technology forces driving the needed for selling-Chain management-Technology forces driving the need for selling-Chain management-The Universal business problem: Managing the order acquisition process-Elements of selling –chain infrastructure –he Basics of enterprise resource planning-ERP decision=Enterprise Architecture planning-ERP use in the real world: Three case studies-ERP implementation: Catching the bull by the horns –ERP architecture and toolkit Evaluation.

**Unit-V**

**Hrs 12**

Roadmap to moving your company into e-Business-Setting the stage for e-Blueprint planning-Basics phases of e-Blueprint planning-Communicate, communicate, communicate-The serious of e-Business blueprint planning.

**Text Book:**

1. E-Business 2.0 Roadmap for success-Ravi Kalakota and Marcia Robinson –Pearson education- Low price edition.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
<b>V</b>	<b>14U5CAEL1B</b>	<b>Major Elective - MANAGEMENT INFORMATION SYSTEM</b>	<b>4</b>	<b>4</b>

### **Objective**

- ❖ To know about various information systems required to design MIS.

---

#### **Unit I** **Hrs 12**

**Introduction To Information System:** why Study Information System - Why Business Need Information technology- Fundamentals of Information System - Overview of Information Systems.

---

#### **Unit II** **Hrs 12**

**Solving Business problems with Information System:** System Approach to problem Solving - Developing Information System Solution - Technical Foundations of Data Base Management.

---

#### **Unit III** **Hrs 12**

**Information System For Strategic Advantage:** - Fundamentals of Strategic Advantage - Strategic Application and Issues In It; Managing IT: Enterprise and Management.

---

#### **Unit IV** **Hrs 12**

**Business Applications of Information Technology:** The Internet and Electronic Commerce - Fundamentals of Electronic Commerce - Information System for Business Operations: Business Information System - Transaction processing System.

---

#### **Unit V** **Hrs 12**

**Information System for Managerial Decision Support:** Decision Support Systems-Artificial Intelligence Technology in Business - Managing IT-planning for business Change with IT-Implementing Business change with IT.

---

### **Reference:**

1. "Management Information System", James A.O' Brein, Fourth Edition, Galgotia publications, 1999.

### **General Reference:**

1. "Management Information System", Gordon B. Davis Margre the H.Olson, Mc Graw Hill, 3rd Reprint 2000.

Semester	Subject code	Title of the course	Hours of Teaching /Week	No. of Credits
<b>V</b>	<b>14U5CAEL2A</b>	<b>Major Elective OPEN SOURCE TECHNOLOGY</b>	<b>4</b>	<b>3</b>

### **Objective**

- ❖ To know about the techniques and concepts of Open source technology.

---

#### **Unit I** **Hrs 12**

**Introduction:** shell programming: shell - pipes and redirection - shell as a programming language - shell Syntax.

---

#### **Unit II** **Hrs 12**

**Working with Files:** File structure - Library functions - Low - level File Access - The standard I/O Library - File & Directory Maintenance.

---

#### **Unit III** **Hrs 12**

Reading from & Writing to the Terminal - Terminal Structure - Terminal output - Debugging: Types of error - General debugging Techniques.

---

#### **Unit IV** **Hrs 12**

**Process management:** Process structure - Starting new process - Signals - Threads - Thread attributes - Canceling a Thread.

---

#### **Unit V** **Hrs 12**

**Internet programming:** CGI: From elements - Sending information to the WWW server - Returning HTML to the client .

---

### **Reference:**

1. Beginning LINUX programming - Neil Mathew & Richard Stones - Shroff Publications & Distributors Pvt Ltd., 1999.Chapters: Only relevant topics from chapters 1-3, 5,9,10-11& 20.

### **General Reference:**

1. Professional LINUX Microprogramming - Richard Stones& Neil Mathew, 2001.
2. WWW.advacedlinuxprogramming. com
3. WWW tdlp.Com4.WWW.stk.org

Semester	Subject Code	Title of the course	Hours of Teaching / Week	No. of Credits
<b>V</b>	<b>14U5CAEL2B</b>	<b>Major Elective – II WEB TECHNOLOGY</b>	<b>4</b>	<b>3</b>

### **Objective**

- ❖ To know about the techniques and concepts of Web Technology.

---

#### **Unit I**

**Hrs 12**

HTML: Introduction-SGML-Outline of an HTML Document-Head Section-Body section-HTML Forms. DHTML: Introduction-CSS-DHTML Document Objects Model and collections-Event Handling-Filters and Transitions – Data Binding.

---

#### **Unit II**

**Hrs 12**

JAVASCRIPT: Introduction-Language Elements objects of Java script-Other objects. VBSCRIPT: Introduction-Embedding VBScript code in an HTML Document-Comments-Variables-Operators-Procedures-Conditional Statements-Looping Constructs-object and VBScript-Cookies.

---

#### **Unit-III**

**Hrs 12**

ASP: Introduction-Advantages of using Asp-First ASP Script-Processing of Asp Scripts with Forms-Variables and Constructs-Subroutines-Include/Virtual-ASP Cookies-Asp Objects-Connecting to Data with ASP.

---

#### **Unit-IV**

**Hrs 12**

SERVLETS: Introduction-Advantages of Servlets over CGI-Installing Servlets-The Servlet Life cycle-Servlet API-A Simple Servlet-Handling HTTP GET Requests-Handling HTTP POST Requests-Cookies-Session Tracking-Multi tier Applications using Database Connecting-Servlet chaining.

---

#### **Unit-V**

**Hrs 12**

JSP: Introduction-Advantages of JSP-Developing First JSP-Component of JSP-Reading Request Information-Retrieving the Data Posted from a HTML File to a JSP File-JSP Sessions-Cookies-Disabling sessions.

---

### **Text Book:**

1. N.P Gopalan,J.Akilandeswari, "Web Technology" A Developer's Perspective, Prentice Hall of India Private Limited, New Delhi, 2008.
2. D.P. Nagpal, " Web Design Technology", S.Chand and Company Ltd., 2009

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
<b>VI</b>	<b>14U6CAC7</b>	<b>Core – DISTRIBUTED TECHNOLOGIES</b>	<b>6</b>	<b>6</b>

**Objective:**

To impart knowledge about the distributed environment, its architecture and application development using J2EE and .Net technologies.

---

**Unit – I      Distributed Hardware Architecture:      Hrs 18**

Evolution of personal Computer– PC to PC Communication – Local Area – Network – File server Architecture – Client – Server Architecture – Database Server Architecture – Corporate Network- Intranet – wide Area Network – Internet

**Distributed Software Architecture:**

Mainframe – File Sharing – Client Server Architecture: Single tier – 2 tiers – 3 tiers – N tier architecture – Distributed Application.

---

**Unit – II:      Hrs 18**

**Distributed Application Development using J2EE: (Unit II & III)**

**J2EE** Platform: J2EE Architecture – Containers – J2EE Technologies – Component Technologies – Service Technologies – Communication Technology – Developing J2EE Application

**Distributed Computing Using RMI:**

RMI Architecture–RMI Exceptions–Developing Applications with RMI– Introduction to Struts Framework

---

**Unit – III:    EJB Architecture and Design:      Hrs 18**

Introduction to EJB – The EJB Containers – J2EE and its Services – Working With EJB – Session Beans and Business Logic – Entity Beans and Persistence

**Distributed Application Development using .NET: (Unit IV & V)**

---

**Unit IV:      The NET Architecture:      Hrs 18**

The vision and goals of .NET – The building blocks of NET – An Overview of .NET framework: The NET Evolution– Design goals of the NET frame work–The NET framework Architecture – An Overview of .NET application.

---

**Unit – V:      ASP. NET:      Hrs 18**

An Introduction to ASP.NET–An Overview of ASP.NET–Programming with ASP.NET – Web Forms and ASP.NET.

**Books for Study:**

1. Subrahmanyam Allamaraju, "Professional Java Server Programming"–J2EE Edition Vol I Shroff Publishers and Distributors Pvt. Ltd.

**Unit I & II** Chapter 1 – Distributed Application Development using J2EE

Chapter 2 – Distributed Software Architecture

**Unit III** Chapter 14, 15 &16 – EJB Architecture and Design

**Unit IV** 2. Kevin Hoffman & Jeff Gabriel, "Professional .NET Framework", Shroff Publishers and Distributors Pvt. Ltd. Chapters 1 & 2 (10 to 64 pages)

**Unit V** 3. Dave Mercer, "ASP.NET–A Beginner's Guide", Tata McGraw Hill Publications Pvt. Ltd.

Chapters 1, 2, 3 & 4.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
VI	14U6CAC8	Core – SOFTWARE ENGINEERING	6	6

**Objective**

- ❖ To understand various phases in developing a Software.

**Unit I**

**Hrs 18**

**Introduction to Software Engineering:** introduction-some definitions-some size factor-Total effort devoted to software-distribution of effort-project size categories-how programmer spend their time-quality and productivity factors-managerial issues  
**Planning a software project: Introduction** –defining the problem-goals and requirements-developing solution strategy-planning the development process-the phased life Cycle Model-Milestones, documents and Reviews-the cost model –The prototype life Cycle Model-Successive Versions planning an organizational structures-project structures - project Format/Functional Format / Matrix Format-programming Team structure.

**Unit II**

**Hrs 18**

**Software Cost Estimation:** Introduction software cost factor-programmer Ability –product complexity-product size-Available Time –Required level of Reliability-Level of technology-**Software cost estimation Techniques**-Expert Judgment-Delphi cost estimation-work breakdown structures-algorithmic cost models-staffing Level Estimation-Estimating software Maintenance costs.-**software Requirements Definition**-The Software Requirement specification-Formal specification Techniques-Relational Notations-implicit Equations /Recurrence Relations/Algebraic Axioms/Regular Expressions-state oriented Notations-Decision Tables/Event Tables

**Unit III**

**Hrs 18**

**Software Design:** Introduction-Fundamental design concepts-Abstraction-Information hiding-structure-modularity-concurrency-verification-Aesthetics-Modules and Modularization Criteria- design Notation-data flow diagrams-structure charts-HIPO Diagrams-procedure templates-pseudo code-structured flow charts-structured English-Design Tables-Design Techniques-Stepwise Refinement- Level of Abstractions-structured design-integrated top- down development-Jackson structured programming-summary of design techniques-detail design considerations-Real-time and distributed system design-test plans-Milestones, walkthroughs and inspection-design guidelines.

**Unit IV**

**Hrs 18**

**Implementation Issues**-introduction- structured coding techniques-single entry, single Exit Constructs-Efficiency considerations –Violations of single entry, single – data encapsulations-the go to statement-Recursions-coding style-standard and guidelines-documentation guidelines-supporting documents-internal documentations.

**Unit V**

**Hrs 18**

**Verification and Validation Techniques**-introduction-quality assurance - walkthroughs and inspections - walkthroughs - inspections-static analysis - Symbolic Execution-unit Testing and Debugging-unit testing – Debugging - system testing-integration testing-acceptance testing -Formal Verification-input - output Assertions-weakest preconditions structural induction.

**References:**

1. Richard E.Fairley,"Software Engineering Concepts", McGraw-Hill Book Company-1985.
2. Roger Pressman,"Software Engineering",Sixth Edition, McGraw-Hill Book Company, 2005.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>VI</b>	<b>14U6CACP5</b>	<b>DISTRIBUTED TECHNOLOGIES LAB</b>	<b>6</b>	<b>6</b>

**Objectives:**

To learn the practical knowledge of using distributed application development packages.

1. Distributed applications using RMI
  - a. Simple RMI application
2. Web based distributed application in J2EE platform with Java Servlets
3. Web based distributed application in J2EE platform with JSP
4. Enterprise Java Beans
  - a. Session Bean
  - b. Entity Bean

**ASP .NET LAB**

5. Simple Programs with ASP.NET
6. Web Forms and ASP.NET

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
<b>VI</b>	<b>14U6CAEL3A</b>	<b>Major Elective MULTIMEDIA</b>	<b>6</b>	<b>4</b>

### **Objective**

- ❖ To know about design principles of multimedia system.

---

### **Unit I**

**Hrs 18**

Multimedia Overview: Introduction, Multimedia presentation and production, characteristics of a multimedia presentation, Multiple media, Utilities of multisensory perception, Hardware and software requirements, Uses of multimedia, Promotion of multimedia based contents, steps for creating multimedia presentation. Visual Display Systems: Introduction, cathode Ray Tube (CRT), Video Adapter Card, Video Adapter cable, Liquid Crystal Display (LCD), Plasma Display Panel (PDP).

---

### **Unit II**

**Hrs 18**

Text: Introduction, Types of Text, Unicode Standard, Font, Insertion of Text, Text compression, File Formats. Image: Introduction, Image Types, Seeing colors, color models, Basic steps for Image processing, Scanner, Digital camera, Interface Standards, Image processing software, File formats, Image output on monitor, Image output on printer.

---

### **Unit III**

**Hrs 18**

Audio: Introduction, Fundamentals Characteristics of sound, Elements of Audio systems, Microphone, Amplifier, Loudspeaker, Audio mixer, Musical Instrument Digital Interface(MIDI),MIDI messages, MIDI connections, Sound card, Audio File format and CODECs, Software Audio Players, Audio Recording Systems, Audio and multimedia, Audio Processing software.

---

### **Unit IV**

**Hrs 18**

Video: Introduction, Analog video camera, Transmission of video signals, Video signal format, Digital video, Digital Video Standards, PC Video, Video File Format and CODECs, Video editing, Video editing software.

---

### **Unit V**

**Hrs 18**

Animation: Introduction, uses of animation, key frames and Tweening, Types of animation, Computer Assisted Animation, Creating movements, Principle of animation, some Techniques of Animation, Animation on the web, 3D Animation, Special Effects, Creating Animation, Rendering algorithms, Animation software.

---

### **Text Book:**

**Principles of Multimedia** by Ranjan Parekh- the Tata McGraw Hill companies, Sixth Reprint 2008.

Chapters:

UNIT I: Chapter 1-1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9  
Chapter 3-3.1, 3.2, 3.3, 3.4, 3.5, 3.6

UNIT II: Chapter 4-4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7  
Chapter 5-5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.13, 5.14, 5.15, 5.16

UNIT III: Chapter 7-7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 7.10, 7.11, 7.14, 7.15, 7.19, 7.22(Up to 7.22.10), 7.23(up to 7.23.2), 7.24, 7.26, 7.28

UNIT IV: Chapter 8-8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 8.10(up to 8.10.4), 8.11, 8.12

UNIT V: Chapter 9-9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 9.11, 9.13, 9.14, 9.15, 9.16

**Reference: Multimedia System Design** by Prabhat K.Andleigh and Kiran Thakar-PHI-2008



Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>VI</b>	<b>14U6CAEL3B</b>	<b>Major Elective PHP PROGRAMMING</b>	<b>6</b>	<b>4</b>

**Objective**

- ❖ To Understand programming Techniques in ` PHP `

---

**Unit I**

**Hrs18**

**PHP & HTML test:** Coding building blocks – PHP decision making – Expression – Operator concepts – Conditionals – Looping – Function calling – Function defining function. Object Oriented Programming – Arrays – Arrays fundamentals

---

**Unit II**

**Hrs18**

**Database Basics:** Database design – Structured Query Language – MYSQL Database – Managing the database – Backing up and restoring data – Advanced SQL.

---

**Unit III**

**Hrs18**

**PHP with MYSQL:** The process – Querying the database with PHP function – Using PEAR working with forms building a Form – Templates.

---

**Unit IV**

**Hrs18**

**Practical PHP:** String functions – Data and time function – File manipulation – Calling system calls.

---

**Unit V**

**Hrs18**

**Modifying MySQL objects and PHP data:** Changing database objects from PHP – Manipulating table data – Displaying results with Embedded Links – Presenting form to add and process in one file – Updating data – deleting data – performing a sub query.

---

**Reference:**

1. Learning PHP & MySQL, Michel E.Davis &Jon A. Phillips, O'REILLY Publication-2006.

***B.C.A. Computer Application.***

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>VI</b>	<b>14U6CAEL4PA</b>	<b>Major Elective MULTIMEDIA LAB</b>	<b>4</b>	<b>3</b>

1. Creating a sample Image
2. Editing existing image's brightness, mode, color and add and edit layer style
3. Stitch and Edit two images into single image. Use selection tools Lasso tool, Clone stamp
4. Study about timeline concepts. Insert text, image, use scaling rotation alignment
5. Study masking concepts. Use audio in the movie.
6. Add buttons, menus, and actions to the movie.
7. Export movie, Use multiple scenes.
8. Insert text, image, and sprite to the movie.
9. Add effects to the text(predefined and user defined)
10. Create simple 3D animation and export

***B.C.A. Computer Application.***

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>VI</b>	<b>14U6CAEL4PB</b>	<b>Major Elective PHP PROGRAMMING LAB</b>	<b>4</b>	<b>3</b>

1. Write a server side PHP program that displays marks, total, grade of a student in tabular format by accepting user inputs for name, number and marks from a HTML form.
2. Write a PHP program that adds products that are selected from a web page to a shopping cart.
3. Write a PHP program to access the data stored in a MYSQL table.
4. Write a PHP program interface to create a database and to insert a table into it.
5. Write a PHP program using classes to create a table.
6. Write a PHP program to upload a file to the server.
7. Write a PHP program to create a directory, and to read contents from the directory.
8. Write a shell program to find the details of an user session.
9. Write a shell program to change the extension of a given file.
10. Create a MYSQL table and execute queries to read, add, remove and modify a record from that table.