SRI KANYAKA PARAMESWARI
ARTS & SCIENCE COLLEGE FOR WOMEN
(Managed by SKPD & Charities)
"Linguistic (Telugu) Minority Institution
Conferred by the Government of Tamil Nadu"
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DEPARTMENT OF COMPUTER APPLICATIONS

PROGRAM OUTCOME

Graduates of the program should be able to:

PO1: Understand basic concepts of computers and apply the concepts to solve real world problems on their own.

PO2: Acquire the required competencies to develop their communication and professional skills to compete in the industry.

PO3: Develop practical skillswith absolute focus to function as a successful entrepreneurand apply those skills to solve problems in industry, society and business.

PO4: Develop strong commitment towards social responsibility through ethical programming and engage in self-directed lifelong learning.

PO5: Improve analytical and critical thinking to identify the opportunities, analyze a problem and provide innovative solutions for the betterment of the society.

PROGRAM SPECIFIC OUTCOME

PSO1: Acquire and understand the necessary theoretical and practical knowledge of computers, to investigate and solve real-world problems using mathematical, accounting and computingtechniques.

PSO2: Learn advanced technologies and programming languages with hands-on training through internships, to compete in the ever changing industry.

PSO3: Apply various technologies to develop application oriented projects.

PSO4: Apply computer science principles, methods and tools to solve problems in society.

PSO5: Solve mathematical and statistical problems with the help of computers.

SUBJECT:PROBLEM SOLVING USING PYTHON **YEAR:** I
SUBJECT CODE: SE21A **SEMESTER:** I

UNIT – I

Introduction: The essence of computational problem solving – Limits of computational problem solving-Computer algorithms-Computer Hardware-Computer Software-The process of computational problem solving-Python programming language - Literals - Variables and Identifiers - Operators - Expressions and Data types.

UNIT - II

Control Structures: Boolean Expressions - Selection Control - If Statement- Indentation in Python- Multi-Way Selection -- Iterative Control- While Statement- Infinite loops- Definite vs. Indefinite Loops- Boolean Flags and Indefinite Loops. Lists: List Structures - Lists in Python - Iterating over lists in Python.

UNIT - III

Functions: Program Routines- Defining Functions- More on Functions: Calling Value-Returning Functions- Calling Non-Value-Returning Functions- Parameter Passing - Keyword Arguments in Python - Default Arguments in Python-Variable Scope.

UNIT - V

Objects and their use: Software Objects - Turtle Graphics – Turtle attributes-Modular Design: Modules - Top-Down Design - Python Modules - Text Files: Opening, reading and writing text files - String Processing - Exception Handling.

UNIT - V

Dictionaries and Sets: Dictionary type in Python - Set Data type. Object Oriented Programming using Python: Encapsulation - Inheritance – Polymorphism. Recursion: Recursive Functions.

TEXT BOOK:

1. Charles Dierbach, "Introduction to Computer Science using Python - A computational Problem solving Focus", Wiley India Edition, 2015.

REFERENCE BOOKS:

1. MarkLutz,"*LearningPythonPowerfulObjectOrientedProgramming*",O'reillyMedia 2018, 5th Edition.
2. Timothy A. Budd, "*Exploring Python*", Tata MCGraw Hill Education Private Limited 2011, 1st Edition.
3. Allen Downey, Jeffrey Elkner, Chris Meyers, "*How to think like a computer scientist: learning with Python*",2012.
4. Sheetal Taneja & Naveen kumar, "*Python Programming a Modular approach – A Modular approach with Graphics, Database, Mobile and Web applications*", Pearson, 2017.
5. ChSatyanarayanaMRadhikaMani, BNJagadesh, "*Pythonprogramming*",Universities Press2018.

WEB REFERENCES

- http://interactivepython.org/courselib/static/pythonds
- http://www.ibiblio.org/g2swap/byteofpython/read/
- http://www.diveintopython3.net/
- http://greenteapress.com/wp/think-python-2e/
- NPTEL & MOOC courses titled Pythonprogramming
- http://spoken-tutorial.org/tutorial-search/?search_foss=Python&search_language=English
- http://docs.python.org/3/tutorial/index.html

COURSE OUTCOME

CO1: Describe the core syntax and semantics of Python programming language.
CO2: Interpret the fundamental Python syntax and the use of Python control flow statements
CO3: Explain the need for working with functions in Python.
CO4: Develop simple turtle graphics programs in Python.
CO5: Explain the usage of Dictionaries, Sets and Object-Oriented programming concepts in Python.

SUBJECT NAME: ALLIED MATHEMATICS I **YEAR: I**
SUBJECT CODE: SM3AA **SEMESTER:I**

UNIT 1: Algebra And Numerical Methods:Algebra: Summation of series - simple problems.
Numerical Methods: Operators E,Δ,V, difference tables- Newton-Raphson method- Newton's forward and backward interpolation formulae for equal intervals, Lagrange's interpolation formula. Chapter 2, Section 2.1.3, 2.2, 2.2.1, 2.3, 2.3.3 Chapter 3, Section 3.4.1 and Chapter 5, Section 5.1 and 5.2.

UNIT 2 : Matrices: Symmetric, Skew-Symmetric, Orthogonal, Hermetian, Skew-Hermetian and Unitary matrices. Eigen values and Eigen-vectors, Cayley-Hamilton theorem (without proof) – verification- Computation of inverse of matrix using Cayley - Hamilton theorem.
Chapter 4, Section 4.1.1 to 4.1.6, 4.5, 4.5.2, 4.5.3.

UNIT 3 : Theory Of Equations: Polynomial equations with real coefficients, irrational roots, complex roots, symmetric functions of roots, transformation of equation by increasing or decreasing roots by a constant, reciprocal equation-simpleproblems.
Chapter 3, Section 3.1 to 3.4.1(omit section 3.2.1)

UNIT 4 : Trigonometry :Expansions of sin(nθ) and cos(nθ) in a series of powers of sinθ and cosθ - Expansions of sinnθ, cosnθ, tannθ in a series of sines, cosines and tangents of multiples of "θ" - Expansions of sinθ, cosθ and tanθ in a series of powers of "θ" – Hyperbolic and inverse hyperbolic functions .
Chapter 6, Section 6.1 to 6.3.

UNIT 5 : Differential Calculus:Successive differentiation, nth derivatives, Leibnitz theorem (without proof) and applications, Jacobians, Curvature and radius of curvature in Cartesian co-ordinates, maxima and minima of functions of two variables- Simple problems
Chapter 1, Section 1.1 to 1.3.1 and 1.4.3.

Content and treatment as in
Allied Mathematics, Volume I and II, by P. Duraipandian and S. Udayabaskaran, S. Chand Publications

Reference:-

1. S. Narayanan and T.K. Manickavasagam Pillai – AncillaryMathematics,S. Viswanathan Printers, 1986,Chennai.
2. Allied Mathematics by Dr. A. Singaravelu, MeenakshiAgency.

E-Resources:

1. http://www.themathpaage.com

COURSE OUTCOME:

CO1: Evaluate the summation of series, Operators, Newton-Raphson Method, Newton's forward and backward formulae, Lagrange's Formula.

CO2: Calculate symmetric, Skew-Symmetric, Hermetian, Eigen Values and Vectors, Cayley – Hamilton theorem.

CO 3: Determine Polynomial Equations, irrational and complex roots, transformation of equation, Reciprocal equation,.

CO4: Explain the concepts of expansions of $\sin\theta$, $\cos\theta$ and $\tan\theta$ in a series of powers of "θ" Hyperbolic and inverse hyperbolic function.

CO 5: Understand the concepts of Successive differentiation, Leibnitz theorem, Jacobians, curvature, radius of curvature and maxima and minima of functions.

SUBJECT: PRACTICAL-I PROBLEM SOLVING USING PYTHON **YEAR :** I
SUBJECT CODE: **SE211** **SEMESTER:** I

LIST OF EXERCISES:

1. ProgramtoconvertthegiventemperaturefromFahrenheittoCelsiusandviceversa depending upon user's choice.
2. Program to calculate total marks, percentage and grade of a student. Marks obtainedin each of the five subjects are to be input by user. Assign grades according to the following criteria:
   Grade A:Percentage>=80 Grade B: Percentage >=70 and <80
   GradeC:Percentage>=60and<70GradeD:Percentage>=40and<60Grade
   E: Percentage <40
3. Program, to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
4. Program to display the first n terms of Fibonacci series.
5. Program to find factorial of the given number using recursive function.
6. Write a Python program to count the number of even and odd numbers from array of N numbers.
7. Python function that accepts a string and calculate the number of upper case letters and lower case letters.
8. Python program to reverse a given string and check whether the give string is palindrome or not.
9. Write a program to find sum of all items in a dictionary.
10. Write a Python program to construct the following pattern, using a nested loop1
    22
    333
    4444
    55555
    666666
    7777777
    88888888
    999999999
11. Read a file content and copy only the contents at odd lines into a newfile.
12. Create a Turtle graphics window with specific size.
13. Write a Python program for Towers of Hanoi using recursion
14. Create a menu driven Python program with a dictionary for words and their meanings.
15. Devise a Python program to implement the Hangman Game.

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COURSE OUTCOME

CO1: Develop simple programs using input statements of Python programming language.
CO2: Implement various control structures of Python in simple programs.
CO3: Manipulate files using Python statements.
CO4: Develop simple turtle graphics window and towers of Hanoi using recursion in Python.
CO5: Implement menu driven Python programs and game programs like Hangman.

SUBJECT: BASICS OF RETAIL MARKETING **YEAR: I**
SUB CODE: CNE1B **SEMESTER -I**

Unit – I: Retailing – definition – Retail Marketing – Growth of organized retailing in India – importance of retailing.

Unit – II: Functions of retailing – characteristics of Retailing – Types of Retailing – store retailing – Non-store retailing

Unit – III: Retail location factors – Branding in retailing – private labeling – Franchising concept

Unit – IV: Communication tools used in Retailing – Sales promotion, e-tailing – window display

Unit – V: Supply chain management – definition – importance – Role of information Technology in retailing.

Reference Books:

1. Modern Retail Management – J.N.Jain&P.P.Si h Regal Publications, NewDelhi
2. Retail Management – Suja Nair, Himalaya Publishinghouse.

COURSE OUTCOME

CO1: Explain Growth of organized retailing in India, importance of retailing.
CO2: Construct various types of retailing, store and non-store retailing.
CO3: Define Retail location, branding, franchising.
CO4: Analyze Communication tools used in retailing, supply chain management**.**
CO5: Study chain management in marketing and role of IOT

SUBJECT: OBJECT ORIENTED PROGRAMMING CONCEPTS USING C++ **YEAR:**I
SUBJECT CODE: SU22A **SEMESTER:**II

UNIT - I

Introduction to C++ - key concepts of Object-Oriented Programming –Advantages – Object Oriented Languages – I/O in C++ - C++ Declarations. Control Structures: - Decision Making and Statements: If ..else, jump, goto, break, continue, Switch case statements - Loops in C++ : for, while, do - functions in C++ - inline functions – Function Overloading.

UNIT - II

Classes and Objects: Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – Overloading member functions – Bit fields and classes – Constructor and destructor with static members.

UNIT- III

Operator Overloading: Overloading unary, binary operators – Overloading Friend functions – type conversion – Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchal, Hybrid, Multi path inheritance – Virtual base Classes – Abstract Classes.

UNIT - IV

Pointers – Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes – Arrays – Characteristics – array of classes – Memory models – new and delete operators – dynamic object – Binding, Polymorphism and Virtual Functions.

UNIT - V

Files – File stream classes – file modes – Sequential Read / Write operations – Binary and ASCII Files – Random Access Operation – Templates – Exception Handling - String – Declaring and Initializing string objects – String Attributes – Miscellaneous functions .

TEXT BOOK:

1. E. Balagurusamy, "*Object-Oriented Programming with C++",* TMH 2013, 7th Edition.

REFERENCE BOOKS:

1. Ashok N Kamthane, "*Object-Oriented Programming with ANSI and TurboC++",* Pearson Education 2003.

2. Maria Litvin & Gray Litvin, "*C++ for you*", Vikas publication2002.

WEB REFERENCES:

- NPTEL & MOOC courses titled Object oriented programming concepts usingC++
- https://alison.com/course/introduction-to-c-plus-plus-programming

COURSE OUTCOME

CO1: Describe the basic concepts of OOPs and the control flow statements.
CO2: Interpret about concepts of classes, objects and member functions.
CO3: Explain the need for overloading functions in C++.
CO4: Discuss about pointer and array concepts in C++.
CO5: Explain the usage of files and strings in object oriented programming.

SUBJECT: **C++PROGRAMMING LAB** **YEAR:** I
SUBJECT CODE: SU221 **SEMESTER:** II

LIST OF EXERCISES:

1. Write a C++ program to demonstrate function overloading, Default Arguments and Inline function.
2. Write a C++ program to demonstrate Class and Objects
3. Write a C++ program to demonstrate the concept of Passing Objects to Functions
4. Write a C++ program to demonstrate the Friend Functions.
5. Write a C++ program to demonstrate the concept of Passing Objects to Functions
6. Write a C++ program to demonstrate Constructor and Destructor
7. Write a C++ program to demonstrate Unary Operator Overloading
8. Write a C++ program to demonstrate Binary Operator Overloading
9. Write a C++ program to demonstrate:
    - Single Inheritance
    - Multilevel Inheritance
    - Multiple Inheritance
    - Hierarchical Inheritance
    - Hybrid Inheritance
10. Write a C++ program to demonstrate Virtual Functions.
11. Write a C++ program to manipulate a Text File.
12. Write a C++ program to perform Sequential I/O Operations on a file.
13. Write a C++ program to find the Biggest Number using Command Line Arguments
14. Write a C++ program to demonstrate Class Template
15. Write a C++ program to demonstrate Function Template.
16. Write a C++ program to demonstrate Exception Handling.

COURSE OUTCOME

CO1: Demonstrate classes, objects, function overloading and the usage of inline functions.
CO2: Execute programs on the concepts of classes, objects and member functions.
CO3: Implement inheritance converts in C++.
CO4: Apply various file concepts of C++ with object oriented programming.
CO5: Implement programs to execute class templates and function templates

SUBJECT: ALLIED MATHEMATICS-II **YEAR:** I
SUBJECT CODE: SM3AE **SEMESTER:** II

UNIT1: Integral Calculus: Bernoull is formula–Reduction formulae

$\int_0^{\frac{\pi}{2}} sin^n\, xdx, \int_0^{\frac{\pi}{2}} cos^n\, xdx, \int_0^{\frac{\pi}{2}} sin^m\, xcos^n xdx,$(m,n being positive integers),Fourier series for function $\sin(0,2\pi),(-\pi,\pi)$.Chapter2: Section2.7 &2.9,Chapter4: Section4.1.

UNIT2: DifferentialEquations:OrdinaryDifferentialEquations:secondordernon-homogeneousdifferential equations with constant coefficients of the form ay" +by'+ cy = X where X is of the form $e^{\alpha x}\cos\beta x$and$e^{\alpha x}$ $\sin\beta x$-Related problems only.
Partial Differential Equations: Formation, complete integrals and general integrals, four standard types and solving Lagrange's linear equation Pp+Qq=R.
Chapter5: Section5.2.1, Chapter6: Section6.1to6.4

UNIT 3 : Laplace Transforms: Laplace transformations of standard functions and simple properties, inverse Laplace transforms, Application to solution of linear differential equations up to second order-simple problems.
Chapter7:Section7.1.1 to 7.1.4&7.2to7.3

UNIT 4 : Vector Differentiation: Introduction, Scalar point functions, Vector point functions, VectordifferentialoperatorGradient,Divergence,Curl,Solenoidal,irrotational,identities.
Chapter8, Section8. 1to8.4.4

UNIT 5 : Vector Integration: Line, surface and volume integrals, Gauss, Stoke's and Green's theorems(withoutproofs).Simple problems on these.
Chapter 8,Section8.5to8.6.3.

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Content and treatment as in
Allied Mathematics, Volume I and II , P. Duraipandian and S. Udayabaskaran, S. Chand Publications.

Reference:-
1. S. Narayanan and T.K. Manickavasagam Pillai – Ancillary Mathematics, S. Viswanathan Printers, 1986,Chennai.
2. Allied Mathematics by Dr. A. Singaravelu, MeenakshiAgency.

E-Resources:

1. **http://www.sosmath.com**
2. **http://www.analyzemath.com/Differential_Equations/applications.html**

COURSE OUTCOME

CO 1: Describe the concepts of Bernoulli's Formula, Reduction Formula, and Fourier series.

CO 2: Determine the Second order non-homogeneous differential equations, P.D.E formation and four standard types, Lagrange's linear equation.

CO 3: Evaluate Laplace transformation, Inverse Laplace transforms, Application to solution of linear differential equations up to second order.

CO 4: Calculate Scalar and Vector point functions, Gradient, Divergence, Curl, Solenoidal.

CO 5: Explain the concepts of Surface and Volume integrals, Gauss, Stoke's and Green's Theorems and Problems.

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SUBJECT: CONCEPT OF SELF HELP GROUP **YEAR: I**
SUB CODE: MNM2J **SEMESTER -II**

Unit – I: Meaning, Concept and functions of SHGS

Unit – II: Women empowerment through SHGS

Unit – III: Micro finance through SHGS

Unit – IV: Social Development through SHGS

Unit – V: Role of Govt. and NGO's in fostering SHGS

COURSE OUTCOME

CO1: Explain self help group concept in India.

CO2: Compar**e** Micro financing and self help group

CO3: Describe NGO Assistance to self help groups.

CO4: Interpret Linkage between banks and self help groups.

CO5: Classify Women empowerment through self help group**.**

SUBJECT: DATA STRUCTURES **YEAR: II**
SUB CODE: SZ23A **SEMESTER –III**

Unit 1: Abstract Data Types(ADTs)-List ADT-array -based implementation-linked list implementation-singly linked lists-circular linked lists-doubly-linked lists-applications of lists-Polynomial Manipulation-All operations-Insertion –Deletion –Merge-Traversal.

Unit-2: Stack ADT-Operations-Applications-Evaluation Arithmetic Expressions-Conversion of infix to postfix expression-Queue ADT - Operations- Circular Queue-Priority Queue-deQueue-Applications of Queue.

Unit 3: Tree ADT-Tree traversals-Binary Tree ADT- Expression trees-Applications of trees-Binary search tree ADT-Threaded Binary Trees-AVL Trees-B-Tree-B+Tree-Heap-Applications of Heap.

Unit-4: Definition – Representation of Graph-Types of Graph-Breadth First Traversal-Depth First Traversal-Topological sort-Bi-connectivity-Cut vertex-Euler circuits-Applications of Graphs.

Unit-5 : Searching-Linear Search- Binary Search-Sorting –Bubble Sort-Selection Sort-Insertion Sort-Shell Sort-Radix Sort-Hashing-Hash Functions-Separate chaining-Open Addressing –Rehashing-Extendible Hashing.

RecommendedTexts

i. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C++", Pearson Education 2014, 4th Edition.
iiReema Thareja,"Data Structures Using C" Oxford Universities Press 2014, 2nd Edition.

Reference Books

i. Thomas H.Cormen,Chales E.Leiserson,Ronald L.Rivest,Clifford Stein," Introduction to Algorithms" , McGraw Hill 2009, 3rd Edition.
ii. Aho,Hopcroft and Ullman, "Data Structures and Algorithms", Pearson Education 2003.

COURSE OUTCOME

CO1: Explain the concept of Abstract Data Types (ADT).

CO2: Discuss basic linear data structures such as stacks and queues and evaluates arithmetic expressions.

CO3: Describe the concept of non-linear data structures using trees and its traversal algorithms.

CO4: Explain the concept of Graphs and Implements traversal in Graphs.

CO5: Describe and analyze elementary sorting and searching algorithms.

SUBJECT: JAVA PROGRAMMING **YEAR: II**
SUB CODE: SZ23B **SEMESTER: III**

Unit-1: Introduction to OOPS: Paradigms of Programming Languages – Basic concepts of Object Oriented Programming – Differences between Procedure Oriented Programming and Object Oriented programming - Benefits of OOPs – Application of OOPs. Java: History – Java features – Java Environment – JDK – API. Introduction to Java: Types of java program – Creating and Executing a Java program – Java Tokens- Java Virtual Machine (JVM) – Command Line Arguments –Comments in Java program.

Unit-2: Elements: Constants – Variables – Data types - Scope of variables – Type casting – Operators: Special operators – Expressions – Evaluation of Expressions. Decision making and branching
statements- Decision making and Looping– break – labeled loop – continue Statement. Arrays: One Dimensional Array – Creating an array – Array processing – Multidimensional Array – Vectors – ArrayList – Advantages of Array List over Array Wrapper classes.

Unit-3: Class and objects: Defining a class – Methods – Creating objects – Accessing class members – Constructors – Method overloading – Static members –Nesting of Methods – this keyword – Command line input. Inheritance: Defining inheritance –types of inheritance– Overriding methods – Final variables and methods – Final classes – Final methods - Abstract methods and classes – Visibility Control- Interfaces: Defining interface – Extending interface - Implementing Interface - Accessing interface variables. Strings: String Array – String Methods – String Buffer Class.

Unit-4: Packages: Java API Packages – System Packages – Naming Conventions –Creating & Accessing a Package – Adding Class to a Package – Hiding Classes. Exception Handling: Limitations of Error handling – Advantages of Exception Handling - Types of Errors – Basics of Exception Handling – try blocks – throwing an exception – catching an exception – finally statement. Multithreading: Creating Threads – Life of a Thread – Defining & Running Thread – Thread Methods – Thread Priority – Synchronization –Implementing Runnable interface – Thread Scheduling.

Unit-5: I/O Streams: File – Streams – Advantages - The stream classes – Byte streams –Character streams. Applets: Introduction – Applet Life cycle – Creating & Executing an Applet –Applet tags in HTML – Parameter tag – Aligning the display - Graphics Class: Drawing and filling lines – Rectangles – Polygon – Circles – Arcs – Line Graphs – Drawing Bar charts AWT Components and Even Handlers: Abstract window tool kit – Event Handlers – Event Listeners – AWT Controls and Event Handling: Labels – Text Component – Action Event – Buttons – Check Boxes – Item Event – Choice– Scrollbars – Layout Managers- Input Events – Menus.

1. RecommendedTexts

i. E. Balagurusamy, "Programming with Java", TataMc-Graw Hill, 5th Edition.
ii. Sagayaraj, Denis, Karthick and Gajalakshmi, "Java Programming for Core and advanced learners", Universities Press (INDIA) Private Limited 2018.

2. ReferenceBooks

i. Herbert Schildt, "The complete reference Java", TataMc-Graw Hill, 7th Edition.

COURSE OUTCOME

CO1: Describe the basic concepts of OOPs and JDK, API.
CO2: Explain about the control flow statements and arrays.
CO3: Interpret about concepts of classes, objects and member functions.
CO4: Discuss about the java packages and Exception handling.
CO5: Explain the concepts of applets, AWT classes and Internetworking.

SUBJECT: COMPUTER ORGANIZATION **YEAR: II**
SUB CODE: SZ23C **SEMESTER –III**

Unit 1: Data representation: Data types – Complements- fixed point and floating point representation other binary codes. Register Transfer and Micro operations: Register transfer language- Register transfer- Bus and Memory transfers – Arithmetic, logic and shift micro operations.

Unit 2: Central processing unit: General register and stack organizations- instruction formats - Addressing modes- Data transfer and manipulation - program control- RISC - Pipelining - Arithmetic and instruction- RISC pipeline - Vector processing and Array processors.

Unit 3: Microprocessor Architecture and its Operations - 8085 MPU - 8085 Instruction Set and Classifications. Programming in 8085: Code conversion - BCD to Binary and Binary to BCD conversions - ASCII to BCD and BCD to ASCII conversions - Binary to ASCII and ASCII to Binary conversions.

Unit 4: Programming in 8085:BCD Arithmetic - BCD addition and Subtraction - Multibyte Addition and Subtraction - Multiplication and Division. Interrupts: The 8085 Interrupt – 8085 Vectored Interrupts.

Unit 5:Direct Memory Access(DMA)and 8257 DMA controller - 8255A Programmable Peripheral Interface. Basic features of Advanced Microprocessors - Pentium - I3 , I5 and I7

RecommendedTexts

1. M.M. Mano, "Computer System architecture". Pearson, Third Edition,2007
2. R.S. Gaonkar-"Microprocessor Architecture-Programming and Applicationswith 8085"- 5th Edition- Penram-2009.
3. Tripti Dodiya & Zakiya Malek, "Computer Organization and Advanced Microprocessors", Cengage Learning,2012.

Reference Books

1. Mathur- "Introduction to Microprocessor"- 3rd Edition- TataMcGraw-Hill-1993.
2. P. K. Ghosh and P. R. Sridhar- "0000 to 8085: Introduction to Microprocessors for Engineers and Scientists"- 2nd Edition- PHI-1995.
3. NagoorKani- "Microprocessor (8085) and its Applications"- 2nd Edition- RBA Publications-2006.
4. V. Vijayendran- "Fundamentals of Microprocessors – 8085"- S. Viswanathan Pvt. Ltd.-2008.

COURSE OUTCOME

CO 1: Summarize the data representation, bus and memory transfers.
CO 2: Interpret the fundamental registers stack organization and RISC Pipeline.
CO 3: Demonstrate the ability to program a microprocessor in Assembly language.
CO 4: Explain the Basics of BCD arithmetic, 8085 Microprocessor and Interrupts.
CO 5: Explain the usage of DMA and peripheral interfaces.

SUBJECT: DATA STRUCTURES USING JAVA LAB **YEAR: II**
SUB CODE: SZ231 **SEMESTER: III**

1. Write a Java programs to implement the List ADT using arrays and linked lists.
2. Write a Java programs to implement the following using a singly linked list.
   (a)Stack ADT
   (b) Queue ADT

3. Write a java program that reads an infix expression, converts the expression to postfix form and then evaluates the postfix expression (use stack ADT).
4. Write a Java program to implement priority queue ADT.
5. Write a Java program to perform the following operations:
(a) Insert an element into a binary search tree.
(b) Delete an element from a binary search tree.
(c) Search for a key element in a binary search tree.
6. Write a Java program to perform the following operations
(a) Insertion into an AVL-tree
(b) Deletion from an AVL-tree
7. Write a Java programs for the implementation of BFS for a given graph.
8. Write a Java programs for the implementation of DFS for a given graph.
9. Write a Java programs for implementing the following searching methods:
(a) Linear search
(b) Binary search.
10. Write a Java programs for implementing the following sorting methods:
(a) Bubble sort
(b) Selection sort
(c) Insertion sort
(d) Radix sort.

COURSE OUTCOME

CO1: Implement programs to execute class using array, linked list, Stack, Queue.
CO2: Execute programs on the concepts of infix expression and evaluate the postfix expression
CO3: Implement binary search tree, AVL, BFS and DFS.
CO4: Apply various searching techniques linear and binary.
CO5: Implement various sorting methods bubble, selection, insertion, radix sort.

SUBJECT: FINANCIAL ACCOUNTING **YEAR: II**
SUB CODE:SZ33A **SEMESTER: III**

Unit-1: The Accounting structure: Basic accounting concepts and conversions - Accounting equation - Meaning of accounting - Groups interested in accounting information - trial balance, final accounts(emphasis to be given to important adjustments) - Rectification of errors-Suspense account

Unit-2: Depreciation accounting - Meaning of depreciation -Methods of providing depreciation - Fixed percentage on original cost- Fixed percentage on diminishing balance (including change in the method of depreciation) Single entry : Definition and salient features Statement of affairs method-Conversion method. Average due date –Account current and investment accounts

Unit-3: Branch Accounts: Debtors system-profit and Loss Accounts -Stock and debtors system - Distinction between whole sale profit and retail profit - Independent branch (foreign branch excluded) -Departmental Accounts: Basis for allocation of expenses - Interdepartmental transfer at cost or selling price- Treatment of expenses which cannot be allocated.

Unit-4: Hire purchase and Instalment purchase: Meaning and legalposition - Accounting aspects -Default and re-possession - Hirepurchase trading account - Instalment system - Accounting aspect. Saleor Return: Meaning and legal position -Accounting procedure underdifferentcircumstances.

Unit-5:Partnership Accounts: Section 13 of Indian Partnership Act - Fixed and fluctuating capital - Final accounts of firms - Admission of a partner- Retirement of a partner- Death of a partne - dissolution of partnership - Insolvency of a partner - (Garner Vs Murray) - Insolvency of all partners Gradual realization of assets and piece meal distribution.

Recommended Texts & Reference

1.Gupta R.L, Advanced Accountancy, S.Chand, Delhi.
2. Agarwala A.N, Higher Science of Accountancy, Kitab Mahal,Allahabad.
3. S.P. Jain and K.L. Narang, Financial Accounting
4. M.C.Shukla and T.S.Grawel, Adavnced Accounts(Vol. I)
5. Gillespie Accounting system, Procedure & methods, Prentice Hall India Ltd, New Delhi.

COURSE OUTCOME

CO 1: Explain basic concepts of accounting and prepare final account.

CO2: Describe method of calculate of depreciation.

CO3: Prepare branch account and departmental account

CO4: Illustrate hire purchase and installment system.

CO5: Describe partnership account including admission, retirement, death and insolvency of partner and dissolution of partnership.

SUBJECT: COMPUTERNETWORKS **YEAR: II**
SUB CODE: SZ24A **SEMESTER: IV**

Unit-1:Introduction–NetworkHardware-Software-ReferenceModels-OSIandTCP/IP Models - Example Networks: Internet, ATM, Ethernet and Wireless LANs - Physical Layer – Theoretical Basis for Data Communication –Guided Transmission Media.

Unit-2: Wireless Transmission - Communication Satellites - Telephone System: Structure, Local Loop,TrunksandMultiplexingandSwitching.DataLinkLayer:DesignIssues-ErrorDetectionandCorrection.

Unit-3: Elementary Data Link Protocols - Sliding Window Protocols - Data Link Layer in the Internet - MediumAccessLayer-ChannelAllocationProblem-MultipleAccessProtocols-Bluetooth.

Unit-4: Network Layer - Design Issues - Routing Algorithms - Congestion Control Algorithms – IPProtocol - IPAddresses – Internet Control Protocols.

Unit-5: Transport Layer - Services - Connection Management - Addressing, Establishing and Releasing a Connection - Simple Transport Protocol - Internet Transport Protocols (ITP) - Network Security:Cryptography.

RecommendedTexts

i. A.S.Tanenbaum,"Computer Networks", Prentice-HallofIndia2008,4thEdition.ReferenceBooks

ReferenceBooks:

i. Stallings,"DataandComputerCommunications",PearsonEducation2012,7thEdition.
ii. B. A. Forouzan, "Data Communications and Networking", Tata McGraw Hill 2007, 4th Edition.iii F. Halsall, "Data Communications, Computer Networks and Open Systems", Pearson Education2008.
iv..D.BertsekasandR.Gallagher,"DataNetworks",PHI2008,2ndEdition.
v.Lamarca, "CommunicationNetworks",TataMcGrawHill2002.

COURSEOUTCOME

CO1: Describe network hardware, OSI and TCP/IP models.

CO2: Explain working of data link layer and its design issues.

CO3: Discuss channel allocation problem and usage of Bluetooth in computer networks.

CO4: Implement working of Internet Control Protocols.

CO5: Explain how connection management is performed in computer networks for releasing a connection.

SUBJECT: OPEN SOURCE TECHNOLOGIES **YEAR: II**
SUB CODE: SZ24B **SEMESTER: IV**

Unit-1:Introduction–WhyOpenSource –OpenSource –Principles, Standards Requirements, Successes –FreeSoftware–FOSS–Internet Application Projects

Unit-2: Open source – Initiatives, Principles, Methodologies, Philosophy, Platform, Freedom, OSSD,Licenses Copyright,Copyleft,Patent,ZeroMarginalTechnologies,Incomegenerationopportunities, Internalization

Unit-3: CaseStudies–Apache,BSD,Linux,Mozilla(Firefox),Wikipedia,Joomla,GCC,OpenOffice.

Unit-4: Open Source Project –Starting, Maintaining –Open Source – Hardware, Design, Teaching &Media

Unit-5: Open Source Ethics – Open Vs Closed Source – Government – Ethics – Impact of Open source Technology – Shared Software–Shared Source

RecommendedTexts

i.Kailash Vadera, Bhavyesh Gandhi, "Open Source Technology", Laxmi Publications Pvt Ltd 20121stEdition.

ReferenceBooks:

i.FadiP. DeekandJamesA. M. McHugh, "OpenSource:TechnologyandPolicy", CambridgeUniversitiesPress 2007

COURSEOUTCOME

CO1: Describe open source principles and standard requirements.

CO2: Explain open source methodologies, licenses, copy rights and patent.

CO3: DiscussopensourcecasestudieslikeMozilla(Firefox),GCC,openoffice.

CO4: Explain how open source projects are implemented.

CO5: Discussopensourceethicsandcompareopenandclosedsourcetechnologies.

SUBJECT: OPEN SOURCE TECHNOLOGIES LAB **YEAR: II**
SUB CODE: SZ241 **SEMESTER: IV**

LIST OF EXERCISES:

1. Study and usage of LibreOfficeSuite– Writer,Calc&Impress
2. Text Processing with PERL
3. Simple Applications using PHP
4. Simple Applications using Python
5. Image editing using GIMP
6. Study and usage of Business Intelligence tools–BIRT,JMagallanes
7. Creation of network diagrams using GraphViz
8. Linux Installation
9. Software Configuration in Linux environment.
10. Version Control System using Git.

COURSEOUTCOME:

CO1: Demonstrate Libre Office Suite.
CO2: Implement simple applications using PHP and Python
CO3: Apply Various Business Intelligence Tools likeBIRT,JMagallanes
CO4: Development work diagrams using GraphViz
CO5: Understand Installation and Configuration of Linux environment.

SUBJECT: E-COMMERCE TECHNOLOGIES **YEAR: II**
SUBJECT CODE: SZ24C **SEMESTER: IV**

UNIT-I

History of E-commerce and Indian Business Context: E-Commerce –Emergence of the Internet –Emergence of the WWW–Advantages of E-Commerce –Transition to E-Commerce in India – The Internet and India–E-transition Challenges for Indian Corporate. Business Models for E-commerce: Business Model – E-business Models Based on the Relationship of Transaction Parties - E-business Models Based on the Relationship of Transaction Types.

UNIT- II

Enabling Technologies of the World Wide Web:WorldWide Web –Internet Client-Server Applications– Networks and Internets –Software Agents– Internet Standards and Specifications–ISP.e-Marketing :Traditional Marketing –Identifying Web Presence Goals–Online Marketing –E-advertising–E-branding.

UNIT-III

E-Security: Information system Security – Security on the Internet – E-business Risk Management Issues – InformationSecurityEnvironmentinIndia.LegalandEthicalIssues:Cyberstalking –Privacy is at Risk in the Internet Age – Phishing – Application Fraud – Skimming – Copyright – Internet Gambling – Threats to Children.

UNIT-IV

e-Payment Systems: Main Concerns in Internet Banking – Digital Payment Requirements – Digital Token-based e-payment Systems – Classification of New Payment Systems – Properties of Electronic Cash – ChequePaymentSystemsontheInternet–Riskande-PaymentSystems–Designinge-paymentSystems– DigitalSignature–OnlineFinancialServicesinIndia -Online Stock Trading.

UNIT-V

Information systems for Mobile Commerce: What is Mobile Commerce? – Wireless Applications –Cellular Network – Wireless Spectrum – Technologies for Mobile Commerce – Wireless Technologies –Different Generations in Wireless Communication – Security Issues Pertaining to Cellular Technology. Portals for E-Business: Portals–Human Resource Management–Various HRIS Modules.

TEXTBOOK:

1.P.T.Joseph, S.J.,*"E-Commerce-AnIndianPerspective*", PHI2012,4thEdition.

REFERENCEBOOKS:

1. DavidWhiteley,"*E-CommerceStrategy, TechnologiesandApplications*",TataMcGrawHill, 2001.
2. RaviKalakota,AndrewBWhinston, "*Frontiers ofElectronicCommerce*", Pearson2006, 12thImpression.

WEBREFERENCES:

1. https://www.docsity.com/en/e-commerce-notes-pdf-lecture-notes-university-level/2484734/
2. https://magnetoitsolutions.com/blog/advantages-and-disadvantages-of-ecommerce
3. https://www.researchgate.net/publication/320547139ECommerce_Merits_and_Demerits_A_ReviewPaper

Course Outcome

CO1: Discuss in Indian Business Context and its advantages.
CO2: InterprettheTechnologybehindWWWandInternetClient-ServerApplications.
CO 3: Demonstrate how the privacy is at Risk in the Internet Age.
CO4: Explain the Basics of e-Payment systems and online stock trading.
CO 5: Discuss how the portal for E-business are Managed

SUBJECT: COST AND MANAGEMENT ACCOUNTING **YEAR: II**
SUB CODE: SZ34A **SEMESTER: IV**

Unit-1: Cost Accounting: Definition, Meaning and Objectives DistinctionbetweenCostandFinancialAccounting.Elementsofcostandpreparationofcostsheetsandtender. ManagementAccounting–Definitionandobjectives– DistinctionbetweenmanagementandFinancialAccounting.

Unit-2: Stores Records – Purchase Order – Goods Received. Note – Bin Card – Stores Ledger – Purchase, Receipt and Inspection – Inventory Control – ABC Analysis – Economic Ordering Quality – Maximum, Minimum and Reordering levels–Methods of PricingIssued.

Unit-3: Labor: Importance of Labor CostControl – Various Methods of Wage Payment– Calculation of Wages–Methods of Incentive for Schemes.

Unit-4: Overheads: Factory, Administration, Selling and Distribution of Overheads – Classification – Allocation and Apportionment – Redistribution (Secondary Distribution) – Absorption of Overheads including‘MachineHourRate..

Unit-5: Marginal Costing: The Concept – Break Even Analysis – Break – Even Chart – Importance andassumptions - Application of Profit Volumes Ratio – Budget and Budgetary Control: Procedure andUtility–Preparation of Different types of Budget including Flexible Budget.

1. RecommendedTexts&Reference

1. WheldonA.J., CostAccountingandCostingMethods.
2. IyengarS.P., CostAccounting:PrinciplesandPractice.
3. BharB.K.,CostAccounting:Methodsandproblems.
4. Bigg W.W.,CostAccounts.
5. PrasadN.K,CostAccounting:PrinciplesandProblems.
6. JainS.P.andNarangK.L.,AdvancedCostAccounting.
7. AgarwalM.,Theoryand PracticesofCostAccounting
8. RobertAnthony:ManagementAccounting:Textandcases.
9. MaheswariS.N.,Principles ofManagementAccounting.

COURSEOUTCOME

CO1-Prepare Cost sheet & tender
CO2-Discuss store'sRecords, store'sLedger, Inventory Control
CO3- Enumerate methods of calculation of wages.
CO4-Analyze different types of overheads and calculate Machine hour Rate
CO5- Describe Fund Flow a Cash flow analysis
CO6-Analyze the Ratio
CO7-Discuss Marginal Costing
CO8- Prepare Different types of Budget

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SUBJECT: ENVIRONMENTAL STUDIES **YEAR: II**
SUB CODE : ENV4B **SEMESTER IV**

Unit -1: Introduction to Environmental Studies

- Multidisciplinary nature of environmental studies
- Scope and importance, concept of sustainability and sustainable development.

Unit – 2: Ecosystem

- What is an Ecosystem? Structure and Function of Ecosystem; Energy flow in an Ecosystem; Food chains, Food webs and Ecological Succession,

a) Case Studies of the following ecosystem:
b) Forest Ecosystem
c) Grassl and Ecosystem
d) Desert Ecosystem
e) Aquatic Ecosystem (ponds,stream,la s, rivers, ocean,estuaries)

Unit – 3: Natural Resources: Renewable and Non- Renewable Resources

- Land resources and Land use change: Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water: Use and over – exploitation of surface and ground water, floods, droughts, conflicts over water (international and interstate)
- Energy resources: Renewable and nonrenewable energy sources, use of alternate energy sources, growing energy needs, case studies

Unit – 4: Biodiversity and Conservation

- Levelsofbiologicaldiversity:Genetics,speciesandecosystemdiversity, bio geographic zones of India : biodiversity patterns and global biodiversity hotspots.
- India as a mega biodiversity nation, endangered and endemics species of India.
- Threats to biodiversity: Habitat loss, poaching of wild life, man- wild life conflicts,biological invasions; conservations of biodiversity: In-situ and Ex-situ conservation of biodiversity
- Ecosystemandbiodiversityservices:Ecological,economic,social,ethical,aestheticand informational value.

Unit – 5: Environmental Pollution

- Environmental Pollution: Types, causes, effects and controls: Air, water, soil and noise pollution.
- Nuclear Hazards and Human health risks.
- Solid waste management: Control measures of urban and industrial waste
- Pollution case studies.

Unit – 6: Environmental Policies and Practices

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities andagriculture.
- Environment Laws: Environment protection act, air (prevention & control of pollution) act; water (prevention and control of pollution) act; wildlife protection act; forest conservation act; Internationalagreements;MontrealandKyotoprotocolsandconventiononbiologicaldiversity (CBD).
- Natural reserves, tribal populations and rights, and human wildlife conflicts in Indiancontext.

Unit – 7: Human Communities and the Environment

- Human population growth, impacts on environment, human health and welfare.
- Resettlement and rehabilitation of projects affected persons; case studies.
- Disaster management: Floods, earthquake, cyclone and landslides.
- Environmental movements: Chipko, Silent Valley, Bishnois of Rajasthan.
- Environmental Ethics: Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awarness, case studies (e.g. CNG Vehicles inDelhi)

Unit – 8: Field Work

- Visit to an area to document environmental assets: river/forest/flora/faunaetc.
- Visit to a local polluted site –Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds and basic principles ofidentification.
- Study of simple ecosystem- pond, river, Delhi Ridgeetc.

COURSE OUTCOME :

CO 1: Discuss Scope and importance of EVS.
CO2: Create Public awareness on environmental issues.
CO 3: Explain structures and functions of ecosystem
CO 4: Enumerate renewable and non-renewable natural resources
CO 5: Describe bio-diversity, environmental pollution, environmental, policies and practices.
CO 6: Explain link between human communities and the environment.

SUBJECT: SOFTWARE ENGINEERING **YEAR: III**
SUB CODE: BCE-CSC14 **SEMESTER: V**

UNIT- I
Introduction – Evolution – Software Development projects – Emergence of Software Engineering. Software Life cycle models – Waterfall model – Rapid Application Development – Agile Model – Spiral Model

UNIT- II
Requirement Analysis and Specification – Gathering and Analysis – SRS – Formal System Specification

UNIT- III
Software Design – Overview – Characteristics – Cohesion & Coupling – Layered design – Approaches Function Oriented Design – Structured Analysis – DFD – Structured Design – Detailed design

UNIT- IV
Object Modeling using UML – OO concepts – UML – Diagrams – Use case, Class, Interaction, Activity, State Chart – Postscript

UNIT- V
Coding & Testing – coding – Review – Documentation – Testing – Black-box, White-box, Integration, OO Testing, Smoke testing.

TEXT BOOK:

1. Rajib Mall, "*Fundamentals of Software Engineering*", PHI 2018, 5th Edition.

REFERENCE BOOKS:

1. Roger S. Pressman, "*Software Engineering - A Practitioner's Approach*", McGraw Hill 2010, 7th Edition.

2. Pankaj Jalote, "*An Integrated Approach to Software Engineering*", Narosa Publishing House 2011, 3rd Edition.

WEB REFERENCES:

NPTEL online course – Software Engineering - https://nptel.ac.in/courses/106105182/

COURSEOUTCOME :

CO1: Describe the evolution of software development projects and life cycle models.

CO2: Identify the requirement analysis and specification of software development.

CO3: Apply different design concepts and approaches.

CO4: Develop the product using UML and object oriented concepts.

CO5: Apply the testing concepts and documentation of software project.

SUBJECT: OPERATING SYSTEM **YEAR: III**
SUB CODE: BCE-CSC10 **SEMESTER: V**

UNIT - I

Introduction: Views - Types of System - OS Structure – Operations - Services – Interface- System Calls System Structure - System Design and Implementation. Process Management: Process - Process Scheduling - Inter-process Communication. CPU Scheduling: CPU Schedulers - Scheduling Criteria - Scheduling Algorithms.

UNIT - II

Process Synchronization: Critical- Section Problem - Synchronization Hardware Semaphores - Classical Problems of Synchronization - Monitors. Deadlocks: Characterization - Methods for Handling Deadlocks - Deadlock Prevention - Avoidance - Detection - Recovery.

UNIT - III

Memory Management: Hardware - Address Binding – Address Space - Dynamic Loading and Linking – Swapping – Contiguous Allocation - Segmentation - Paging – Structure of the Page Table.

UNIT - IV

Virtual Memory Management: Demand Paging - Page Replacement Algorithms - Thrashing. File System: File Concept -. Access Methods - Directory and Disk Structure - Protection - File System Structures - Allocation Methods - Free Space Management.

UNIT - V

I/O Systems: Overview - I/O Hardware - Application I/O Interface - Kernel I/O Subsystem - Transforming 1/0 Requests to Hardware Operations - Performance. System Protection: Goals - Domain - Access matrix. System Security: The Security Problem - Threats – Encryption- User Authentication.

TEXT BOOK:

1. Abraham Silberschatz, Peter B Galvin, Greg Gagne, "*Operating System Concepts*", Wiley India Pvt. Ltd 2018, 9th Edition,.

REFERENCES:

1. William Stallings, "*Operating Systems Internals and Design Principles*", Pearson, 2018, 9th Edition.
2. Andrew S. Tanenbaum, Herbert Bos, "*Modern Operating Systems*", Pearson 2014, 4th Edition.

WEB REFERENCES:

- NPTEL & MOOC courses titled Operating Systems
- https://nptel.ac.in/courses/106106144/

COURSEOUTCOME :

CO1: Understand the fundamental concepts and role of operating system.

CO2: Describe the structure and functions of Operating System.

CO3: Compare the performance of scheduling Algorithms.

CO4: Apply memory management techniques paging and segmentation schemes.

CO5: Describes the I/O system and system security concepts.

SUBJECT NAME: RELATIONAL DATABASE MANAGEMENT SYSTEM **YEAR: III**
SUBJECT CODE: BCE-CSC11 **SEMESTER:** V

UNIT - I Introduction to DBMS– Data and Information - Database – Database Management System – Objectives- Advantages – Components - Architecture. ER Model: Building blocks of ER Diagram – Relationship Degree – Classification – ER diagram to Tables – ISA relationship – Constraints – Aggregation and Composition – Advantages

UNIT - II Relational Model: CODD's Rule- Relational Data Model - Key - Integrity – Relational Algebra Operations – Advantages and limitations – Relational Calculus – Domain Relational Calculus - QBE.

UNIT – III Structureof Relational Database.Introduction to RelationalDatabase Design - Objectives –Tools – Redundancy and Data Anomaly – Functional Dependency - Normalization – 1NF – 2NF – 3NF – BCNF. Transaction Processing – Database Security.

UNIT - IVSQL: Commands – Data types – DDL - Selection, Projection, Join and Set Operations – Aggregate Functions – DML – Modification - Truncation - Constraints – Sub query.

UNIT – VPL/SQL: Structure - Elements – Operators Precedence – Control Structure – Iterative Control - Cursors - Procedure - Function - Packages – Exceptional Handling - Triggers.

TEXT BOOK:
1. S. Sumathi, S. Esakkirajan, "Fundamentals of Relational Database Management System", Springer International Edition 2007

REFERENCE BOOKS:
1. Abraham Silberchatz, Henry F. Korth, S. Sudarshan, "Database System Concepts", McGrawHill 2019, 7th Edition.
2. Alexis Leon & Mathews Leon, "Fundamentals of DBMS", Vijay Nicole Publications 2014, 2nd Edition.

WEB REFERENCES:
NPTEL & MOOC courses titled Relational Database Management Systems https://nptel.ac.in/courses/106106093/ https://nptel.ac.in/courses/106106095/

COURSE OUTCOME:

CO1: Describe the basic concepts of database system and ER model.
CO2: Design Relational model, Data model, Relational Algebra Operations, and Relational Calculus.
CO3: Implement relational data base and normalization forms.
CO4: Apply SQL Commands.
CO5: Analyze the PL/SQL structure, procedure, function, packages and triggers.

SUBJECT: OPERATING SYSTEM LAB **YEAR: III**
SUB CODE:BCE-CSC12 **SEMESTER: V**

LIST OF EXERCISES:

1. Basic I/O programming.
   To implement CPU Scheduling Algorithms:
2. Shortest Job First Algorithm.
3. First Come First Served Algorithm.
4. Round Robin and Priority Scheduling Algorithms.
5. To implement reader/writer problem using semaphore.
6. To implement Banker's algorithm for Deadlock avoidance.
   Program for page replacement algorithms:
7. First in First out Algorithm.
8. Least Recently Used Algorithm.
9. To implement first fit, best fit and worst fit algorithm for memory management.
10. Program for Inter-process Communication.

COURSE OUTCOME:

CO1: Compare and Understand CPU Scheduling Algorithms.

CO 2: Execute reader/ writer problem using semaphore.

CO3: Apply Banker's algorithm to avoid deadlock.

CO4: Evaluate page replacement algorithms.

CO5: Analyze the memory management and its allocation policies.

SUBJECT: PL/SQL LAB **YEAR: III**
SUB CODE: BCE-CSC13 **SEMESTER: V**

LIST OF EXERCISES

1) DDL commands with constraints.
2) DML Commands with constraints.
3) SQL Queries: Queries, sub queries, Aggregate function
4) PL/SQL: Exceptional Handling
5) PL/SQL: Cursor
6) PL/SQL: Trigger
7) PL/SQL: Packages
8) Design and Develop Application for Library Management
9) Design and Develop Application for Student Mark Sheet Processing
10) Design and Develop Application for Pay Roll Processing

COURSE OUTCOME:

CO1: Implement DDL and DML commands with constraints.

CO2: Understand queries in SQL to retrieve information from database.

CO3: Apply SQL Queries to implement Aggregate function.

CO4: Implement PL/SQL statements:exception handling, cursor, trigger, and packages mechanisms.

CO5: Develop database applications for pay using front-end and back-end tools.

SUBJECT: RESOURCE MANAGEMENT TECHNIQUES **YEAR: III**
SUB CODE: BCA-DSE1C **SEMESTER: V**

Unit-1: Basics of Operations Research(OR): Characteristics of O.R-Necessity of O.R in Industry -OR and Decision making Role of computers in O.R. Linear programming:Formulations and Graphical solution (of 2variables) canonical & standard terms of Linear programming problem.Algebraic solution: Simplex method.

Unit-2: Algebraic solution: Charnes method of penalties - two phase simplex method - concept of Duality-properties of duality-Dual simplex method.

Unit-3: Transportation model:Definition- formulation and solution of transportation models- the row - minima, column - minima, matrix minima and vogel's approximation methods. Assignment model: Definition of Assignment model - comparison with transportation model - formulation and solution of Assignment model-variations of Assignment problem.

Unit-4: Sequencing problem: Processing each of n jobs through m machines - processing n jobs through 2 machines - processing n jobs through 3 machines - processing 2 jobs through mmachines-processing n jobs through m machines - travelling salesman problem. Game Theory: Characteristics of games - Maximin,Minimax criteria of optimality - Dominance property - algebraic and graphical method of solution of solving 2x2games.

Unit-5: Pert - CPM: Networks - Fulkerson's Rule - measure of activity - PERT computation – CPM computation - resource scheduling. Simulation: Various methods of obtaining random numbers for use in computer simulation - Additive, multiplicative and mixed types of congruence random number generators-Monte Carlo method of simulation-its advantages and disadvantages.

RecommendedTexts

i. HamdyA.Taha:,1996,OperationResearch - AnIntroduction,5th edition,PrenticeHallofIndia,Pvt.Ltd.,NewDelhi .
ii. AckoffR.L. andSasieniM.W,1968, FundamentalsofOperationsResearch,JohnWileyandsons,NewYork.
iii. CharnesA.CooperW.andHendersenA.1953,IntroductiontoLinearProgramming,WileyandSons,NewYork.
iv.SrinathL.S,1973,PERTandCPMprinciplesandapplications,AffiliatedEastWestPressPvt.Ltd.,NewYork.

WEB REFERENCES:

- http://ocw.mit.in
- http://ebooks.Ipude.in.operationsresearch

COURSEOUTCOME:

CO1 : Describe O.R and Decision making, Linear Programming, Graphical and Simplex Method.

CO2: Evaluate Algebraic Solution, two phase simplex method, duality.

CO3: Calculate **t**ransportation model, row and column minima Method, Vogel's Method, Assignment Problems.

CO4: Calculate Sequencing problem, processing n jobs through m machines, Travelling Salesman Problem, Game theory, Dominance, Graphical Method.

CO5: Describe PERT-CPM Networks, Fulkerson's Rule,Simulation, MonteCarloMethod.

SUBJECT NAME: VALUE EDUCATION **YEAR: III**
SUBJECT CODE: VAE5Q **SEMESTER: V**

Unit 1: Value education – its purpose and significance in the present world- Value system – the role of culture and civilization-Holistic Living-Balancing the outer and inner- Body, Mind and intellectual level Duties and responsibilities.

Unit 2: Salient values for life- Truth, commitment, honesty and integrity, forgiveness and love, empathy and ability to sacrifice, care, unity and inclusiveness, Self-esteem and Self-confidence, punctuality - Time, Task and Resource management- Problem solving and Decision-making skills – Inter personal and Intra personal relationship – Team work – Positive and Creative thinking.

Unit 3: Human Rights – Universal Declaration of Human rights – Human rights violation -National Integration- Peace and non – violence – Dr. A. P.J kalam' s ten points for enlightened citizenship – Social values and Welfare of the citizen – The role of media in value building.

Unit 4: Environment and Ecological balance – interdependence of wellbeing – living and non – living. The binding of man and nature – Environment- conservation and enrichment.

Unit 5: Social Evils – Corruption, Cybercrime, Terrorism – Alcoholism, Drug addiction, Dowry – Domestic violence – Untouchability – Female infanticide – atrocities against Women – How to tackle them.

Books for Reference :

1. MG. Chitakra: Education and Human Values, A.P.H. Publishing Corporation, New Delhi, 2003.
2. Chakravarthy, S.K. : Values and ethics for organization: Theory and Practice,Oxford University Press, New Delhi, 1999.
3. Satchidananda, M.K. : Ethics, Education, Indian Unity and Culture, Ajantha Publications, Delhi, 1991.
4. Das, M.S. & Gupta, V.K.: Social Values among young adults: A chaning Scenario, M.D. Publicatoins, New Delhi, 1995.
5. Bandiste, D.D.: Humanist Values: A source book, B.R. Publishing Corporation, Delhi, 1999.
6. Ruhela, S.P.: Human Values and education, Sterling publications, new delhi, 1986.
7. Kaul, G.N.: Values and education in independent indian Associated publishers, Mumbai, 1975.
8. NCERT, Education in values, New Delhi, 1992.
9. Swami Budhananda (1983) How to build character A primer: Ramakrishna mission, New delhi.
10. A Cultural heritage of india (4 vols), Bharatiyavidyabhavan, Bombay. (Selected chapters only)
11. For life, for the future : Reserves and Remains – UNESCO Publication.
12. Values, A Vedanta kesari presentation, Sri Ramakrishna math, Chennai, 1996.
13. Swami Vivekananda, Youth and modern india, Ramakrishna mission, Chennai.
14. Swami Vivekananda, call to the youth for nation building, advaitaAshrama, Calcutta.
15. Awakening Indians to india, Chinmayan and a Mission, 2003.

COURSE OUTCOME:

CO1: Explain basic principles of professional ethics and mass media ethics.
CO2: Compare leadership, ethical business decisions
CO3: Describe value of faith, social awareness and commitment
CO4: Analyze Impact of globalization and consumer awareness
CO5: Discuss Evolution of human rights and the international law in operation.

SUBJECT: WEB DESIGN AND DEVELOPMENT **YEAR: III**
SUBJECT CODE: BCA-DSC18 **SEMESTER: VI**

UNITI:

HTML: HTML-Introduction-tag basics- page structure-adding comments working with texts, paragraphsand line break. Emphasizing test- heading and horizontal rules-list-font size, face and color-alignment-links-tables-frames

UNITII:

Forms & Images Using Html: Graphics: Introduction-How to work efficiently with images in web pages,image maps, GIF animation, adding multimedia, data collection with html forms textbox, password, listbox, combobox, textarea,tools for building webpage front page

UNITIII:

XML & DHTML: Cascading style sheet (CSS)-what is CSS-Why we use CSS-adding CSS to your webpages-Grouping styles-extensible markup language (XML). Dynamic HTML: Document object model(DCOM)-AccessingHTML&CSSthroughDCOMDynamiccontentstyles&positioning-Eventbubbling-databinding.

UNITIV:

JavaScript : Client side scripting, What is JavaScript, How todevelop JavaScript, simple JavaScript, variables, functions, conditions, loops and repetition, Advance script, JavaScript and objects, JavaScriptownobjects,theDOMandwebbrowserenvironments,formsandvalidations

UNITV:

Ajax: Introduction, advantages &disadvantages, Purpose of it, ajax based web application, alternatives ofajax
JavaScript&AJAX:Introductiontoarray-operators,makingstatements-date &time-mathematics-strings-Eventhandling-formproperties.AJAX.IntroductiontojQueryandAngularJS.

TEXTBOOKS:

1. PankajSharma,"*WebTechnology*",SkKataria&SonsBangalore2011.(UNITI,II,III&IV).
2. MikeMcgrath,"*Java Script*",DreamTechPress2006,1st Edition.(UNITV:JAVASCRIPT)
3. AchyutSGodbole& AtulKahate,"*WebTechnologies*", 2002,2ndEdition.(UNITV:AJAX)

REFERENCEBOOKS:

- LauraLemay,RafeColburn,JenniferKyrnin,*"MasteringHTML,CSS&JavascriptWebPublishing*",2016.
- DT Editorial Services (Author), "*HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML,AJAX,PHP,jQuery)*",Paperback2016,2nd Edition.
- C.Xavier,"*WorldWideWebDesignwithHTML*",TMH Publishers2001.
- WendyWillard,"*ABeginnersGuideHTML",*TataMcGrawHill2009,4thEdition.

WEBREFERENCES:

- NPTEL&MOOCcoursestitledWebDesignandDevelopment.

https://www.udemy.com/topic/web-design

COURSE OUTCOMES:

CO1: Develop and publish Web pages using Hypertext Markup Language(HTML).

CO2: Ability to optimize page styles and layout with Cascading Style Sheets(CSS).

CO3: Analyze and apply the role of languages to create a capstone.

CO4: Ability to understand HTML, DHTML, CSS, XML, JavaScript and AJAX.

CO 5: Create website using client-side web programming languages.

SUBJECT NAME: DATA MINING **YEAR: III**
SUBJECT CODE: BCA-DSC19 **SEMESTER: VI**

UNIT – I: Basic Data Mining Tasks – Data Mining Versus Knowledge Discovery in Data Bases – Data Mining Issues – Data Mining Matrices – Social Implications of Data Mining – Data Mining from Data Base Perspective.

UNIT – II: Data Mining Techniques – a Statistical Perspective on data mining – Similarity Measures – Decision Trees – Neural Networks – Genetic Algorithms.

UNIT – III: Classification: Introduction – Statistical – Based Algorithms – Distance Based Algorithms – Decision.

UNIT – IV: Clustering Tree – Based Algorithms – Neural Network Based Algorithms – Rule Based Algorithms – Combining Techniques: Introduction – Similarity and Distance Measures – Outliers – Hierarchical Algorithms- Partitioned Algorithms.

UNIT – V: Association Rules: Introduction - Large Item Sets – Basic Algorithms – Parallel & Distributed Algorithms – Comparing Approaches – Incremental Rules – Advanced Association Rules Techniques – Measuring the Quality of Rules.

TEXT BOOK:

1. Jiawei Han & Micheline Kamber, "Data Mining Concepts & Techniques", 2011, 3 rd Edition.

REFERENCE BOOK:

1. Margaret H.Dunbam, "Data Mining Introductory and Advanced Topics", Pearson Education 2003.

WEB REFERENCES:

- NPTEL & MOOC courses titled Data Mining
- https://nptel.ac.in/courses/106105174/

COURSE OUTCOME:

CO1: Describe the data mining tasks and database perspective.
CO 2: Apply the data mining techniques and neural networks
CO 3: Describe the classifications of statistical and distance based algorithm.
CO 4: Apply clustering tree algorithms.
CO5: Discuss about the association rules and measure.

SUBJECT: MOBILE APPLICATION DEVELOPMENT **YEAR: III**
SUBJECT CODE: BCA-DSC20 **SEMESTER: VI**

UNIT-I

Mobile Application Development - Mobile Applications and Device Platforms - Alternatives for Building Mobile Apps -Comparing Native vs. Hybrid Applications -The Mobile Application Development Lifecycle-The Mobile Application Front-End-The Mobile Application Back-End-KeyMobileApplicationServices-WhatisAndroid-Androidversionhistory-ObtainingtheRequired Tools- Launching Your First Android Application-Exploring the IDE-Debugging Your Application-Publishing Your Application

UNIT-II

Understanding Activities-Linking Activities Using Intents-Fragments-Displaying Notifications-Understanding the Components of a Screen-Adapting to Display Orientation-Managing Changes to Screen Orientation- Utilizing the Action Bar-Creating the User Interface Programmatically Listening for UI Notifications

UNIT-III

Using Basic Views-Using Picker Views -Using List Views to Display Long Lists-Understanding Specialized Fragments - Using Image Views to Display Pictures -Using Menus with Views-Using Web View- Saving and Loading User Preferences-Persisting Data to Files-Creating and Using Databases.

UNIT-IV

Sharing Data in Android-Creating Your Own Content Providers -Using the Content Provider-SMSMessaging-SendingEmail-DisplayingMaps-GettingLocationData-MonitoringaLocation.

UNIT-V

ConsumingWebServicesUsingHTTP-ConsumingJSONServices-CreatingYourOwnServices – Binding Activities to Services-Understanding Threading.

TEXTBOOK:

1.JeromeDiMarzio, "*BeginningAndroidProgrammingwithAndroidStudio*",4th Edition.

REFERENCEBOOKS:

1. DawnGriffiths,DavidGriffiths,"*HeadFirstAndroidDevelopment:ABrain-FriendlyGuide",*2017.
2. NeilSmyth,"*AndroidStudio3.0DevelopmentEssentials: Android",*8th Edition.
3. PradeepKothari,"*AndroidApplication Development (WithKitkat Support)",*BlackBook2014.

WEBREFERENCES:

- https://developer.android.com/guide
- https://en.wikipedia.org/wiki/Android_10
- Develop App forFree
- https://flutter.dev/
- http://ai2.appinventor.mit.edu
- https://en.wikipedia.org/wiki/Android_version_history

COURSE OUTCOME:

CO1: Describe the basics of mobile application development.

CO2: Develop Android application with User interface, networking and animation.

CO3: Use simulator tools to test and publish the application.

CO4: Ability to understand Specialized Fragments.

CO5: Develop own content Providers and Monitoring a Location.

SUBJECT: MOBILE APPLICATION DEVELOPMENT LAB **YEAR: III**
SUBJECT CODE: BCA-DSC21 **SEMESTER: VI**

Exercises

1. Develop an application that finds greatest among three numbers using GUI Components
2. Develop an application to display your personal details using GUI Components
3. Develop an application that uses the radio button
4. Develop an application that uses the image button
5. Develop an application that uses AlertDialogBox
6. Develop an application that uses LayoutManagers.
7. Develop an application that uses audiomode(NORMAL,SILENT,VIBRATE)
8. Develop an application that uses to send messages from one mobile to another mobile.
9. Develop an application that uses to send email
10. Develop an application form mobile calls.
11. Develop an application for Student Marksheet processing
12. Develop an application for Login Page in Database.
13. Develop an application for Google map locator(optional)

WEBREFERENCES:
DeveloptheApponline

- https://flutter.dev/
- http://ai2.appinventor.mit.edu

COURSE OUTCOME:

CO1: Develop an application using GUI Components.

CO2 : Use Emulator tools to design and develop applications.

CO3: Create an application that uses to send Messages.

CO4: Ability to create an application using database.

CO5: Develop an application Google map locator.

SUBJECT: SOFTWARE PROJECT MANAGEMENT **YEAR: III**
SUBJECT CODE: BCA-DSE2C **SEMESTER: VI**

UNIT-I

IntroductiontoCompetencies-ProductDevelopmentTechniques-ManagementSkills-ProductDevelopment Life Cycle - Software Development Process and models - The SEI CMM – International Organization for Standardization.

UNIT-II

Managing Domain Processes - Project Selection Models - Project Portfolio Management – Financial Processes - Selecting a Project Team - Goal and Scope of the Software Project-Project Planning -Creating the Work Breakdown Structure - Approaches to Building a WBS - Project Milestones – Work Packages-Building a WBS for Software.

UNIT-III

Tasks and Activities - Software Size and Reuse Estimating - The SEI CMM - Problems and Risks - CostEstimation - Effort Measures - COCOMO: A Regression Model - COCOMO II - SLIM: A Mathematical Model-Organizational Planning – Project Roles and Skills Needed.

UNIT-IV

Project Management Resource Activities - Organizational Form and Structure - Software DevelopmentDependencies-Brainstorming-SchedulingFundamentals-PERTandCPM-LevelingResourceAssignments-MaptheScheduletoaRealCalendar-CriticalChainScheduling.

UNIT-V

Quality: Requirements – The SEI CMM - Guidelines - Challenges - Quality Function Deployment - Building the Software Quality Assurance - Plan - Software Configuration Management: Principles-Requirements- Planning and Organizing- Tools- Benefits- Legal Issues in Software- Case Study

TEXTBOOK:

1.RobertT.Futrell,DonaldF.Shafer,LindaI.Safer,"*QualitySoftwareProjectManagement*",PearsonEducationAsia2002.

REFERENCEBOOKS:

1. PankajJalote, "*SoftwareProjectManagement inPractice*", AddisonWesley2002.
2. Hughes, "*SoftwareProjectManagement*",TataMcGrawHill2004,3rdEdition.

WEBREFERENCES:

- NPTEL&MOOCcoursestitledSoftwareProjectManagement
- www.smartworld.com/notes/software-project-management.

COURSE OUTCOME:

CO1: Ability to understand importance of software project management.

CO2: Describe software management metrics.

CO3: Understand ability to software project planning and tracking.

CO4: Ability to plan project management Resources.

CO5: Apply software configuration management tools.