Government of Karnataka
SYLLABUS FOR 2014-2015
SECOND PUC - COMPUTER SCIENCE (41)

SL No	NAME OF THE UNIT/CHAPTER	SUB-UNITS	NO. OF OURS
	UNIT A	BACKDROP OF COMPUTERS 35 Hrs	
1	Typical configuration of Computer system Organisation 5 Hrs/ 4 Marks	Review of Block diagram of CPU	1
		Mother board	2
		Introduction to Motherboard	
		Types of Motherboards	
		Components of Motherboard	
		Processor and clock speed	
		BIOS	
		CMOS	
		Memory and Expansion slots	
		Disk Controllers	
		I/O Ports and Interfaces	
		BUS	
		Power supply SMPS and UPS	1
		Typical configuration of Computer system	1
2	BOOLEAN ALGEBRA 15 Hrs/ 13 Marks	Development of Boolean Algebra (History)	2
		Binary valued quantities	
		Boolean constants	
		Boolean variables	
		Logical operators	
		Logical functions or compound statements	2
		Logical operators	
		Evaluation of Boolean expressions	
		Using truth table	
		Using rules of algebra	
		Logic gates	2
		Basic gates	
		OR Gate	
		AND Gate	
		NOT Gate	
		Derived Gates	
		NOR Gate	
		NAND Gate	
		XOR Gate	
		XNOR Gate	
		Design of gates	1
		NAND to NAND and NOR to NOR design	
		Design of basic gates (NOT , OR & AND) using NAND and NOR gates	
		Basic postulates of Boolean Algebra (with proof)	2

		Properties of 0 and 1	
		Indempotence law	
		Involution law	
		Complementarity law	
		Commutative law	
		Associative law	
		Distributive law-different forms	
		Absorption law	
		De Morgan's theorems	3
		De Morgan's I theorem	
		De Morgan's II theorem	
		Applications of De Morgan's theorems	
		Derivation of Boolean expressions	
		Min terms	
		Max terms	
		Canonical expressions	
		Minimization of Boolean expressions	3
		Simplification using Karnaugh map (upto 4-variables)	
		Sum-of-product reduction using Karnaugh map	
		Product-of-sum reduction using Karnaugh map	
3	Data structures 15 Hrs/ 14 Marks	Introduction to Data Structures	2
		Introduction to Data Structures	
		Data representation	
		Types of Data structures -Linear and non linear	
		Definition for Traversal, Insertion, Deletion,Searching,sorting and merging	
		Arrays	6
		Introduction	
		Types of arrays	
		one dimensional and two dimensional	
		Memory representation of data	
		Basic operations on One dimensional arrays	
		Traversing	
		Insertion of an element	
		Deletion of an element	
		searching(linear and Binary search)	
		Sorting	
		Stacks and Queues	5
		Data representation in stacks(using arrays)	
		Operations on stacks(Push and pop)	
		Applications of Stacks-polish notation-prefix,infix,postfix expression	
		Queues	
		Types of Queues	
		Data representation	
		Operations on Queues	

		Linked lists	2
		Single and double linked lists	
		Operations on single linked lists	
	UNIT B	COMPUTING IN C++ 45Hrs	
4	Object Oriented Programming in C++ 45 Hrs/ 39 Marks	Review of C++ covered in First PUC	2
		Programming paradigms	1
		Procedural programming	
		Object Oriented programming	
		Basic concepts of OOPS	4
		Introduction to Classes and Objects	
		Data Abstraction	
		Data Encapsulation	
		Inheritance	
		Polymorphism	
		Advantages of OOPS over earlier programming methodologies	
		Classes and objects	
		Declaration & definition of class and objects	6
		Access specifies (scope of class & its members)	
		Private	
		Public	
		Protected	
		Members of the class	
		Data members	
		Member functions	
		Member functions inside class definition	
		Member functions out side class definition	
		Referencing class members	
		Array within class	
		using objects	
		array of objects	
		Functions returning objects	
		Function over loading	3
		Introduction	
		Need for function overloading	
		Declaration and definition of function overloading Function over loading	
		Restrictions on functions over loading	
		Calling over loaded functions	
		Inline function	
		Friend function	
		Constructor & Destructor	8
		Introduction	
		Constructor	
		Declaration & definition of Constructor	

		Default constructor	
		Parameterized constructor	
		Copy constructor	
		Constructor overloading	
		Special characteristics of constructor	
		Constructor with default arguments	
		Destructor	
		Need for Destructor	
		Declaration & definition of Destructor	
		Special characteristics of Destructor	
		Inheritance(Extending classes)	8
		Concepts of Inheritance	
		Base class	
		Derived class	
		Defining derived classes	
		Protected visibility modes	
		Levels of inheritance	
		Single	
		Multilevel	
		Multiple	
		Hierarchical	
		Relationship between classes	
		Pointers	7
		Introduction	
		Declaration & initialization of pointers	
		Memory rlepresentation of pointers	
		Address operator	
		Pointer operator(indirection operator)	
		Pointer arithmetic	
		Memory allocation of pointers(static and dynamic)	
		new and delete	
		Pointer and arrays	
		Arrays of pointers	
		Pointers to an array(1 dimensional)	
		Pointers to strings	
		Pointer and functions	
		By passing the references	
		By passing the pointers	
		Pointer and structures	
		Pointer and objects	
		this pointer	
		Data file handling	6
		Introduction	
		Header files(fstream.h)	
		Types of data files	

		Text file introduction	
		Binary file introduction	
		Opening & closing files	
		Using constructor	
		Using open()	
		File modes	
		In ,out, app modes	
		get(), getline(), put(),putline(),open(),close(),read(),write()	
		Detecting end of file	
		File pointers	
		tellg(), tellp(), seekg(), seekp() functions	
		Operation on files(sequential)	
		Create, write, display	
	UNIT C	LARGE DATA, DATABASE AND QUERIES 20Hrs	
	DATABASE CONCEPTS 20 Hrs/ 18 Marks	Database Concepts	
		Introduction :Facts,data,information,features	
		database definitions : data types , field,records,table	
		Logical database concepts- entities,attributes,relations(1:1,1-M,M-1,M-M)	
		Physical data organisation - sequential,random,indexed sequential	
		Need for Databases	
		Data Abstraction :- view,schema,internal,conceptual,external	
		Data Models	8
		Hierarchial,Network and Relational Models	
		KEYS- Primary,Secondary,Candidate,Foreign,Alternate	
		Relational Algebra	
		Selection	
		Projection	
		Union	
		Cartesian Product	
		Data warehousing,Data mining concepts.,	
		Structured Query Language	
		Introduction and need of sql	
		Data types(number,Varchar,Date)	4
		DDL	
		DML	
		SQL COMMANDS	
		CREATE,DROP,ALTER,UPDATE	
		INSERT,DELETE.SELECT,DISTINCT	8
		FROM,WHERE,GROUP BY, ORDER BY ,JOIN	
		SQL Functions	

		SUM,AVG,COUNT,MAX,MIN	
UNIT D ADVANCED CONCEPTS IN COMMUNICATION TECHNOLOGY 20Hrs			
6	Networking Concepts 10 Hrs/ 09 Marks	Introduction	10
		Evolution of Networking and Protocols	
		ARPANET,Layers,OSI VsTCP/IP,HTTP,ftp/Slip/PPP	
		Internet, Interspace	
		Different Terminologies used in Network	
		Advantages of Networking	
		Switching techniques	
		Circuit,Message and Packet Switching	
		Type of Networking	
		LAN,MAN,WAN	
		Transmission Media	
		Twisted pair cable,Co axial Cable, optical fibres,Microwave,Radiowave,Satellite, Infrared, Laser	
		Network Topologies	
		Point-point,Bus,Star,Ring,Tree,Mesh,Graph,Fully connected	
		Network Devices	
		Modem,RJ-45,Hub,Ethernet,Switch,repeater,bridge,router and gateway	
		Wireless/Mobile Computing	
		Definition	
		Technologies of GSM,CDMA,GPRS,WLL,2G,3G,4G,5G	
		Applications	
		SMS,Voice,Chat,Video conferencing protocol,WiFi, Viruses	
		Network Security	
7	Internet and Open source concepts 5Hrs/ 4 Marks	Definition and Applictions	5
		Internetworking terms and concepts	
		WWW,Telnet,URL,Domain,Web server, Web sites, web browser,web Address,Web Page	
		IPR issues	
		Open source	
		E-commerce	
8	Web Designing 5 Hrs/ 4 Marks	Introduction	5
		HTML, -text,layout,images,table,forms,settings	
		XML	
		DYNAMIC HTML	
		Web HOSTING	
			120

List of programs to be conducted in practical sessions

Section A C++ and Data structure

1. Write a program to find the frequency of presence an element in an array.
2. Write a program to insert an element into an array at a given position.
3. Write a program to delete an element from an array from a given position
4. Write a program to sort the elements of an array in ascending order using insertion sort.
5. Write a program to search for a given element in an array using Binary search method.
6. Write a program to create a class with data members principle, time and rate. Create member functions to accept data values to compute simple interest and to display the result.
7. Write a program to create a class with data members a, b, c and member functions to input data, compute the discriminant based on the following conditions and print the roots.
   - Ø If determinant=0, print the roots that are equal
   - Ø If the discriminant is>0, print the real roots
   - Ø If the discriminant<0, print that the roots are imaginary
8. Program to find the area of a square/rectangle/triangle using function overloading.
9. Program to find the cube of a number using inline functions.
10. Write a program to find the sum of the series $1+ x + x^2 + \ldots + x^n$ using constructors.
11. Create a base class containing the data members roll number and name. Also create a member function to read and display the data using the concept of single level inheritance. Create a derived class that contains marks of two subjects and total marks as the data members.
12. Create a class containing the following data members register No., name and fees. Also create a member function to read and display the data using the concept of pointers to objects.
13. Write a program to perform push items into the stack.
14. Write a program to pop elements from the stack.
15. Write a program to perform enqueue and dequeue.
16. Write a program t o create a linked list and appending nodes.

Section B SQL

17. Generate the Electricity Bill for one consumer
18. Create a student database and compute the result.
19. Generate the Employee details and compute the salary based on the department.
20. Create database for the bank transaction.

Section C HTML

21. Write a HTML program to create a study time-table.
22. Create an HTML program with table and Form.