

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

SL No	NAME OF THE UNIT/CHAPTER	SUB-UNITS	NO. OF OURS
<b>UNIT A</b>		<b>BACKDROP OF COMPUTERS</b>	<b>35 Hrs</b>
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	2
		Logical functions or compound statements	
		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	
		Idempotence law	
		Involution law	
		Complementarity law	
		Commutative law	
		Associative law	
		Distributive law-different forms	
		Absorption law	
		De Morgan's theorems	
		De Morgan's I theorem	
		De Morgan's II theorem	
		Applications of De Morgan's theorems	
		Derivation of Boolean expressions	3
		Min terms	
		Max terms	
		Canonical expressions	
		Minimization of Boolean expressions	
		Simplification using Karnaugh map ( upto 4-variables)	3
		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	
		Introduction to Data Structures	
		Data representation	
		Types of Data structures -Linear and non linear	2
		Definition for Traversal, Insertion, Deletion, Searching, sorting and merging	
		Arrays	
		Introduction	
		Types of arrays	
		one dimensional and two dimensional	
		Memory representation of data	
		Basic operations on One dimensional arrays	6
		Traversing	
		Insertion of an element	
		Deletion of an element	
		searching(linear and Binary search)	
		Sorting	
		Stacks and Queues	
		Data representation in stacks(using arrays)	
		Operations on stacks(Push and pop)	
		Applications of Stacks-polish notation-prefix, infix, postfix expression	5
		Queues	
		Types of Queues	
		Data representation	
		Operations on Queues	



	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)	
	Concepts of Inheritance	
	Base class	
	Derived class	
	Defining derived classes	
	Protected visibility modes	
	Levels of inheritance	
	Single	
	Multilevel	
	Multiple	
	Hierarchical	
	Relationship between classes	
	Pointers	
	Introduction	
	Declaration & initialization of pointers	
	Memory representation 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	
	Introduction	
	Header files(fstream.h)	
	Types of data files	
		8
		7
		6

		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	
<b>UNIT C</b>		<b>LARGE DATA, DATABASE AND QUERIES 20Hrs</b>	
<b>DATABASE CONCEPTS</b> 20 Hrs/ 18 Marks	Database Concepts		8
	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		
	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		4
	Introduction and need of sql		
	Data types(number,Varchar,Date)		
	DDL		
DML		8	
SQL COMMANDS			
CREATE,DROP,ALTER,UPDATE			
INSERT,DELETE.SELECT,DISTINCT FROM,WHERE,GROUP BY, ORDER BY ,JOIN			
SQL Functions			

		SUM,AVG,COUNT,MAX,MIN	
<b>UNIT D    ADVANCED CONCEPTS IN COMMUNICATION TECHNOLOGY    20Hrs</b>			
6	Networking Concepts 10 Hrs/ 09 Marks	Introduction	10
		Evolution of Networking and Protocols	
		ARPANET, Layers, OSI Vs TCP/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 Applications	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  $1 + x + x^2 + \dots + x^n$  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 to 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.