

**TEACHING & EXAMINATION SCHEME
For the Examination - 2015
COMPUTER SCIENCE**

B.Sc. Final

THEORY

			Pd/W (45mts.)	Exam. Hours	Max. Marks
					150
CS.301	Paper I	Computer Organisation –II	2	3	50
CS.302	Paper II	Programming Language C and C++	2	3	50
CS.303	Paper III	Computer Graphics	2	3	50
PRACTICAL					
CS304		Advanced Computer Lab	6	5	75
				Total	225

**B.SC. PART-III
PAPER I
COMPUTER ORGANIZATION – II**

Note: The question paper for the examination will be divided in three parts i.e., Section – A, Section – B and Section – C.

Section – A: Will consist of 10 compulsory questions. There will be two questions from each unit and answer of each question shall be limited upto 30 words. Each question will carry 1 mark.

Section – B: Will consist of 10 questions. Two questions from each unit will be set and students will answer one question from each Unit. Answer of each question shall be limited upto 250 words. Each question carry 3.5 marks.

Section – C: Will consist of total 05 questions. The paper setter will set one question from each Unit and students will answer any 03 questions and answer of each question shall be limited upto 500 words. Each question will carry 7.5 marks.

UNIT 1:

Microprogram Control Organisation; Control memory, Address sequencing microprogram and its sequencing , microinstruction formats. Software aids, Advantages and applications of microprogramming.

UNIT 2:

Arithmetic processors; Addition and subtraction and Algorithms, multiplication and division Algorithms for arithmetic with 2's compliment, floating point arithmetic and decimal arithmetic operations and their hardware implementation.

UNIT 3:

8086 & other microprocessors; Organisation of 8086 –Instruction set, addressing modes and instruction codes, assembler directives and pseudo instructions, simple assembly language programming examples, interfacing with I/O and memories, 8086 interrupts and DMA.

UNIT 4:

Memory Organisation : Auxiliary memory, microcomputer memory, memory hierarchy, Associative memory, virtual memory, Cache memory, Memory mangement.

UNIT 5:

Analog interface : O.P.- AMP basics, D/A converter , DAC 0808, successive approximation, A/D converter–ADC 0801, software handshaking, Hardware handshaking, successive approximation with software, voltage controlled oscillator, sample and hold circuits.

Paper II PROGRAMMING LANGUAGE C and C++

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Section – C: Will consist of total 05 questions. The paper setter will set one question from each Unit and students will answer any 03 questions and answer of each question shall be limited upto 500 words. Each question will carry 7.5 marks.

UNIT 1:

Programming language C: structure of C program, Identifiers and keywords, data types, constants, arithmetic operations, library functions, expressions, input/output statements: getchar and putchar, scanf and printf, relational and logical operators, unary operators, hierarchy of operations.

UNIT 2:

Transfer of control: IF-else statement, Switch statement, Goto statement, iterative statements: While, Do-while, For statement, nested loops, break statements, Arrays: definitions, one-dimensional and multi-dimensional, functions; define and accessing a function, arguments of a function, passing arguments and array to a function, recursion.

UNIT 3:

Pointers: pointer declaration, operations on pointers, pointers to array, array of pointers, passing pointers to a function, user defined data types: structures, defining a structure, processing a structure, structure and pointers, passing structure to a function unions. Introduction to C++, Basic data types, Derived data types, reference variables, Input/Output statements in C++.

UNIT 4:

Operators in C++, manipulators, type cast operator, functions in C++, main function, function prototyping, call by reference, return by reference, inline functions, friend function, virtual functions. Class data type, creating objects, member functions, private member functions, static data members, static member functions, pointers to members.

UNIT 5:

Constructors, multiple constructors in a class, copy and dynamic constructors, destructors, operator overloading , type conversions: Basic to class, class to basic and class to class. Inheritance, single inheritance, multilevel inheritance, multiple inheritance, hierarchical inheritance, hybrid inheritance, pointers to objects.

Paper III

COMPUTER GRAPHICS

Note : The question paper for the examination will be divided in three parts i.e., Section – A, Section – B and Section – C.

Section – A: Will consist of 10 compulsory questions. There will be two questions from each unit and answer of each question shall be limited upto 30 words. Each question will carry 1 mark.

Section – B: Will consist of 10 questions. Two questions from each unit will be set and students will answer one question from each Unit. Answer of each question shall be limited upto 250 words. Each question carry 3.5 marks.

Section – C: Will consist of total 05 questions. The paper setter will set one question from each Unit and students will answer any 03 questions and answer of each question shall be limited upto 500 words. Each question will carry 7.5 marks.

UNIT 1:

Geometry and Line Generation : Points and lines, line segments, vectors, pixels and frame buffer, vector generation, DDA algorithm, Bresenham's algorithm, antialiasing of lines, thick lines, character generation.

UNIT 2:

Graphic Primitives : Display devices, display file structure, and interpreters, normalized device coordinates, entering commands in display file, display file interpreter, entering text, line style, entering Polygons in display file.

UNIT 3:

Transformation : Matrices, scaling transformation, angles, rotation, homogeneous coordinates, coordinate translations, coordinate transformation, rotation about arbitrary point, inverse transformations, transformation routines.

UNIT 4:

Segmentation : Segment, segment creation, image transformations, saving and showing of segments, windowing and Clipping; window and view port, Viewing transformations, clipping, Cohen Sutherland algorithms.

UNIT 5:

Graphic interactions : Principle and working of common interactive graphic devices, selectors and locators, Mouse, Joystick, light pen and tablet.

3D-Graphics : Introduction, geometrical and coordinate transformations, rotation about an arbitrary axis, various kinds of projections, parallel and perspective projections, viewing parameters, special projections.

Books suggested :

Rajaraman : Computer Programming in C, Prentice Hall of India

Gottfried, B. :Programming with C, Schaum's Outline Series, Tata McGraw Hill

Balguruswamy, E. : Programming in ANSI C, Tata McGraw Hill

Harrington S. : Computer Graphics . A Programming Approach, McGraw Hill

Hearn D. and Baker : Computer Graphics, Prentice Hall of India

Morris Mano : Computer System Architecture, Prentice Hall of India

Hall,D.V.: Microprocessor and Interfacing, , Tata McGraw Hill.

Balguruswamy, E. : Object Oriented Programming with C++ in ANSI C, Tata McGraw Hill

EXPERIMENTS FOR PRACTICAL WORK

ADVANCE COMPUTER LABORATORY (Programming Language C++)

1. Write a program to show the use of arithmetic operations and library functions in evaluating expressions.
2. Write a program to show the use of input and output statements.
3. Write a program to show the use of if-else statement.
4. Write a program to show the use of switch and case statements.
5. Write a program to show the use of one dimensional and multi-dimensional arrays.
6. Write a program to show the use of while statements.
7. Write a program to show the use of do-while statements.
8. Write a program to show the use of for statements.
9. Write a program to show the use of functions.
10. Write a program to show the use of recursion.
11. Write a program to create a linked list using pointers.
12. Write a program to define and use a structure.
13. Write a program to find roots of an equation by Newton-Raphson method.
14. Write a program to sort a list of data using selection sort.
15. Write a program to manipulate strings.
16. Write a C++ program to show the use of class & object.
17. Write a C++ program to show the use of operator overloading.
18. Write a C++ program to show the use of pointers to objects.
19. Write a C++ program to show the inheritance.