

GUJARAT TECHNOLOGICAL UNIVERSITY

Semester: 1

PDDC- CIVIL ENGINEERING

Subject Name Computer Programming and Utilization

Sr.No	Course content
1.	Introduction to Computer & Programming: Introduction, Basic block Diagram and functions of various components of computer. Concept of Hardware and Software. Concept of basic types of software. Introduction to programming and programming languages. Flow charts and algorithms.
2.	Introduction to C Language: I. Fundamentals of 'C': Data types in 'C'. Operators and their hierarchy, Concept of header files, I/O functions, control structures in C, looping structures in C, arrays and strings. II. Functions and recursion: Concepts of functions with various types of parameters. Various types of parameter passing mechanisms. Recursive functions and implementation of these concepts in 'C'. III. Pointers and structures: Concepts of pointers and simple programs using pointers. Introduction to simple structure and its implementations.
3.	Introduction to C++ language I. Principles of object oriented programming, Comparison with procedural languages, Tokens, expressions and control structures Introduction to functions, classes, objects, constructors, destructors in C++. II. Classes and Objects: Declaring classes, defining member functions, Making an outside function inline, nesting of member functions, private member functions, Arrays with in a class, Memory allocation of objects, static data members, static member functions, arrays of objects, objects as function arguments, friend function, returning of objects, const member function.

Reference Books:

1. Title : Programming in ANSI C, 4th edition
Author: Balagurusamy E
Publisher: Tata McGraw-Hill Publishing Company limited
2. Object oriented programming with C++, 3rd edition
Author: Balagurusamy E
Publisher: Tata McGraw-Hill Publishing Company limited

GUJARAT TECHNOLOGICAL UNIVERSITY**PDDC - SEMESTER-I • EXAMINATION – SUMMER 2013****Subject Code: X10002****Date: 05-06-2013****Subject Name: Computer Programming and Utilization****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What is pointer? Write a program to do swapping of two elements using pointers. **07**
- (b) What is difference between 'for' loop and 'while' loop. **07**
Write a program using 'for' loop.

1
1 2
1 2 3
1 2 3 4
1 2 3 4 5

- Q.2** (a) Draw the Block Diagram of Computer Architecture and explain each block with its functions. **07**
- (b) How to define and declare Single dimensional array. Write a C program to arrange single dimensional array of 5 elements in Ascending order. **07**

OR

- (b) Explain Nesting of IF...ELSE statement and the ELSE....IF ladder with example. **07**

- Q.3** (a) Write a Program to demonstrate the "call by value" and "call by reference" concept in C **07**
- (b) Write a "C" program to swap even position number with odd position and vice versa. **07**

OR

- Q.3** (a) List out the categories of functions. Explain any one category with example. Also Explain difference between unions and structures. **07**
- (b) What is the difference between 'while' loop and 'do while' loop. Write a program using 'while' loop to reverse the digits of the number. For example the number is 12345 should be printed as 54321. **07**

- Q.4** (a) Explain the usage of constructor and destructor in C++. Write a C++ program to demonstrate the use of Constructor and Destructor. **07**
- (b) What is Friend function? Write a C++ Program to show usage of Friend Function **07**

OR

- Q.4** (a) Write a C++ Program to demonstrate the operators' hierarchy **07**
- Q.4** (b) Create a class named student having data member name, rollno, and three marks. Write a member function to: **07**
- (i) input name, rollno and marks
 - (ii) calculate percentage
 - (iii) display all the information

- Q.5** (a) Explain features of object oriented programming language. **07**
(b) Describe various types of Inheritance **07**

OR

- Q.5** (a) Write short note on Polymorphism **07**
(b) Give comparison of Static Memory Allocation and Dynamic Memory Allocation with a code snippet. **07**

GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC - SEMESTER – I • EXAMINATION – WINTER 2012

Subject code: X 10002**Date: 17/01/2013****Subject Name: Computer Programming & Utilization****Time: 10.30 am - 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Draw basic block diagram of computer and explain each component of it. **07**
 (b) Explain various input and output devices for computers. **07**

- Q.2** (a) Write an algorithm and draw flow chart to find minimum of three numbers. **07**
 (b) Write a program to compute Income tax when total income is given. **07**

Income	Tax
Up to Rs. 50,000	Nil
Rs. 50,001 to 60,000	10%
Rs. 60,001 to 1,50,000	20%
Rs. 1,50,001 or above	30%

Total tax to be payable is calculated by adding 15% surcharge to the tax computed using above table.

- Q.3** (a) What is Constant? Explain different constant with example. **07**
 (b) Write a 'C' program which displays the Floyd's triangle. **07**

```

1
2 3
4 5 6
7 8 9 10
  
```

- Q.4** (a) Explain various types of loops in 'C' with examples. **07**
 (b) Write a program to print first N Fibonacci numbers using for loop. **07**
 i.e. 0,1,1,2,3,5,8,13,.....N

- Q.5** (a) Explain initialization of One and Two dimensional arrays in 'C'. **07**
 (b) Write a program to arrange array of N elements into ascending order. **07**

- Q. 6** (a) List benefits and applications of object oriented programming C++. **07**
 (b) Explain expressions and their types in C++. **07**

- Q. 7** (a) Explain constructors and destructors for C++ language. **07**
 (b) Write a C++ program of calculating Factorial of numbers using recursive function. **07**

GUJARAT TECHNOLOGICAL UNIVERSITY**PDDC - Ist Semester–Examination – May/June- 2012****Subject code: X10002****Subject Name: Computer Programming & Utilisation****Date: 30/05/2012****Time: 10:30 am – 01:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Give the difference between Procedural Programming & Object Oriented Programming. **07**
 (b) What is flow-chart? Give the limitation of flow-chart. Also draw flow-chart to solve $1! + 2! + \dots + n!$ **07**
- Q.2** (a) Explain various types of loops available in C with example. **07**
 (b) Write a 'C' program which displays the Pascal's triangle. **07**
- OR**
- (b) What are constructors and destructors? Give the characteristics of constructors. **07**
- Q.3** (a) Draw a block diagram of computer & explain each block. **07**
 (b) Describe the logical operator, assignment operator & unary operator in C. **07**
- OR**
- Q.3** (a) List the various types of constants in 'C' with examples **07**
 (b) Explain operator precedence & associativity in C with examples. **07**
- Q.4** (a) Explain the difference between "call by value" & "call by reference" with suitable example. **07**
 (b) Define the following terms: **07**
- | | |
|-------------------------|--------------------|
| 1) Operating system | 2) Compiler |
| 3) Application software | 4) System software |
| 5) class | 6) Structures |
| | 7) Unions |
- OR**
- Q.4** (a) Write a program to find the smallest number from the two numbers with the help of class and object. **07**
 (b) Compare static memory allocation and dynamic memory allocation. **07**
- Q.5** (a) Describe the features of Object Oriented Programming. **07**
 (b) Write a C program which finds the square of numbers stored in the array and the average of elements in array. **07**
- OR**
- Q.5** (a) What is pointer? How to initialize it & how it is different from array? **07**
 (b) Write a program in C to count number of positive, negative and zero elements from 3×3 matrix. **07**

GUJARAT TECHNOLOGICAL UNIVERSITY**PDDC SEM-I Examination-Dec-2011****Subject code: X10002****Date: 27/12/2011****Subject Name: Computer Programming & Utilization****Time: 10.30 am -1.00 pm****Total marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What is pointer? Write a program to do swapping of two elements using pointers. **07**
 (b) What is difference between 'for' loop and 'while' loop. **07**
 Write a program using 'for' loop.

1
 2 2
 3 3 3
 4 4 4 4

- Q.2** (a) Draw the Block Diagram of Computer Architecture and explain each block with its functions. **07**
 (b) How to define and declare Single dimensional array. Write a C program to arrange single dimensional array of 5 elements in Ascending order. **07**

OR

- (b) What is the difference between 'while' loop and 'do while' loop. Write a program using 'while' loop to reverse the digits of the number. For example the number is 12345 should be printed as 54321. **07**

- Q.3** (a) Write a Program to demonstrate the "call by value" and "call by reference" concept in C **07**
 (b) Describe various string handling operation using sample 'C' codes **07**

OR

- Q.3** (a) List out the categories of functions. Explain any one category with example. Also Explain difference between unions and structures. **07**
 (b) Explain Nesting of IF...ELSE statement and the ELSE.....IF ladder with example. **07**

- Q.4** (a) Explain the usage of constructor and destructor in C++. Write a C++ program to demonstrate the use of Constructor and Destructor. **07**
 (b) Explain features of object oriented programming language **07**

OR

- Q.4** (a) Write a C++ Program to demonstrate the operators' hierarchy **07**
 (b) Give comparison of Static Memory Allocation and Dynamic Memory Allocation with a code snippet. **07**

- Q.5** (a) What is Friend function? Write a C++ Program to show usage of Friend Function. **07**
 (b) Describe various types of Inheritance **07**

OR

- Q.5** (a) Write short note on Polymorphism **07**
 (b) Write a C++ program to demonstrate copy constructor **07**

GUJARAT TECHNOLOGICAL UNIVERSITY**Subject code: X10002 Subj. Name: Computer Programming and utilization****Date: 21/06/11****Total Marks: 70****Time: 10:30 am to 1:00pm****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What do you mean by flow chart? What is its importance in programming? How is it implemented? **07**
- (b) What do you mean by algorithm? How it is helpful in writing C Programs? **07**

- Q.2** (a) What is data type? Explain category wise data types of C language. **07**
- (b) Explain different types of errors encounter in 'C' Programs. **07**

OR

- (b) What do you mean by header file? Explain in detail. **07**

- Q.3** (a) Which loop is better for programming? Express your views. **07**
- (b) Write a 'C' Program to sum of digits of given 5digit input number by keyboard. **07**

OR

- Q.3** (a) What do you mean by function prototype? How is it defined in C? Give proper example of it and explain. **07**
- (b) Write a program to separate integer and fractional part of given floating point number. **07**

- Q.4** (a) Trace the output **07**
- | | |
|--|--|
| (i) main()
<pre> { int x = 10; y=2; for(y=0; y<2; ++y) printf("%d,%d",x++,++x); }</pre> | (ii) main()
<pre> {int i=0, x=0; do{ if(i%5 == 0)}x++; printf("%d", x); } ++i; }while(i<20); printf("%d", x);} </pre> |
|--|--|

- (b) What is constructor? How does it differ from simple C++ function? **07**

OR

- Q.4** (a) What is the value of u1 and u2? Also explain logic **07**
- ```

int u1, u2;
int v = 3;
int *v;
u1 = 2 * (v+5);
pv =&v;
u2 = 2(*pv+5);

```

- Q.4** (b) What do you mean by function prototype? How is it define in C? Give proper example of it and explain. **07**

- Q.5** (a) What do you mean by class and object? Explain with example. **07**

- (b) What do you mean by keyword? Explain Static data member and function with example. **07**

**OR**

- Q.5** (a) What do you mean by null value? What is the use of it in String? **07**  
(b) Explain Friend function of C++ with example. **07**

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**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**P.D.D.C. Sem- I Regular / Remedial Examination January. 2011**

**Subject code: X10002**

**Subject Name: Computer Programming & Utilisation**

**Date: 04 / 01 /2011**

**Time: 10.30 am – 01.00 pm**

**Total Marks: 70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain algorithm and flowchart with simple c program. **07**  
 (b) Draw the block diagram of computer and explain function of various computer components. **07**

- Q.2** (a) Enlist the operators used in the 'C' language. Explain any two in details. **07**  
 (b) What is an array? How the single and two dimensional array can be declared and initialized? **07**

**OR**

- (b) Write a c program to print reverse number (i.e. 1256 print as 6521). **07**

- Q.3** (a) What is recursion? Explain with small example. **07**  
 (b) Write a program to sort given number in ascending order (Use one dimensional array). **07**

**OR**

- Q.3** (a) Write a program to find the length of a sting and reverse the string. **07**  
 (b) Describe the features of object oriented programming language. **07**

- Q.4** (a) Write a program to print following output using for loop. **07**  
 1  
 1 2  
 1 2 3  
 1 2 3 4

- (b) Explain the friend function with c++ program. **07**

**OR**

- Q.4** (a) Describe inline function in C++ language. Write a program to calculate area of circle using inline function. **07**

- Q.4** (b) What is constructor and destructor in c++ language? Explain with program. **07**

- Q.5** (a) What is Dynamic memory allocation, compare it with static memory allocation. **07**  
 (b) What is pointer? How is a pointer initialized? Explain with small example. **07**

**OR**

- Q.5** (a) Write a function program to evaluate the following. **07**  

$$x + \frac{x^2}{x!} + \frac{x^4}{4!} + \frac{x^6}{6!} + \dots + \frac{x^n}{n!}$$

- (b) Explain 'break' and 'continue' using example. **07**

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**GUJARAT TECHNOLOGICAL UNIVERSITY**

P.D.D.C. Sem- I Remedial Examination March / April 2010

Subject code: X10002

Subject Name: COMPUTER PROGRAMMING AND UTILIZATION

Date: 31 / 03 / 2010

Time: 12.00 noon – 02.30pm

Total Marks: 70

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary
3. Figures to the right indicate full marks

**Q-1 Attempt following programs.**

- a. Write a C program to generate Fibonacci series using function. **07**
- b. Write a C++ program to find out the volume of cube, cylinder and rectangular box using the concept of function overloading. Assume suitable CLASS name and its member elements and member functions. **07**

**Q-2 Attempt following questions.**

- a. Explain switch statement with flowchart and make a calculator having functions addition, subtraction, multiplication, division and modulo. **07**
- b. Explain ternary operator and compare the same with if...else statement. **04**
- c. Give the output of following C code. (Assume all the standard libraries has been included and code is syntactically correct.) **03**

```
void main()
{
 printf("%06d", 2010);
 printf("%#6X", 1234);
 printf("%7.2f", 69.2010);
}
```

**OR**

- b. Write a C program to arrange array of N elements in to ascending order. **04**
- c. Explain logical operator and size of operator in C language. **03**

**Q-3 Attempt following questions.**

- a. What is scope and visibility of variables? Explain concept of Global and static variables. **06**
- b. Explain the concept of Command line arguments in C language. **04**
- c. Give the difference between structure and union. **04**

**Q-3 OR**

- a. Give the use of following library functions. **06**  
 strlen(), strcmp(), strcpy(), strcat()  
 Write a program to check whether given word is palindrome or not using given functions.
- b. What is recursion? Write a program to find out factorial of a given number using recursion. **04**
- c. List out advantages of using pointers. **04**

**Q-4 Do as directed.**

- a. Write a C program to exchange two integers using function with pointer arguments. **06**
- b. "Major limitation of C function is that it can return only one value and to overcome this situation we have to use pointers." Justify this statement. **04**
- c. Draw a flow chart of to do a sum of first 10 numbers. **04**

**OR****Q-4 Do as directed.**

- a. How do you initialize and declare and access the member elements of nested structure elaborate same with suitable example. **06**

- b. `int main()  
{ char CGender;  
  short SPrice;  
  int Ival=9;  
  printf( "sizeof CGender = %d\\tsizeof(char) = %d"  
      "\\nsizeof SPrice = %d\\tsizeof(short) = %d"  
      , sizeof CGender , sizeof SPrice);  
  printf("\\nValue of Ival is : %d%d%d", ++Ival, --Ival, Ival++);  
  return 0;  
}` 04
- c. Explain call by value and call by reference with reference to function argument. 04
- Q-5 Attempt following questions.**
- a. Explain concept of reference variables in C++. 07
- b. List out basic concepts of Object –Oriented Programming explain each in detail. 07
- OR**
- Q-5 Attempt following questions.**
- a. What are the special characteristics of friend function write a small program which illustrates the use of friend function. 07
- b. What is inline function? Illustrate the same with example. 07
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**GUJARAT TECHNOLOGICAL UNIVERSITY****P.D.D.C. Sem- I Examination January 2010****Subject code: X10002****Subject Name: COMPUTER PROGRAMMING & UTILISATION****Date: 02 / 01 / 2010****Time: 11.00 am – 1.30 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Distinguish between programming languages “C” and “C++” **07**  
 (b) Draw the flowchart to identify minimum number out of given five input numbers. **07**

- Q.2** (a) In what way *main()* is different from the rest of the functions? **07**  
 (b) Justify: Machine dependent implementation increases portability. **07**

**OR**

- (b) What are enumeration variables? How they are declared? What is the advantage of using them in a program? **07**

- Q.3** (a) What is the difference between Pre-Decrement and Post-Decrement operation? Explain with suitable example. **07**  
 (b) Write a “C” Program that reads number from 1 to 7 and accordingly it should print MONDAY to SUNDAY. **07**

**OR**

- Q.3** (a) Distinguish between the following: **07**  
       (i) Actual and Formal arguments  
       (ii) Automatic and Static variables  
 (b) Write a “C” program that read an input string and count number of words in the string and print counted words. **07**

- Q.4** (a) Write a “C” program to swap even position number with odd position and vice – versa. **07**  
 (b) Write a “C” program that read one dimensional array of five different values and print the same using pointer. **07**

**OR**

- Q.4** (a) Explain the difference between “call by reference” and “call by value” with suitable example. **07**  
 (b) What is recursive function? Explain with example. **07**

- Q.5** (a) What does inheritance mean in “C++”. What are different forms of inheritance? Explain with syntax. **07**  
 (b) Create a class point having data member X and Y of type integer. Write member function program in “C++” to input two input points and display the addition of two points. **07**

**OR**

- Q.5** (a) What are inline functions? Write an inline function for finding minimum of two numbers in “C++” program **07**  
 (b) Create a class named student having data member name, rollno, and three marks. Write a member function to: **07**  
       (i) input name, rollno and marks  
       (ii) calculate percentage  
       (iii) display all the information

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