

# PURBANCHAL UNIVERSITY

2017

4 Years Bachelor of Computer Application (BCA)/First Semester/Final  
Time: 03:00 hrs. Full Marks: 60 /Pass Marks: 24

**BCA175CO: Computer Programming in C (New Course)**

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

## Group A

**Answer TWO questions.**

**2×12=24**

1. What do you mean by precedence and associativity of operators?  
Discuss different types of operators in C with examples. 4+8

2(a) What is preprocessor directive? Find the output that will be  
generated by the following program: 2+4

```
#include <stdio.h>
int main( )
{
    int i,j, x=0;
    for (i=0; i<5; i++ )
        for(j=0; j<i; j++) {
            x+=(i+j-1);
            printf( "%d", x);
        }
    printf("\nx = %d", x);
}
```

(b) What is the difference between pre-increment and post increment operators? Write a C program that asks user to enter Principal Amount (P), Number of Years (N), and Interest Rate (R) and calculate the Interest Amount (I). The formula is:  $I = (P \times N \times R) / 100$ . 2+4

3. Discuss entry controlled loop and exit controlled loop with example. Body Mass Index (BMI) is a measure of body fat based on height and weight that applies to adult men and women. A person is categorized in terms of their BMI as follow:

**Contd. ...**

(2)

BMT	Categories
Less than 18.5	Underweight
18.5-24.9	Normal Weight
25-29.9	Overweight
30 and over	Obesity

The BMI is calculates as:  $BMI = \text{Weight in kg} / (\text{Height in meter})^2$ .  
Suppose a person weighs 60 kg and is 1.7 meters tall then his BMI is:  $60 / (1.7)^2 = 20.76$

Write a program to ask user to enter his/her height in meter weight in kg and calculate his/her BMT as per the formula given above and display his/her category according to a table given above.

### Group B

**Answer SIX questions.**

**6×6=36**

4. Write a program to sort array element in ascending order. 6
5. Write a program to store N integer numbers in a data file and display sum of even numbers after reading from data file. 6
6. Write a program, using pointer, to find the largest element in a given array. 6
7. What do you mean by recursion? Write a program to calculate factorial of a given number using recursion. 2+4
8. Suppose a College has 500 students. Each student has their own *name*, *faculty*, *semester*, *class roll* and *PU\_registration\_number*. Write a program using structure that define the variables mentioned above, ask user to enter the information for all students and display all the information. Assume appropriate data types. 6
9. What do you mean by pointers? Explain how pointers and array are closely related. 2+4
10. Write a program to draw a circle, a square and a rectangle each with different colors using graphics functions. 6
11. Write short notes on any TWO: 3+3
  - (a) Algorithm and Flow Chart
  - (b) String Handling Functions
  - (c) Switch Statement



# PURBANCHAL UNIVERSITY

**2018**

4 Years Bachelor of Computer Application (BCA)/First Semester/Final

Time: 03:00 hrs.

Full Marks: 60 /Pass Marks: 24

**BCA175CO: Computer Programming in C (New Course)**

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

## Group A

**Answer TWO questions.**

**2×12=24**

1. Define the terms C tokens, keywords and identifiers with example. Discuss different types of bitwise operators in C with examples. What is preprocessor directive? 6+4+2
- 2(a) What is an arithmetic expression? Find the output that will be generated by the following program: 2+4

```
#include <stdio.h>
int main( )
{
    int a = 5, b = 3, sum = 0;
    while(--a > 0)
    {
        sum += a/2 + b%2;
        b++;
    }
    printf("a=%d\n",a);
    printf("b=%d\n",b);
    printf("sum=%d",sum);
    return 0;
}
```

- (b) What is the difference between pre-increment and post increment operators? Given a total distance travelled by a vehicle (in km) and spent fuel (in liter); write a program to calculate the vehicle's average mileage. 2+4

**Contd. ...**



(2)

3. Differentiate between while loop and do-while loop with example.  
An electricity authority charges according to the following rates:-  
For the first 20 units: Rs 80  
For the next 80 units: Rs 5 per unit  
For the next 100 units: Rs 7 per unit  
Beyond 200 units: Rs 10 per unit  
and Rs 50 of service charge is added to all users. Write a program to read number of units consumed and print out the total charge. 4

**Group B**

**Answer SIX questions.**

**6×6=36**

4. Write a program to initialize integer array of size 50 and count the number of elements that are exactly divisible by 5 and greater than 15. 6
5. Write a program to find transpose of a given matrix using pointer. 6
6. Using user defined function, write a program to determine whether a given number is prime or not. 6
7. Differentiate library and user defined functions. Write a program to find the sum of first and last elements of an array of size, N using pointer. 2+4
8. What do you mean by nested structure? Explain with example program. 6
9. Write a program to find sum of following:  
 $1! + 3! + 5! + \dots + N!$  6
10. Write a program to draw a rectangle, circle and triangle using graphical functions. 6
11. Write short notes on any TWO: 3+3  
(a) File opening modes  
(b) Basic structure of C programs  
(c) Unformatted input functions

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# PURBANCHAL UNIVERSITY

**2019**

4 Years Bachelor of Computer Application (BCA)/First Semester/Final

Time: 03:00 hrs.

Full Marks: 60 /Pass Marks: 24

**BCA175CO: Computer Programming in C (New Course)**

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

## Group A

**Answer TWO questions.**

**2×12=24**

1. What is function prototype? Mention advantages of using a function. Write a program to search a given element in an array using function. 2+3+7
2. Define nested structure with its syntax. Write a program, using structure, to input records of N cricketers and display the records in alphabetical order on the basis of name. The structure numbers include: Name, nationality, match-played, and runs-scored. 3+9
- 3(a) What are unary operators? Explain with examples. 4
- (b) Write a C program that takes an input sentence and displays the sentence by deleting all the vowels from it. 8

## Group B

**Answer SIX questions.**

**6×6=36**

4. Mention characteristics of an algorithm. Write an algorithm and flow chart to determine whether a given number is palindrome or not. 6
5. Write a C program to input two numbers a and b such that a<b. Then display all the prime , numbers between a and b. 6
6. What is recursion? Write a C program using recursion to calculate the sum of all digits of any input number. 2+4
7. Write a C program to input a list of numbers in an array and sort them in descending order using pointer. 6

**Contd. ...**

(2)

8. Define DMA. Discuss memory management functions of DMA with syntax. 2+4
9. Write a C program to display a circle in such a way that it is tangent to all four sides of a square. 6
11. Write short notes on any TWO: 3+3
- (a) Data types
  - (b) File opening modes
  - (c) Branching and looping



# PURBANCHAL UNIVERSITY

2020

4 Years Bachelor of Computer Application (BCA)/First Semester/Final  
Time: 03:00 hrs.

Full Marks: 60 /Pass Marks: 24

**BCA175CO: Computer Programming in C (New Course)**

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

## Group A

Answer TWO questions.

2×12=24

1. Define symbolic constant with a proper illustration. Why do we need escape sequences? Write a program to swap contents of two variables without using dummy variable. 4+2+6

2(a) Define local and global variables with examples. 3

(b) What is conditional statement? Give an example. 2

(c) Write a C program to sort a number of input strings. 7

3(a) Differentiate between break and exit. 2

(b) What are file opening modes? 3

(c) Write a C program to find the sum of the following series. 7

$$\frac{1}{x} - \frac{1}{x^2} - \frac{1}{x^3} - \frac{1}{x^4} + \dots \text{upto } N \text{ terms.}$$

## Group B

Answer SIX questions.

6×6=36

4. What is union? How does it differ from a structure? Explain with syntax. 2+4

5. Write a program to find sum of N elements of an array using pointer. 6

6. Write a C program to read a positive number and determine its binary equivalent. 6

7. Define function. Write a C program to pass argument to any user-defined function and return a value from that function. 1+5

Contd. ...



(2)

8. Write a C program to display all the prime numbers between two input numbers, a and b where  $a < b$ . 6
9. Write a graphics program in C that displays a circle (having 100 pixels radius) and a rectangle (having 100 pixels width and 50 pixels height). 6
10. Write short notes on any TWO: 3+3
  - (a) Dynamic memory allocation
  - (b) Compilation and execution
  - (c) Nested structure





# PURBANCHAL UNIVERSITY

**2021**

4 Years Bachelor of Computer Application (BCA)/First Semester/Final

Time: 03:00 hrs.

Full Marks: 60 /Pass Marks: 24

**BCA104CO: Computer Programming in C (New Course)**

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

## Group A

**Answer TWO questions.**

**2×12=24**

- 1(a) Explain the process of executing a C program. 4
- (b) What are the different types of loop? Explain with syntax. 6
- (c) Define escape sequence and write its use. 2
- 2(a) Explain relational operators and conditional operator with examples. 5
- (b) Define recursion. Write a C program to enter a long integer and display the sum of all digits using recursion. 1+6
- 3(a) Define structure with example. How does a structure differ from an array? 2+2
- (b) Write a C program to input details (id, name, address and salary) of 10 employees, and display the details of the employee with highest and lowest salary. 8

## Group B

**Answer SIX questions.**

**6×6=36**

4. Explain call by value and call by reference with suitable programs.

5. Write a C program to generate the following output:

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

**Contd. ...**

(2)

6. Define pointer. Write a C program to input a line of text, and determine the total number of consonants, vowels, digits and blank spaces using pointers.
7. Write the importance of data files in programming. How do you open and close a data file? Give example.
8. What is for loop? Write menu-based programming using switch-case statement.

"MENU"

1. ADD

2. MUL

3. EXIT

9. Write a C program to display a circle inside a square such that the circle touches all four sides of the square.
10. Write short notes on any TWO: 3+3
  - (a) DMA
  - (b) Data types
  - (c) History of C



# PURBANCHAL UNIVERSITY

2022

4yrs./3yrs. Bachelor of Computer Application (BCA)/First Semester/Final

Time: 03:00 hrs.

Full Marks: 60 /Pass Marks: 24

**BCA104CO/175CO: Computer Programming in C (New/Back)**

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

## Group A

**Answer TWO questions.**

**2×12=24**

- 1(a) Define structure and explain how it differs from union. Write a program to create a structure named "Book" with members book\_id, book\_name and price. Read the details of N books and display the details of most expensive book. 3+7
- (b) Define keywords and identifiers with examples. 2
- 2(a) Define recursive function. Write a program to generate fibonacci sequence up to the number entered by the user. 2+6
- (b) Write the importance of C. 4
- 3(a) Explain one-dimensional and two-dimensional array. Write a program to read two 4×4 matrices, find their sum and display the result in matrix format. 2+6
- (b) What are different types of built-in data types available in C? Explain with example. 4

## Group B

**Answer SIX questions.**

**6×6=36**

4. Write a program to print the following pattern:

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

**Contd. ...**

(2)

5. What are unary operators in C? Explain logical and relational operators with example. 2+4
6. Write a program to check alphabet entered by the user is vowel or not using if-else and switch statement.
7. Write a program to sort N strings using user-defined function.
8. Write a program to draw circle at (200,200) with diameter 200 using suitable graphics functions. Also draw the diameter.
9. Write a program to find the prime numbers between two positive numbers entered by the user..
10. Write short notes on any TWO: 3+3
  - (a) Relationship between array and pointer
  - (b) Importance of data files
  - (c) Dynamic memory allocation

