



# BRAINWARE UNIVERSITY

Course – MCA

C Programming (MCA102)

(Semester – 1)

**Time allotted: 3 Hours**

**Full Marks : 70**

[The figures in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

## Group –A

(Multiple Choice Type Question)

**1. Choose the correct alternatives for the following (Answer any ten) 1x10=10**

- (i) Which of the following is not a valid variable name?  
 a) int A    b) int A2  
 c) int 2A                                         d) int A\_2
- (ii) The Hexadecimal equivalent of the number  $(101101010010)_2$  is  
 a) A53    b) A52  
 c) B52    d) C62
- (iii) The correct syntax to send an array “A” as a parameter to function “func” is  
 a) func(&A)                                        b) func(A)  
 c) func(\*A)                                        d) func(A[size])
- (iv) Find out the output:  

```
main() {
int i=1;
printf("%d%d%d",i,++i,i++);}

```

 a) 331    b) 133  
 b) 314    d) 111
- (v) Pointer is  
 a) a variable containing the address of a variable  
 b) a value  
 c) a memory location  
 d) none of these

- (vi) A function may contain
- one return statement
  - two return statements
  - more than two return statements
  - none of these
- (vii) Which one of the following is a Bitwise operator?
- <
  - >=
  - &&
  - <<
- (viii) The output of the following code is:
- ```
for ( i=1; i<=5 ; i++) {
    if ( i % 2) continue;
    printf( "%d" , i) ;
}
```
- 1 2 3 4 5
  - 1 3 5
  - 2 4
  - None of these
- (ix) fgetc(fp) is
- a function that reads a character from a file pointed by fp
  - a macro that reads a character from a file pointed by fp
  - a function that writes a character from a file pointed by fp
  - a macro that writes a character from a file pointed by fp
- (x) The output of the following code is:
- ```
#define SQ(X) X*X
void main()
{
    int a,b;
    a=5;
    b = SQ(a+2);
    printf("%d",b);
}
```
- 49
  - 25
  - 7
  - 17
- (xi) The output of the following code is:
- ```
char *p;
p="Hello";
printf("%c",*&p);
```
- Hello
  - Some address will be printed
  - H
  - None of these

**Group – B****(Short Answer Type Question)**Answer **any three** of the following questions

3x5=15

2. Write a C program to print the following pattern ( till n rows, where n is taken as input)

```

      1
     0 1
    0 1 0
   1 0 1 0
  1 0 1 0 1

```

5

3. a) What is tail recursion?  
b) Write a recursive function power(a,b) to calculate the value of a raised to b.

1+4

4. Write down the differences between:

- a) malloc() and calloc()  
b) function and macro  
c) post increment and pre increment

2+2+1

5. Write a C program to find the largest and smallest among a list of n numbers taken as input.

5

6. a) Why do we use functions in programming?  
b) Write a function prototype which accepts an integer, a float pointer and a string as parameters.  
c) How do you access a structure variable through a structure pointer? Explain with example.

1+2+2

**Group – C****(Long Answer Type Question)**Answer **any three** of the following questions

3x15=45

7. a) What are auto, extern and static variables? Explain their uses with a suitable example.  
b) Write down the differences between while loop and do-while loop.  
c) Explain implicit type casting and explicit type casting?  
d) Write a C program to find the sum of the following series:

$$5+55+555+5555+\dots$$

6+2+3+4

8. a) Write down the difference between break and continue with a suitable example.  
 b) Write a C program to check if a string taken as input is palindrome or not without using string related functions supported by the compiler.  
 c) Write a C function “int mystrlen(char str[])”, which will take a string as argument and returns the length of that string without using string related functions supported by the compiler.  
 d) Write a sample C code to implement “switch-case”.
- 3+5+4+3
9. a) Write down the differences between structure and union.  
 b) What do you mean by typedef?  
 c) Write down the differences between recursion and iteration.  
 d) Suppose you have to create and maintain records of students given below: Roll Number, Name, Department, Course, and Year of admission. How do you create and maintain this record for 150 students of your college. Write a program to print names of all students who joined in a particular year.
- 3+2+3+7
10. a) Write a program to read a file and display its contents along with line number before each line.  
 b) Write a C program that will receive two file names as command line argument and copy all the contents of first file to another file  
 c) Explain the purpose of fseek().
- 6+7+2
11. Write short notes on **any three** of the following 3x5=15
- a) Dynamic memory allocation
  - b) Bitwise operator
  - c) Call by value and call by reference
  - d) Pointer Arithmetic
  - e) Array of pointers