



BRAINWARE UNIVERSITY

Library
Brainware University
398, Ramkrishnapur Road, Barasat
Kolkata, West Bengal-700125

Term End Examination 2024-2025

Programme – BCA-Hons-2024/BCA(MAWT)-Hons-2024

Course Name – Problem-Solving Methodologies

Course Code - VAC00012

(Semester I)

Full Marks : 60

Time : 2:30 Hours

[The figure 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 x 15=15

1. Choose the correct alternative from the following :

- (i) What is an algorithm?
 - a) A software application
 - b) A step-by-step procedure to solve a problem
 - c) A programming language
 - d) A computer hardware component
- (ii) "Interest rate is decreased by 2%", Select the statement below, which will display the same:
 - a) `printf("Interest rate is decreased by 2%");`
 - b) `printf("Interest rate is decreased by 2'%'");`
 - c) `printf("Interest rate is decreased by 2%%");`
 - d) `printf("Interest rate is decreased by 2'");`
- (iii) The variable retains its value in-between function calls is called _____.
 - a) auto
 - b) static
 - c) register
 - d) extern
- (iv) The preprocessor directives must be preceded by the symbol
 - a) *
 - b) &
 - c) @
 - d) #
- (v) The keyword used to transfer control from a function back to the calling function is :
 - a) switch
 - b) goto
 - c) exit
 - d) return
- (vi) What will be the output for the following program segment? `main() { int i; for(i=0; i < 4; ++i); printf("%d", i); }`
 - a) Compilation error
 - b) 1 2 3 4
 - c) 0 1 2 3
 - d) 4
- (vii) Identify the correct functions which is used to concatenate two strings in C.
 - a) `strcpy()`
 - b) `strcat()`
 - c) `strcmpare()`
 - d) `strlenlength()`
- (viii) What will be the correct output of the following program? `main () { int k, num = 30; k = (num > 5 ? (num < 10 ? 100 : 200) : 500); printf ("%d %d", num,k); }`

- Brainware
398, Ramkrishnap
Kolkata, West B

a) 200 30
b) 30 100
c) 30 200
d) 30 500

(ix) What will be the output? `int i = 6; printf("%d %d %d", i, i ++ , ++i);`
a) 887
b) 866
c) 788
d) 877

(x) Identify the correct format specifier for double.
a) %lf
b) %d
c) %ld
d) %f

(xi) Choose the function used to receive only a single key from the keyboard.
a) `scanf()`
b) `gets()`
c) `getcha()`
d) `getchar()`

(xii) Identify which variable is accessed when global and local variables share the same name.
a) local variable
b) global variable
c) compilation error
d) none of these

(xiii) Select which operator is known as address of operator.
a) `&&`
b) `&`
c) `!=`
d) `||`

(xiv) If `p` is a pointer variable pointing to another pointer variable, then find its correct syntax for declaration:
a) `int *p`
b) `int **p`
c) `int p*`
d) None of these

(xv) If `p` is a variable of structure `Person`. Then select the correct syntax for accessing member 'name' of `Person`.
`
 struct Person {
 char name[20];
 int age;
 }
 p;
`
a) `p->name`
b) `p.name`
c) `*p.name`
d) None of these

Group-B

(Short Answer Type Questions)

$$3 \times 5 = 15$$

2. Write short notes on:
a. strcmp()
b. strcpy()
c. strrev()
3. Write a C program to calculate the roots of a quadratic equation.
4. Write a C code to print the following pattern for n number of lines.
*
**

5. Differentiate between break and continue with a suitable example.
6. Design a 'C' program to print all prime numbers from 1 to 100.

OR

- Design a 'C' program to find all non fibonacci numbers 1 to 100. (3)

Group-C

(Long Answer Type Questions)

$$5 \times 6 = 30$$

7. Devise an algorithm to reverse elements of an array without using any extra memory space. (5)
8. Construct a flowchart to find the maximum of three numbers. (5)

9. Differentiate between call-by-value and call-by-reference with example. (5)
10. Devise a recursive function in C to find the GCD of two integers. (5)
11. Write a C program to find the sum of the following series: $2+22+222+2222+....$ (5)
12. Write a C program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following: (5)
 - Percentage $\geq 90\%$: Grade A
 - Percentage $\geq 80\%$: Grade B
 - Percentage $\geq 70\%$: Grade C
 - Percentage $\geq 60\%$: Grade D
 - Percentage $\geq 40\%$: Grade E
 - Percentage $< 40\%$: Grade F

OR

Write a C program that converts a temperature from Celsius to Fahrenheit or Fahrenheit to Celsius, based on the user's choice, using a switch-case statement. The user should input a temperature and select the conversion option.

Library
Brainware University
208, Ramkrishnapur Road, Barasat
Kolkata, West Bengal-700125