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BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – BCA-Hons-2024/BCA(MAWT)-Hons-2024/BCA-Hons-2025/BCA(MAWT)-Hons-2025
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 the main function of the CPU in a computer?
a) To store data b) To process data
c) To display data d) To input data

(ii) Which of the following is NOT a function of an operating system?
a) Managing hardware resources b) Providing a user interface
c) Compiling source code d) Running applications

(iii) What is the primary role of a compiler in programming?
a) To execute the code b) To translate high-level code into machine code
c) To store data d) To manage memory

(iv) What is a flowchart?
a) A graphical representation of an algorithm b) A programming language
c) A type of computer memory d) An operating system

(v) What best defines 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

(vi) Which statement is used to terminate the execution of the nearest enclosing loop in which it appears?
a) Break b) Continue
c) Default d) Case

(vii) Which shape is typically used to represent a decision in a flowchart?
a) Rectangle b) Diamond
c) Oval d) Circle

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(viii) Which of the following correctly accesses the last element of a 1-D array int arr[5] = {10, 20, 30, 40, 50};?

a) arr[4]
b) arr[5]
c) arr[6]
d) arr[-1]

(ix) Select the correct way to declare a variable in C.

a) int 4num;
b) char name = "John";
c) float height;
d) double var#;

(x) Select the function to find the length of a string in C.

a) strlen()
b) strlength()
c) strcount()
d) strsize()

(xi) Identify the correct way to define a 1-D array of size 5:

a) int arr[5] = {1, 2, 3, 4, 5};
b) int arr[5] = {1, 2};
c) int arr[5] = {0};
d) All of the mentioned

(xii) Which expression correctly compares two string values in C?

a) str1 == str2
b) strcmp(str1, str2) == 0
c) str1.equals(str2)
d) str1 != str2

(xiii) Which operator is used for dereferencing a pointer in C?

a) *
b) &
c) !=
d) ||

(xiv)
```
#include< stdio.h >
int main()
{
int arr[] = {10, 20, 30};
int *ptr = arr;
printf("%d", *(ptr + 1));
}
```
What will be the output of the following code?

a) 10
b) 20
c) 30
d) 60

(xv) Which of the following best describes a pointer in C?

a) A variable that stores address of other variable
b) A keyword used to create variables
c) A variable that stores address of an instruction
d) All of these

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Group-B

(Short Answer Type Questions) 3 x 5=15

2. Write down the differences between the entry-controlled and exit-controlled loop. (3)
3. Write an algorithm to calculate the factorial of a given number. (3)
4. How does 'switch case' differ from using multiple if-else statements? (3)
5. What do you mean by "library function"? What is the difference between a structure variable and a union variable? (3)
6. What is the difference between an array of pointer and pointer to an array? (3)

OR

Draw a flowchart to check whether a number is divisible by 2. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Differentiate between if-else-if and nested if-else Using code snippets. (5)
8. Compare between actual argument and formal argument. (5)
9. Explain ternary operator with a suitable example. (5)

10. Write a C program to input any alphabet and check whether it is vowel or consonant. (5)
11. Explain any three inbuilt function of "string.h" library. (5)
12. Differentiate between call-by-value and call-by-reference with example. (5)

OR

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 >= 90% : Grade A
Percentage >= 80% : Grade B
Percentage >= 70% : Grade C
Percentage >= 60% : Grade D
Percentage >= 40% : Grade E
Percentage < 40% : Grade F

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