



BCA/PPC : 104 (O)

2024

(1st Semester)

BACHELOR OF COMPUTER APPLICATIONS

Paper : PPC : 104 (Old Course)

**(Programming and Problem Solving through
C Language)**

Full Marks : 70

Pass Marks : 45%

Time : 3 hours

(PART : B—DESCRIPTIVE)

(Marks : 45)

*The figures in the margin indicate full marks
for the questions*

1. (a) What is an algorithm? What are the characteristics of an algorithm? List out three advantages of an algorithm. 1+3+3=7

(b) What are the pre-requisites to design an algorithm? 2

Or

(c) What is a flowchart? Explain different symbols used for flowchart. Explain with an example. 1+3+2=6

- (d) What are shift operators? Write a program to shift the entered number by three bits left and display the result.

1+2=3

2. (a) State the differences between switch() case and nested ifs.

2

- (b) Write a C program to print the entered number in reverse order. Use do-while loop. Also perform sum and multiplication with their digits.

5

- (c) What do you understand by formatted input and output?

2

Or

- (d) Explain any four string handling functions with program examples of each.

8

- (e) What is getch() function?

1

3. (a) What is recursive function? List out its merits and demerits.

1+4=5

- (b) Explain function with argument and no return type with an example.

3

- (c) What do you understand by the scope of a variable?

1

Or

(d) Explain the following with examples :

$$3+3=6$$

(i) Nested structures

(ii) Array of structures

(e) What are the differences between structure and union?

3

4. (a) What is a dangling pointer in C? How do we overcome the problem of a dangling pointer? Explain.

$$2+2=4$$

(b) Explain the features of pointers.

3

(c) Explain the use of indirection operator (*).

2

Or

(d) What are different operations possible in a linked list? Explain.

4

(e) What is the difference between Static memory allocation and Dynamic memory allocation?

3

(f) What are the applications of linked list?

2

5. (a) Explain the following :

1×4=4

(i) rewind()

(ii) ferror()

(iii) ftell()

(iv) fseek()

(b) Explain random access files with examples.

3

(c) What is common line argument? Give example.

2

Or

(d) Write a C program to write data to text file and read it.

4

(e) Explain different preprocessor directives with examples.

4

(f) What are fgets() and fputs() I/O handling functions in C?

1

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(1st Semester)

BACHELOR OF COMPUTER APPLICATIONS

Paper : PPC : 104 (Old Course)

(Programming and Problem Solving through C Language)

(PART : A—OBJECTIVE)

(Marks : 25)

The figures in the margin indicate full marks for the questions

1. Choose the most appropriate answer from the given options by putting a Tick (✓) mark in the brackets provided : 1×10=10

(a) What is the starting point of C program execution?

- (i) # include ()
- (ii) void main() ()
- (iii) Opening curly braces '{' ()
- (iv) None of the above ()

(b) The C programs are converted into machine language using

- (i) an assembler ()
- (ii) a compiler ()
- (iii) an interpreter ()
- (iv) an operating system ()

(c) The C programs are highly portable. It means

- (i) same programs execute on different computers ()
- (ii) programs execute only on the same computer ()
- (iii) programs need a lot of modifications to run ()
- (iv) None of the above ()

(d) printf() belongs to which library of C?

- (i) stdlib.h ()
- (ii) stdio.h ()
- (iii) stdout.h ()
- (iv) stdoutput.h ()

(e) If we want to increment the value of sum by 1, then which of the following should be used?

- (i) `sum++;` ()
- (ii) `sum = sum+1;` ()
- (iii) `sum+ = 1;` ()
- (iv) All of the above ()

(f) The _____ statement is used to transfer the control to the end of statement block in a loop.

- (i) Continue ()
- (ii) Break ()
- (iii) Switch ()
- (iv) Goto ()

(g) What is the value of x in this C code?

```
#include <stdio.h>
void main( )
{
    int x = 5 * 9/3 + 9; }
```

- (i) 3.75 ()
- (ii) Depends on compiler ()
- (iii) 24 ()
- (iv) 3 ()

(h) The member variables of structure are accessed by using

- (i) dot (.) operator ()
- (ii) arrow (→) operator ()
- (iii) asterisk (*) operator ()
- (iv) ampersand (&) operator ()

(i) What does the following statement mean?

int (* (fp) (char *))

- (i) Pointer to a pointer ()
- (ii) Pointer to an array of chars ()
- (iii) Pointer to function taking a char* argument and returns an int ()
- (iv) None of the above ()

(j) Which one of the following is correct syntax for opening a file?

- (i) FILE *fopen (const *filename, const char *mode) ()
- (ii) FILE *fopen (const *filename) ()
- (iii) FILE *open (const *filename, const char *mode) ()
- (iv) FILE open (const *filename) ()

2. State whether the following statements are *True (T)* or *False (F)* by putting a Tick (✓) mark : 1×5=5

(a) The file containing the source code is called the source file.

(T / F)

(b) Array `int a[5]` can be used to store five characters a, b, c, d and e into it.

(T / F)

(c) All the functions, except `main()` function do not execute on their own, they require a calling function.

(T / F)

(d) The conditional operator (`?:`) is a ternary operator.

(T / F)

(e) `dcalloc()` function should be used to free the memory allocated by `calloc()`.

(T / F)

3. Answer the following questions in short :

2×5=10

- (a) Why is the C language called middle level language?

(7)

- (b) Write a C program to use `sizeof( )` operator and determine the size of integer and float variable.

(c) What is a loop? Why is it necessary in the program?

(d) What is the NULL character? Why is it important?

- ii (e) Briefly explain register variables.
