Problem Solving Using C

Theory Questions

Short Questions

1. Why is C called a middle level programming language?
2. Define C tokens? What are the various C tokens?
3. What is an identifier?
4. What is a keyword?
5. State the basic data types in C.
6. Define variable.
7. Define constant.
8. State differences between variables and constants.
9. What are literals?
10. What is the purpose of the keyword const?
11. What the purpose of sizeof operator?
12. What is recursion?
13. What are macros?
14. What is an array?
15. Define pointers.
16. What is base address of an array?
17. What is string?
18. What functions are used to allocate memory dynamically in C?
19. What is a NULL pointer?
20. What is a dangling pointer?
21. What is auto storage class?
22. What is register storage class?
23. What is a static variable?
24. Define extern storage class.
25. What do you understand by a static function?

Broad Questions

1. What do you understand by procedural language?
2. State the salient features of C.
3. Is a C program compiled or interpreted? Explain.
4. Distinguish between source code and object code.
5. Explain the basic data types in C.
6. Explain modifiers.
7. How do you represent octal and hexadecimal numbers in C?
8. List the format specifiers for the basic datatypes.
9. Can I use int datatype to store 32768 value? Justify your answer.
10. What are lvalues and rvalues?
11. Differentiate between break and continue keywords.
12. What do you understand by storage class? Explain each of the storage classes, auto, register, static and extern with example.
13. Name the relational operators supported in C. Explain with example.
14. Name the logical operators supported in C. Explain with example.
15. Explain prefix and postfix increment/decrement operators with examples.
16. What are bitwise operators? Explain with example.
17. Explain type casting with an example.
18. Write a C program to print hello world without using a semicolon (;).
19. Write a C program to swap values of two integers without using a third variable.
20. What is a conditional operator (ternary operator)? Explain with example.
21. What is an infinite loop? Give example of an infinite for loop and an infinite while loop.
22. What is a function? What is a function prototype?
23. What are formal arguments and actual arguments in a function?

24. State differences between call by value and call by reference.
25. Explain with an example the concept of recursion.
26. Compare and contrast between iteration and recursion?
27. "Is recursion more efficient than iteration?" Justify your answer.
28. State differences between macros and functions.
29. Cite situations where functions are preferred and where macros are preferred.
30. What do you understand by scope of a variable? State differences between local and global variables.
31. Can we declare the same variable name to the variables which have different scopes? Justify your answer.
32. Suppose a global variable and local variable have the same name. Is it is possible to access a global variable from a block where local variables are defined?
33. Define array. Explain how an array is stored in memory.
34. What is a pointer? What is an integer pointer?
35. What is array of pointers?
36. What is pointer to a pointer?
37. What is a string? How is a string different from an array of characters?
38. State purpose of any eight string library functions. Illustrate with a program.
39. Write a program to convert a number to a string with the help of sprintf() function in the C library.
40. What is a structure? Explain with example.
41. What is a nested structure?
42. What is self-referential structure?
43. What is a union? Explain with example.
44. State differences between structures and unions.
45. What are enumerated data types?
46. State the purpose of typedef keyword.

47. State the purpose of functions getch(), getche(), gets(), getchar() putchar() and puts().
48. What are the limitations of scanf() and how can it be avoided?
49. Discuss with an example the modes in which a file can be opened in C.
50. What is a pre-processor directive?
51. What are the standard pre-defined macros?
52. How do you override a defined macro?
53. What is a header file? How can you define your own header file?
54. What is the difference between include header files with angular braces < > and double quotes " "?
55. State the syntax of dynamic memory allocation.
56. Distinguish between calloc() and malloc() functions.
57. What is memory leak? Explain with an example.
58. Can a C program be compiled or executed in the absence of a main()?
59. How are command line arguments passed to a C program? Mention the syntax.
60. How can you generate a set of random numbers within 100 and 200?

MCQ Questions

1. Which of the following language is the predecessor to C Programming Language?
a) A
b) B
c) BCPL
d) C++
Answer: (c)

2. C programming language was developed by
a) Dennis Ritchie
b) Ken Thompson

c) Bill Gates
d) Peter Norton
Answer: (a)

3. C was developed in the year ___
a) 1970
b) 1972
c) 1976
d) 1980
Answer: (b)

4. C is a ___ language
a) High Level
b) Low Level
c) Middle Level
d) Machine Level
Answer: (c)

5. C language is available for which of the following Operating Systems?
a) DOS
b) Windows
c) Unix
d) All of these
Answer: (d)

6. Which of the following symbol is used to denote a pre-processor statement?
a) !
b) #
c) ~
d) ;
Answer: (b)

7. Which of the following is a Scalar Data type
a) Float
b) Union
c) Array
d) Pointer
Answer: (a)

8. Which of the following are tokens in C?
a) Keywords
b) Variables
c) Constants
d) All of the above
Answer: (d)

9. What is the valid range of numbers for int type of data?
a) 0 to 256
b) -32768 to +32767

c) -65536 to +65536
d) No specific range
Answer: (b)

10. Which symbol is used as a statement terminator in C?
a) !
b) #
c) ~
d) ;
Answer: (d)

11. Which escape character can be used to begin a new line in C?
a) \a
b) \b
c) \m
d) \n
Answer: (d)

12. Which escape character can be used to beep from speaker in C?
a) \a
b) \b
c) \m
d) \n
Answer: (a)

13. Character constants should be enclosed between ___
a) Single quotes
b) Double quotes
c) Both a and
d) None of these
Answer: (a)

14. String constants should be enclosed between ___
a) Single quotes
b) Double quotes
c) Both a and b
d) None of these
Answer: (b)

15. Which of the following is invalid?
a) ‘’
b) “”
c) ‘a’
d) ‘abc’
Answer: (d)

16. The maximum length of a variable in C is ___
a) 8
b) 16

c) 32
d) 64
Answer: (a)

17. What will be the maximum size of a float variable?
a) 1 byte
b) 2 bytes
c) 4 bytes
d) 8 bytes
Answer: (c)

18. What will be the maximum size of a double variable?
a) 1 byte
b) 4 bytes
c) 8 bytes
d) 16 bytes
Answer: (c)

19. A declaration float a,b; occupies ___ of memory
a) 1 byte
b) 4 bytes
c) 8 bytes
d) 16 bytes
Answer: (c)

20. The size of a String variable is
a) 1 byte
b) 8 bytes
c) 16 bytes
d) None of these
Answer: (d)

21. Which of the following is an example of compounded assignment statement?
a) a=5
b) a+=5
c) a=b=c
d) a=b
Answer: (b)

22. The operator && is an example for ___ operator.
a) Assignment
b) Increment
c) Logical
d) Rational
Answer: (c)

23. The operator & is used for
a) Bitwise AND
b) Bitwise OR

c) Logical AND
d) Logical OR
Answer: (a)

24. The operator / can be applied to
a) integer values
b) float values
c) double values
d) All of these
Answer: (b)

25. The equality operator is represented by
a) :=
b) .EQ.
c) =
d) ==
Answer: (d)

26. Operators have hierarchy. It is useful to know which operator
a) is most important
b) is used first
c) is faster
d) operates on large numbers
Answer: (b)

27. The bitwise AND operator is used for
a) Masking
b) Comparison
c) Division
d) Shifting bits
Answer: (a)

28. The bitwise OR operator is used to
a) set the desired bits to 1
b) set the desired bits to 0
c) divide numbers
d) multiply numbers
Answer: (a)

29. Which of the following operator has the highest precedence?
a) *
b) ==
c) =>
d) +
Answer: (d)

30. The associativity of! Operator is
a) Right to Left
b) Left to Right

c) (a) for Arithmetic and (b) for Relational
d) (a) for Relational and (b) for Arithmetic
Answer: (a)

31. Which operator has the lowest priority?
a) ++
b) %
c) +
d) ||
Answer: (d)

32. Which operator has the highest priority?
a) ++
b) %
c) +
d) ||
Answer: (a)

33. Operators have precedence. Precedence determines which operator is
a) faster
b) takes less memory
c) evaluated first
d) takes no arguments
Answer: (c)

34. Integer Division results in
a) Rounding the fractional part
b) Truncating the fractional part
c) Floating value
d) An Error is generated
Answer: (b)

35. Which of the following is a ternary operator?
a) ?:
b) *
c) sizeof
d) ^
Answer: (a)

36. What will be the output of the expression 11 ^ 5?
a) 5
b) 6
c) 11
d) None of these
Answer: (d)

37. The type cast operator is
a) (type)
b) cast()

c) (;;)
d) // ” ”
Answer: (a)

38. Explicit type conversion is known as
a) Casting
b) Conversion
c) Disjunction
d) Separation
Answer: (a)

39. The operator + in a+=4 means
a) a=a+4
b) a+4=a
c) a=4
d) a=4+4
Answer: (a)

40. p++ executes faster than p+1 because
a) p uses registers
b) p++ is a single instruction
c) ++ is faster than +
d) None of these
Answer: (b)

41. Which of the following statements is true?
a) C Library functions provide I/O facilities
b) C inherent I/O facilities
c) C doesn’t have I/O facilities
d) Both (a) and (c)
Answer: (a)

42. Header files in C contain
a) Compiler commands
b) Library functions
c) Header information of C programs
d) Operators for files
Answer: (b)

43. Which pair of functions below are used for single character I/O.
a) Getchar() and putchar()
b) Scanf() and printf()
c) Input() and output()
d) None of these
Answer: (a)

44. The printf() function retunes which value when an error occurs?
a) Positive value
b) Zero

c) Negative value
d) None of these
Answer: (c)

45. Identify the wrong statement
a) putchar(65)
b) putchar('x')
c) putchar("x")
d) putchar('\n')
Answer: (c)

46. Which of the following is charecter oriented console I/O function?
a) getchar() and putchar()
b) gets() and puts()
c) scanf() and printf()
d) fgets() and fputs()
Answer: (a)

47. The output of printf("%u", -1) is
a) -1
b) minimum int value
c) maxium int value
d) Error message
Answer: (c)

48. An Ampersand before the name of a variable denotes
a) Actual Value
b) Variable Name
c) Address
d) Data Type
Answer: (c)

49. Symbolic constants can
a) # define
b) const
c) symbols
d) None of these
Answer: (b)

50. Null character is represented by
a) \n
b) \0
c) \o
d) \e
Answer: (b)