

Computer Science I Midterm Exam
September 2016
Indian Statistical Institute

Answer any 10 of the following - 2 marks each

1. Declare an integer variable and initialise it to 10.
2. Declare a string of length 10
3. Define a constant for the value of Pi
4. Declare a function called *myfunc* that takes a pointer to an integer as an argument and returns an integer.
5. Write the statement to include a header file called *myfuncs.h*
6. Declare an integer variable whose scope is valid even after the function exits
7. Declare a variable to store variable number of arguments to a function
8. Write a macro that returns the minimum of two integer values.
9. Write the signature of the main function that accepts command line arguments
10. Write the statement to open a file "data.txt" in read mode
11. Write the bitwise expression to multiply *i* by 2.
12. Write an enum expression to store OR, AND, XOR and NOT.

Answer any five of the following - 5 marks each

13. Assume the following: 0 - unsigned int, 1 - long double, 2 - string. Write a *Switch-case* statement that prints the value of a variable using the correct format depending on the type of the variable. The default would be the integer format.
14. Write an *if-else* block to test if a number is positive, negative or zero
15. Write a *for* loop to print all even numbers from 1 to 20 on separate lines.
16. Write a *While* loop that iterates through a character array and counts the vowels in the array.
17. Write a *do-while* loop that calculates the factorial of a number
18. Declare a variable of type Struct to represent an x,y coordinate. Assign values 10 and 20 to x and y.

Answer any five of the following - 5 marks each

19. Write a function that takes two parameters, an integer array as a parameter and an integer which is the length of the array. The function should return an integer which is the sum of the individual elements of the array.
20. Write a recursive function to find the sum of the digits of a number.
21. Write a recursive function that finds the gcd of two numbers.
22. Write a recursive function to convert a given integer from decimal to binary
23. Write a recursive function that determines if a number or string is a palindrome
24. Write a function that allocates an uninitialised block of memory. It accepts the size of the memory as an integer and returns a pointer to the allocated block of memory

Answer any five of the following - 6 marks each

25. Write a program to read two numbers from stdin and print out the product of the numbers on stdout.
26. Write a program to read a character from the keyboard and print a character and its corresponding ASCII value.
27. Write a recursive function to calculate the fibonacci series for a number up to 100
28. Write a function *average*, that accepts a variable number of integer parameters and returns their average.
29. Write a function that checks if a given number is an Armstrong number
30. Write a program that reads a string and prints it if its length is even and prints it in reverse if its length is odd.