GUJARAT TECHNOLOGICAL UNIVERSITY

DI -1 SEMESTER – OLD PAPER – S22 TO S25 – QUESTION BANK(English)

Subject Name & Code:

Basic computer programing- 4310702

Unit I - Flowchart and Algorithm

Repeated Questions:

1. **Define Algorithm. / Write an algorithm for [a specific task].**
    - **Appeared in:** WIN 21 (Q2, 02 marks), WIN 22 (Q1a, 03 marks), WIN 23 (Q1b, 04 marks), WIN 24 (Q1a, 03 marks), SUM 25 (Q1a, 03 marks)
2. **Define Flowchart. / Draw and explain symbols of a flowchart.**
    - **Appeared in:** SUM 22 (Q1a, 03 marks), WIN 22 (Q1a, 03 marks), WIN 23 (Q1a, 03 marks), SUM 25 (Q1c, 07 marks)
3. **Write difference between algorithm and flowchart. / Differentiate algorithm with flowchart.**
    - **Appeared in:** SUM 22 (Q1c, 07 marks), SUM 23 (Q2b, 04 marks), SUM 24 (Q1a, 03 marks)

Other Important Questions:

4. Write advantages of algorithm. (WIN 21 - Q2, 02 marks)
5. Write an algorithm to check even and odd number. (SUM 22 - Q2a, 03 marks)
6. Draw a flowchart to check whether the entered integer is positive, negative or zero. (WIN 24 - Q1b, 04 marks)
7. Draw a flowchart to find the maximum number of given three numbers. (SUM 24 - Q1b, 04 marks)
8. Write an algorithm and draw a flowchart to calculate simple interest. (WIN 22 - Q1b, 04 marks)
9. Draw a flowchart to print all numbers divisible by 7 between M and N. (SUM 25 - Q1c OR, 07 marks)
10. Explain three flowchart structures with example. (WIN 24 - Q1e, 03 marks)
11. Write importance of flowchart. (WIN 23 - Q1a, 03 marks)

Unit II - Basics of 'C'

Repeated Questions:

1. **Explain the basic/general structure of a C program.**
    - **Appeared in:** SUM 22 (Q1c OR, 07 marks), SUM 24 (Q1c OR, 07 marks), WIN 24 (Q1c, 07 marks), SUM 25 (Q2c, 07 marks)
2. **List out/Explain C Tokens.**
    - **Appeared in:** WIN 22 (Q1c, 07 marks), WIN 23 (Q1c, 07 marks)
3. **List out/Explain operators used in C. / Explain various types of operators.**
    - **Appeared in:** SUM 22 (Q2c, 07 marks), WIN 22 (Q1c OR, 07 marks), WIN 23 (Q1c OR, 07 marks), SUM 25 (Q2c, 07 marks)

Other Important Questions:

4. Explain C data types in detail. (SUM 22 - Q1b, 04 marks)
5. List out different derived data types. (WIN 21 - Q4, 02 marks)
6. Discuss four basic datatypes available in C language. (WIN 24 - Q1i, 04 marks)
7. Explain feature of C language. (SUM 22 - Q2a OR, 03 marks)
8. List the rules for defining a variable in C programming. (SUM 25 - Q1b, 04 marks)
9. Explain unary, binary and ternary operators of C language with example. (WIN 24 - Q1f, 04 marks)
10. Explain conditional operator and sizeof operator with suitable example. (WIN 22 - Q2a OR, 03 marks)
11. Explain implicit and explicit type conversions in C language with example. (WIN 24 - Q1h, 03 marks)
12. Explain dynamic initialization of variable with suitable example. (WIN 22 - Q2a, 03 marks)
13. Classify the given identifiers in valid / invalid according to C language. Give reasons for invalid. (WIN 24 - Q1k, 03 marks)
    - Identifiers: 1) ANSI 2) One# 3) Typedef 4) Avg-Mark 5) variable 6) MAIN
14. Evaluate the following expression: 12+8/2-1*13%3 (SUM 24 - Q2a OR, 03 marks)
15. Explain scanf() with example. (WIN 21 - Q2b, 03 marks)
16. Explain input and output statements in 'C' with suitable example. (WIN 23 - Q2b OR, 04 marks)
17. Explain gets() and puts() functions. (SUM 22 - Q4b OR, 04 marks)
18. State TRUE or FALSE:
    a) C is a low level language.
    b) # symbol is used to denote preprocessor statement. (WIN 21 - Q1, 02 marks)

19. State TRUE or FALSE:
    a) main( ) is inbuilt function in C.
    b) global variable automatically initialized by 0. (WIN 21 - Q3, 02 marks)

20. Fill in the blanks by selecting proper option.
    a) Array name represents the address of _____ element. (first/last/middle/highest)
    b) To find the total numbers of characters in the string, _____ function is used.
    (strchar()/strlength()/strlen()/strstr()) (WIN 21 - Q5, 02 marks)

Unit III - Decision Statements and Loop Control Statements

Repeated Questions:

1. **Explain/Write difference between entry control loop and exit control loop.**
    - **Appeared in:** WIN 22 (Q2b, 04 marks), SUM 23 (Q3c OR, 07 marks), WIN 23 (Q3a OR, 03 marks), WIN 24 (Q1g, 07 marks)
2. **Explain/Write difference between break and continue statement.**
    - **Appeared in:** WIN 22 (Q2b OR, 04 marks), WIN 21 (Q3a, 03 marks), WIN 23 (Q3a, 03 marks), SUM 24 (Q3a OR, 03 marks)
3. **Explain if-else statement / nested if-else / else-if ladder with example.**
    - **Appeared in:** SUM 24 (Q2b, 04 marks), WIN 23 (Q2a, 03 marks), WIN 23 (Q2a OR, 03 marks), WIN 24 (Q1j, 07 marks)
4. **Explain switch-case statement with example. / Write a menu-driven program using switch-case.**
    - **Appeared in:** SUM 22 (Q2c OR, 07 marks), SUM 24 (Q2c OR, 07 marks), WIN 23 (Q2c, 07 marks), SUM 25 (Q3b OR, 04 marks)

Other Important Questions:

5. Explain while loop with example. (SUM 24 - Q2c, 07 marks), (WIN 21 - Q2a, 03 marks)
6. Explain for loop with example. (SUM 22 - Q3c OR, 07 marks)
7. Explain do-while loop. (Implied in entry/exit control differences)
8. Generate the following output using nested for loop:
    - Pattern 1:

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

(WIN 22 - Q2c, 07 marks), (WIN 23 - Q3b, 04 marks)

    - Pattern 2:

5

5 4

5 4 3

5 4 3 2

5 4 3 2 1

(WIN 22 - Q2c OR, 07 marks)

- Pattern 3 (Alphabetic):

A

A B

A B C

A B C D

(WIN 23 - Q3b OR, 04 marks)

9. Write a program to find the maximum number out of three numbers using nested if-else. (SUM 23 - Q3a, 03 marks)
10. Write a program to find whether a character entered by the user is an alphabet, digit, or special symbol using if-else ladder. (SUM 23 - Q3a OR, 03 marks)
11. Write a program to find the factorial of a given number. (WIN 22 - Q3a OR, 03 marks)
12. Write a program to find the sum of digits of an integer. (WIN 24 - Q2e, 07 marks)
13. Explain "Unconditional Branching Statement" with syntax and example. (SUM 25 - Q3b, 04 marks)
14. Write a C program using loop to print the following output pattern:
    - Pattern A:

1

2 1

3 2 1

4 3 2 1

(WIN 21 - Q3d, 04 marks)

- Pattern B:

1

2 3

4 5 6

7 8 9 10

(WIN 21 - Q3d OR, 04 marks)

15. Write a program to print the first n terms of the following series: 1, 2, 4, 5, 7, 8, 10, 11... (SUM 24 - Q3b OR, 04 marks)
16. Write a program to check whether the entered integer is an Armstrong number or not. (WIN 24 - Q3c OR, 07 marks)
17. Write a program to compute the series: $m^2 + (m+1)^2 + (m+2)^2 + ... + n^2$, where m and n are positive integers and $m<n$. (SUM 25 - Q3c OR, 07 marks)
18. Write a program to find out whether a given year is a LEAP YEAR or not. (SUM 25 - Q3c, 07 marks)

Unit IV - Array and Pointers

Repeated Questions:

1. **Define Array. Explain single / one-dimensional array with example.**
    - **Appeared in:** SUM 22 (Q4a, 03 marks), SUM 24 (Q3c, 07 marks), WIN 23 (Q3c, 07 marks), WIN 24 (Q4a, 03 marks)
2. **Define Pointer. Explain declaration and initialization of pointer.**
    - **Appeared in:** SUM 22 (Q5b, 04 marks), WIN 22 (Q3c OR, 07 marks), WIN 23 (Q4c OR, 07 marks)
3. **Explain/Differentiate between Call by Value and Call by Reference.**
    - **Appeared in:** SUM 22 (Q3b, 04 marks), SUM 23 (Q4c, 07 marks), WIN 23 (Q4a, 03 marks), SUM 24 (Q4c, 07 marks)
4. **Write a program to perform summation of two numbers using pointers.**
    - **Appeared in:** WIN 21 (Q7, 02 marks), SUM 23 (Q3b OR, 04 marks)

Other Important Questions:

5. Explain initialization of two-dimensional array. (SUM 22 - Q4a, 03 marks)
6. How to declare and initialize a two-dimensional array? (SUM 25 - Q2a, 03 marks)
7. List out characteristics of an array. (WIN 22 - Q3c, 07 marks), (WIN 21 - Q8, 02 marks)
8. Write a program to find the sum of all elements of an array of size N. (SUM 25 - Q2b, 04 marks)
9. Write a program to find the sum of all numbers entered in an array. (WIN 21 - Q5a, 04 marks)
10. Write a program to calculate the sum of numbers from 1 to n using an array. (WIN 22 - Q4b, 04 marks)
11. Write a program to sort an array of n integers in ascending order. (SUM 24 - Q3c OR, 07 marks)
12. Write a program to insert and display elements in a 2x2 matrix. (SUM 22 - Q5c OR, 07 marks)
13. Write a program to find the sum of two 3x3 matrices. (SUM 23 - Q3b, 04 marks)
14. What is a pointer? How does it differ from a primitive data type? (SUM 23 - Q4a OR, 03 marks)
15. List characteristics of pointers. (SUM 25 - Q2a OR, 03 marks)
16. Explain pointer to pointer with an example. (SUM 24 - Q4b OR, 04 marks), (WIN 21 - Q2a OR, 03 marks), (WIN 23 - Q3c OR, 07 marks)
17. Explain void pointer with an example. (SUM 23 - Q4b OR, 04 marks), (SUM 24 - Q4b, 04 marks)

18. Write a program to print numbers from 1 to 10 using a pointer. (WIN 22 - Q4b OR, 04 marks), (WIN 23 - Q4b, 04 marks)
19. Write a program to swap two integer variables using pointers. (WIN 21 - Q4c, 07 marks)
20. Explain the use of & (address of) and * (indirection) operators. Discuss the scale factor of a pointer. (WIN 24 - Q3b, 04 marks)
21. Develop a C program to find the sum of all elements available in an array using a pointer. (SUM 25 - Q2b OR, 04 marks)

Unit V - Functions

Repeated Questions:

1. **Define UDF (User Defined Function). List out types of UDFs. / Explain any one type of UDF with example.**
    - **Appeared in:** SUM 23 (Q3c, 07 marks), WIN 22 (Q4c, 07 marks), WIN 23 (Q5a, 03 marks), SUM 24 (Q4c OR, 07 marks), SUM 25 (Q5c OR, 07 marks)
2. **Explain function declaration, definition, and function call.**
    - **Appeared in:** SUM 23 (Q3c OR, 07 marks), WIN 23 (Q5a OR, 03 marks)
3. **Explain Recursion with example. / Write a program to find factorial using recursion.**
    - **Appeared in:** SUM 22 (Q4c, 07 marks), WIN 21 (Q6, 02 marks), WIN 23 (Q4c OR, 07 marks), SUM 24 (Q5b, 04 marks), SUM 25 (Q4a, 03 marks)

Other Important Questions:

4. What is a function? List advantages of functions. (SUM 25 - Q3a, 03 marks)
5. Give advantages of functions. (SUM 24 - Q4a OR, 03 marks)
6. Explain function with no argument and no return type with example. (WIN 21 - Q2b OR, 03 marks)
7. Explain the concept of actual arguments and formal arguments in user-defined functions. (WIN 24 - Q3a OR, 03 marks)
8. Explain what is user-defined and library function? Explain with two examples of each. (SUM 22 - Q4c OR, 07 marks)
9. Write a program to swap two variables using call by reference. (SUM 23 - Q3c, 07 marks)
10. Write a program to increment a variable using call by reference. (SUM 23 - Q3c OR, 07 marks)
11. Develop a C program to swap two integer values using: i) Call by value ii) Call by reference (SUM 25 - Q5c, 07 marks)
12. A function cannot be defined inside another function. (True/False) (WIN 22 - Q5a(1), 03 marks)
13. Functions cannot return more than one value at a time. (True/False) (WIN 22 - Q5a(2), 03 marks)
14. If return type for a function is not specified, it defaults to int. (True/False) (WIN 22 - Q5a(3), 03 marks)
15. A function is said to be _____ if it calls itself. (Recursive) (WIN 22 - Q5a OR(1), 03 marks)
16. The function which is written by the programmer as per his/her requirements is known as _____ function. (User Defined) (WIN 22 - Q5a OR(2), 03 marks)
17. _____ function is used to calculate the power of a number. (pow()) (WIN 22 - Q5a OR(3), 03 marks)

18. Give the definition of function. List the categories of function. (WIN 21 - Q9, 02 marks)
19. List categories of user-defined functions. Explain any two with example. (SUM 25 - Q5c OR, 07 marks)
20. Discuss the advantages of user-defined functions in programming. (WIN 24 - Q4b OR, 04 marks)

Unit VI - Structure, Union and Files

Repeated Questions:

1. **Define Structure. Explain structure declaration, initialization, and accessing of structure members with example.**
    - **Appeared in:** WIN 22 (Q5c OR, 07 marks), WIN 23 (Q5c, 07 marks), SUM 25 (Q5b, 04 marks)
2. **Define Union. Explain union declaration, initialization, and accessing of union members with example.**
    - **Appeared in:** WIN 22 (Q5c OR, 07 marks), WIN 23 (Q5c OR, 07 marks)
3. **Differentiate between Structure and Union.**
    - **Appeared in:** SUM 22 (Q4b, 04 marks), WIN 21 (Q3a OR, 03 marks), SUM 24 (Q5a, 03 marks), SUM 25 (Q4b, 04 marks)
4. **Explain File Handling functions: fopen(), fclose(), fscanf(), fprintf()**
    - **Appeared in:** SUM 22 (Q5a OR, 03 marks), SUM 23 (Q5, 05 marks), WIN 23 (Q5b OR, 04 marks), SUM 25 (Q5a, 03 marks), SUM 25 (Q5a OR, 03 marks)

Other Important Questions:

5. What is structure? List advantages of structure. (SUM 25 - Q4b, 04 marks)
6. Define a structure Student having rollnumber, name, and result as data members. Read and print the record of the student. (SUM 24 - Q5c, 07 marks)
7. Define a structure Time having data members: hour, minute, and second. Write a program that enters two different times and displays them in HOUR:MIN:SEC format. (WIN 24 - Q4e OR, 07 marks)
8. Develop a C program that declares a structure and initializes the structure variable and displays the size of that variable. (SUM 25 - Q5b, 04 marks)
9. Develop a C program that declares a union and initializes the union variable and displays the size of that variable. (SUM 25 - Q5b OR, 04 marks)
10. Define union Test with an integer, character, and float data members. Write a program that declares a variable of Test, assigns values to data members, and displays all the values correctly. (WIN 24 - Q4b, 04 marks)
11. What is array? Differentiate array with structure. (SUM 23 - Q4b, 04 marks)
12. Differentiate between array and structure. (Write at least three points) (WIN 21 - Q5d, 04 marks)
13. Explain the modes to open a file in C language. (WIN 24 - Q5a, 03 marks)
14. Enlist three reasons to close a file in the C program. (WIN 24 - Q5a OR, 03 marks)
15. Explain static and global storage classes with example. (WIN 24 - Q5b, 04 marks)
16. Explain all storage classes. Write a code of block to demonstrate extern variable. (SUM 23 - Q4c OR, 07 marks)
17. Discuss storage class. (WIN 23 - Q4c, 07 marks)
18. Explain static and extern storage class. (WIN 22 - Q4a OR, 03 marks)
19. Explain enum with example. (SUM 25 - Q4b OR, 04 marks)
20. Write a program to read a text file using file handling. (WIN 22 - Q5b, 04 marks)
21. Write a program to copy one file into another using file handling. (WIN 22 - Q5b OR, 04 marks)
22. Write a program to append content into an existing file. (WIN 23 - Q5b, 04 marks)
23. Write a program to create a text file. Write data into the file and read the data from the file. (SUM 24 - Q5c OR, 07 marks)
24. List four operations that can be performed on a file. (WIN 21 - Q10, 02 marks)
25. Explain getchar() and putchar(). (SUM 23 - Q5, 05 marks)
26. Explain the working of strcpy(), strcmp(), and strcat() functions with example. (WIN 24 - Q4a, 03 marks)
27. Explain the following string functions with example: (1) strcpy (2) strcat (3) strcmp (4) strlen (SUM 22 - Q4a OR, 03 marks)
28. Explain strlen() function with example. (WIN 23 - Q4a OR, 03 marks)

29. Write a syntax of strcpy() and explain. (SUM 24 - Q4a, 03 marks)
30. Write a C program to copy the content of a string STR1 into another string STR2. (WIN 21 - Q4a, 03 marks)
31. Write a C program to check whether the entered string is a palindrome or not. (WIN 21 - Q4a OR, 03 marks)
32. Write a program that reverses a string without using string.h. (WIN 24 - Q2b, 04 marks)

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