C programming theory:

1) Define C-language.
   Ans: C-language is a structured programming language that divides program into many functions.

2) When and who developed C-language?
   Ans: Dennis Ritchie at Bell telephone laboratory developed C-language in 1972 AD.

3) Why is C called middle level language?
   Ans: C is called middle level language because it combines elements of high level language with some features of assembler. A high level language tries to give programmer everything through built-in language. A low level language forces programmer to define function directly from user level.

4) What are the uses of C-language?
   Ans: C is mostly used to build system program such as operating system, language, compiler, text editor, language interpreters, utilities, etc.

5) List the basic data types used in C with their memory consumption. Ans: The basic data types used in C are:

Data Type	Description	Byte	Range
Char	Character	1	0-256
Int	Integer	2	33767-32767
Float	Single precision	4	6 digits of precision
Double	Double precision	8	12 digits of precision

6) List the characteristics of C-language.
   Ans: The characteristics are :
   i) It is a high level language with some features of low level language.
   ii) It is mostly used to prepare system software.
   iii) It is structured programming language with function procedure.
   iv) It supports local and global variable.
   v) v) It has only 32 characters.

7) What is 'C' character sets?
   Ans: Character is a set of valid characters recognized by 'C' language.

8) What is variable? How do you declare a variable in C language?
   Ans: A variable is the name to represent location in the computer's memory where we store some data.
   The general format of declaring a variable in c language is:

   Data type variable name=value;

   Or

   Data type variable name;
   Variable name=value;

9) What is constant? List the different types of c language constants.
   Ans: Constant are the values that do not challenge during the execution of a program.
   The different types of C language constants are:

   Integer constant

Real constant
Character constant
String constant

10) What is data type? What are the basic types of data in C language?
Ans: Data type are means to identify the type of data and associated operation of handling it. The basic types of data in C language:-

Char
Int
Float
Double

11) What are operators? What are the different types of C operator?
Ans: Operators are special symbols that are meant for specific tasks or operations.
The different types of C operators are:-
Arithmetic operators: +, - , %, *
Assignment operators: =
Unary operators: ++, --
Relational operators: >, <, >=, !=, ==
Logical operators: &&, ||

12) What do you mean by selection statement? List the selection statements of program.
Ans: Selection statement is a statement that allows the selective execution of statements depending on the evaluation of an expression.
The selection statements of C program are:-

If statement
Switch statement

13) What do you mean by looping? Name the looping statements provided by C.
Ans: Looping means executing a series of statements for a number of times until a certain condition is fulfilled.
The looping statements provided by care:-

For loop
While loop
Do.....while loop

15) Why is C programming called a pseudo high level language?
Ans: C programming is also called 'pseudo high level language' because of its capacity to access the system low level functions.

16) What are the important elements of C programming?
Ans: The important elements of C programming are:-

'C' character set
'C' keyword
Variables
Constants
Operators

17) What are C keywords? Give examples.
Ans:- C keywords are words which have special meaning for the compiler. Examples are:
auto, break, case, and char

18) How does variable differ from constant?

Ans: It is different from constant because variable value change during execution of program but constant value doesn't change.

19) What are unary operators? State the rules of logical operators.

Ans: The operator that operate on one operand variable or constant is called unary operator.

The logical operator are:

1) ||
   (OR operator) one expression is true enough for the overall expression to be true.
   It combines two expression into one.
2) &&
   (AND operator) Both expression must be true for the overall expression to be true.
3) !
   Not operator reverses the "true" of an expression

20) Why is C language popular than QBASIC?

Ans: Due to the following reasons C language is popular than QBASIC

1) It is reliable, simple and easy to use
2) Programs written in C are efficient and fast and rich in library functions and keywords
3) It occupies less memory space
4) Programs written in C can be reused

21) List any two features of C language.

Ans: Any two features are:-

1) It has 32 keywords.

2) It combines elements of a high level language with some features of assembler. So, it is called middle level language.

22) What do you mean by source code and object code?

Ans: The instructions written using C language is known as source code.

The machine – readable code which is obtained after compilation of source code is called object code.

23) What is structured programming?

Ans: The programming that follows a top- down approach, on which developers separate the overall program structure into different sub section is called structured programming.

24) What is top-down designing model?

Ans: Dividing a complex task into many small modules into order to perform the task is called top-down design.

25) What are different types of C language?

Ans: Different types of C language are:

a. Common C
b. ANSI C

37) What is comment? How it is written?

Ans: Comment is a sequence of characters which are embedded inside source code in specific Pattern.

If we want to place one line of comment, we can write comment after double forward slashes(//) but if we want to place some blocks of comments in a program, we can write comments starting by forward slash asterisk(/*) and multiple lines of comment and ending with asterisk forward slash(*/).

38) What is keyword? Write some of the keywords.

Ans: Keywords are the reserved words which have standard, predefined meaning in C language. Some of the keywords are auto, break, case, if etc.

39) What are the attributes of variable?

Ans: Its attributes are:-

1) The name (int a=5 'a' is a variable name)
2) The value (value of a is 5)
3) The memory address.
4) The memory size taken at memory.

40) Define counter and accumulator in terms looping.

Ans: A counter is a variable which controls the loop statement and provides the track to run the loop statement in certain number times.

Accumulator is a numeric variable which accumulates the values in a loop statement.

41) What symbol terminates every C statement?

Ans: ; symbol terminate every C statements.

42) What delimiters are used to specify the beginning and end of a group of instructions to be executed? { }

43) What are integer variables? List its types.

Ans: The variables used to store whole number are called integer variables.

Its types are: int, short, long, unsigned short, unsigned long.

44) What are format (conversation) specifiers? List them with their meaning and purpose.

Ans: The convention characters tell the compiler what data type's variable or string will be. 1) % d int.

2) % f float or double.
3) % e float or double, output in scientific notation.
4) % c character.
5) %s character string.

45) Write the function of printf and scanf.

In C programming language, printf () function is used to print the ("character, string, float, integer, octal and hexadecimal values") onto the output screen.

In C programming, scanf() is one of the commonly used function to take input from the user. The scanf() function reads formatted input from the standard input such as keyboards and stored in the memory address of variable.

File Handling theory | QBASIC File management practice questions

1) What is data file? What are the different types of data file?

Ans: A data file is collection of organized data stored in computer storage device. A computer application or system including input and output data uses data file.

The two different types of data file in QBASIC are:

a. Sequential access files
b. Random access files

2) What is a file? Name the two types of data file in data processing.

Ans: The collection of records stored on some storage device like magnetic tape, magnetic disk and optical disk is called file.

The two different types of file in data processing are:

a. Program file
b. Data file

3) What do you mean by program file and data file?

Ans) The file which contains a set of instructions that are needed for data processing is called program file. The file which contains only data that are required during data processing is called data file.

4) What is sequential access data file?

Ans) A data file that stores and give access to stored records only in the sequential order is called sequential access data file.

5) What are the disadvantages of sequential access data file?

Ans) The disadvantages of sequential access data file are:

a) It takes long time to access if the data file contains a large volume of data.
b) In sequential access data file we cannot change the existing entry or insert a new entry.

6) Mention the difference between program files and data files.

Ans:

Program files	Data files
A program file has set of instructions needed for data processing.	A data file has collection of related data stored in a secondary storage.

7) What are the difference between PRINT# and WRITE# statements?

Ans:

PRINT#	WRITE#
It adds spaces between data items while storing data.	It inserts commas between the data items.
It does not enclose strings in double quotation marks.	It encloses strings in double quotation marks.

8) What is a file number?

Ans: The number assigned to a file in order to identify it during file processing is called file number.

9) **List the modes of operations for opening a sequential file.**

Ans: The modes of operation for opening a sequential file are:

i) Output Mode: It is used to create a new data file and store records in it.
ii) Input Mode: It is used to read records from existing data file.
iii) Append Mode: It is used to add more records in the existing file after the last record.

10) **Differentiate between output mode and append mode.**

OUTPUT mode	APPEND mode

i) It creates a new file and prepares to store records starting at the beginning of file.	i) It opens an existing file and prepares to add records after the last record of the file.
ii) If the file already exists, its current contents will be destroyed.	ii) If the specified file does not exist, APPEND mode creates it.

11) **Write down the functions of:**

a) OPEN statement: It opens a sequential file for one of the three possible operations : reading, writing or appending records from/ to the file.

b) WRITE statement: It stores data items of each record sequentially to the file specified by the file number.

c) CLOSE statement: It closes one or all opened files mentioned in the file number.

d) INPUT# statement: It reads data items of a record from the sequential data file specified by the file number.

e) EOF ( ): The **EOF** function indicates that the end of a file has been reached.It returns true (non-zero) if the end of file has been reached otherwise returns zero.

f) LINE INPUT statement: It reads the entire line (maximum 255 characters) from the keyboard as a single input and stores in the single string variable.

g) INPUT$ function: It reads the specified number of characters from the data file.

h) NAME statement: The NAME statement renames an old file name. Only file name changes, data and program line remains intact.

i) KILL statement: The KILL statement deletes the file or files from the specified storage.

j) MKDIR statement: It creates a sub directory which is used to manage files.

k) CHDIR statement: It allows QBASIC to change the directory to another.

l) RMDIR statement It is used to remove or delete only the subdirectories from a disk. It can remove only empty subdirectories.

m) FILES statement: The FILES statement displays the list of files of the current sub directory or specified sub directory.

File Handlings Programs practice set

1. A program to input the name, class and roll no, marks of English, Math and Science of a student and store in a sequential file "std.dat".
2. A sequential data file "std.dat" contains name, class and roll no., marks of English, Math and Science of a student. Make a program to display all the records.
3. A sequential data file "std.dat" contains name, class and roll no., marks of English, Math and Science of a student. Make a program to add more records in the file.
4. A sequential data file "std.dat" contains name, class and roll no., marks of English, Math and Science of a student. Make a program to display those records in the file who are passed. (Pass marks: 35).
5. A sequential data file "std.dat" contains name, class and roll no., marks of English, Math and Science of a student. Make a program to count fail students.(Pass marks :35)
6. A sequential data file "std.dat" contains name, class and roll no., marks of English, Math and Science of a student. Make a program to display those records in the file whose marks of English is from 75 to 100.
7. A sequential data file "std.dat" contains name, class and roll no., marks of English, Math and Science of a student. Make a program to display the records whose name starts with **R** or **S**.
8. A sequential data file "std.dat" contains name, class and roll no., marks of English, Math and Science of a student. Make a program to calculate total and percentage of each student and display it.
9. A sequential data file named “std.dat” has several records having fields name, class and roll no., marks of English, Math and Science of a student. Write a program to copy all the records of class 10 into a newly created file “class10.dat”.

Modular Programming | QBASIC

1) **What is a modular programming?**
   Modular programming is a programming technique that divides a large or complex program into many small, manageable, logical and functional modules or blocks.
2) **What is module?**
   Module is self-contained and independent block of statements that solves a particular problem and is included as part of the main program.
3) **What are the advantages of modular programming?**
   The advantages of modular programming are:
   i) It is easy to design, code, modify , test, debug modules independently which is required in a large and complex program.
   ii) It makes possible to use a single module in different places wherever whenever necessary reducing code redundancy.
4) **What are two procedures in QBASIC?**
   The two procedures used in QBASIC are i) SUB-procedure and ii) FUNCTION-procedure.
5) **What is SUB-procedure?**
   A SUB-procedure is a small manageable functional part of program, which completes specific task and does not return any value to the calling main program or module.
6) **What is a FUNCTION-procedure?**
   A FUNCTION-procedure is a small and manageable functional part of a program, which completes specific task and returns single value to the calling main program or module.
7) **Write down the function of CALL statement.**
   The function of CALL statement is to transfer/pass the control of the program to the called sub procedure.
8) **Write down the function of DECLARE statement.**
   The function of DECLARE statement is to declare procedure and verify/check the list of parameters and its data type when the procedure is called.
9) **What is main module?**
   Main module is the main entry point of a program, where all procedures are written. It is also an ending point of the program that controls the entire modules used in the program.
10) **What is sub module?**
    Sub module is a program written under the main module. It is the self-contained and an independent block of statements with a specific name given by the programmer to perform a specific task.
11) **Define parameters and arguments.**
    Parameters are variables, used in the declaration and definition of the procedure. It accepts data (arguments' value or reference) passed to the procedures (SUB procedure and FUNCTION procedure). Arguments are the values (constant or variable) passed to the calling procedure (SUB procedure or FUNCTION procedure).
    * Actual or real parameters are Arguments.
    * Formal parameters are Parameter
    Example:

DECLARE SUB TRIM(W$) CLS INPUT "Enter word"; WO$ CALL TRIM(WO$) END SUB TRIM (W$) FOR I = 1 TO LEN(W$) PRINT LEFT$(W$, I) NEXT I END SUB	Here, **Argument** is WO$ (Real / Actual parameter) **Parameter** is W$	DECLARE SUB SUM(N) N = 5 CALL SUM (N) END SUB SUM(N) FOR X = 1 TO N S =S + X NEXT X PRINT S END SUB	Here, **Argument** is N (Real / Actual parameter) **Parameter** is N

Modular Programming | QBASIC

12) What is Actual parameter?

The parameters passed to the procedure in the calling procedure statements are Actual parameters. It is also known as Arguments.

13) What is Formal parameter?

The parameters in the procedure definition receives the value from the Actual parameters are Formal parameters. It is also known as Parameters.

14) **Write down the functions of DIM SHARED statement.**

The functions of DIM SHARED statement are :

i) It makes variable accessible to all modules.

ii) It appears in main module/ program.

15) **What are library functions?**

Library functions are built-in or readymade functions available in QBASIC by default.

Examples: SQR( ), LEFT$( ), RIGHT$( ), LEN( ), INT ( )

16) **What is user defined function?**

Function defined by the user according to the need is user defined function.

Examples: AREA (L, B) , SUM(A,B,C), Interest(P,T,R)

17) **Write down the differences between SUB and FUNCTION procedure.** Ans:

SUB-procedure	FUNCTION-procedure
i) SUB-procedure does not return value.	i) FUNCTION-procedure must return a value.
ii) SUB-procedure is c alled by CALL statement.	ii) FUNCTION-procedure is called by PRINT statement and expression method.
iii) SUB-procedure's name does not accept data type symbol because it does not need to return a value.	iii) FUNCTION-procedure's name accepts data type symbols such as $, %, !, #, &, etc. and it depends on the type of value to be returned. E.g.: FUNCTION REV$ returns string.

18) **Differentiate between SHARED and COMMON SHARED.**Ans:

SHARED	COMMON SHARED
It is used in the sub program to share the values of certain variables between main module and sub program	It is used in the main program to share variable list between main module and all sub programs.

19) **Differentiate between local variable and global variable.**Ans:

Local Variable	Global Variable
i) Local variables are not visible to other modules or functions. Its scope is local.	ii) Global variables are visible to other modules or functions. Its scope is global
ii) Its value is protected from outside interference and has no effect on the variables outside the procedures.	iii) Its values can be accessed, modify or updated from any procedure or module.

20) **Differentiate between passing argument by value and passing argument by reference**:

Passing arguments by value	Passing arguments by reference

i) When arguments are passed by value it makes a duplicate copy of arguments and their values (constants) are used directly in parameter.	i) When arguments are passed by reference, the address of the variable is passed to the procedure.
ii) It does not make any effect on values of variable, which is passed to a procedure even they are changed in the procedure.	ii) The changes made in the procedure's variable will affect the variables used at calling module.
iii) To pass the argument by value, variable is enclosed in parenthesis.	iii) By default the value is passed by reference.

22) What are the major features of SUB procedure?

Ans: The major features of sub procedure are:

i. It does not return any value.
ii. It does not have a data type.
iii. The parameter can be passed by reference or by value.
iv. They can be recursive.

23) What are the three important parts of SUB procedure? List with examples.

Ans: The three important parts of SUB procedure are:

i. Declaration of SUB procedure
Example: DECLARE SUB AREA (L, B)
ii. Body of SUB procedure
Example: SUB AREA (L, B)

.
.
.

END SUB

iii. Invocation of SUB procedure
Example: CALL AREA (L, B)