10th Class 2021

Computer Science	Group-II	PAPER:II
Time: 1.45 Hours	(Subjective Type)	Max. Marks: 40

(Part-I)

2. Write short answers to any FOUR (4) questions: (8)

(i)   Define algorithm.

Ans An *algorithm* is a finite set of steps which, if followed, accomplish a particular task. An algorithm must be clear, finite and effective. The simplest form of algorithm is *step-form algorithm* (like a to-do list).

(ii)   Write two advantages of flow chart.

Ans Two advantages of flow chart are:

1.   With the help of a flow chart, the logic of an algorithm can be described more effectively.

2.   As flow charts are part of the design document; hence maintenance of operational programs becomes easy.

(iii)   What is meant by control structure?

Ans These are fundamental structures of all high level programming languages. These are used to control the flow of execution of a program.

(iv)   Write down the syntax of FOR ---- NEXT loop.

Ans Syntax:

FOR *variable* = x TO y [STEP z]

NEXT *[variable]*

(v)   Why is loop control structure used in BASIC?

Ans We often face problems whose solution may require executing a set of statements repeatedly. In such situations, we need a structure that would allow repeating a set of statements up to fixed number of times or until a certain criterion is satisfied. Loop structure fulfills this basic requirement.

(vi) How does IF ---- THEN statement work in BASIC?

Ans> The IF...THEN is a decision making statement, depending upon the decision, it can change the order of program execution. It is used to select a path flow in a program based on a condition. A condition is an expression that either evaluates to true (usually represented by 1) or false (represented by 0).

3. Write short answers to any FOUR (4) questions: (8)

(i) Write the use of "INPUT" statement.

Ans> This statement is used to input data from the user during the program execution.

(ii) Define keywords.

Ans> Reserved words or keywords are the words, which have predefined meaning in BASIC. These have predefined uses and cannot be used or redefined for any other purpose in a BASIC program. Keywords cannot be used as variable names. Some of the keywords of BASIC are IF, ELSE, THEN, WHILE, etc.

(iii) What is meant by type declaration characters?

Ans> In GW-BASIC, type declaration characters represent the type of variable. For example, Marks % is the type of character %, viz., integer variable.

(iv) Define vector array.

Ans> Vector array is also known as linear array or one-dimensional array. It consists of only one row or column. It is also called 1-D array.

(v) Describe the use of array.

Ans> There are different operations can be performed by using array, like searching a particular element in an array, matching elements from two different arrays, sorting array, finding a largest and smallest number from an array and rearranging the array.

(vi) How we can fill an array?

Ans> Data (String and numbers) is entered in an array by using LET, READ or INPUT statements for filling and printing of an array.

4. Write short answers to any FOUR (4) questions: (8)

(i) Define sub-program.

Ans A larger program is divided into smaller, manageable piece of codes are called sub-program.

(ii) What is built-in function?

Ans These are functions packaged with every implementation of BASIC.

(iii) What is the use of ABS function?

Ans Purpose:

The purpose of ABS function is to return the absolute value of the expression x *i.e.*, the value without any sign.

(iv) What is the purpose of RIGHT $ function.

Ans To return the specified right most characters of strings x$.

(v) What is SCREEN statement?

Ans The SCREEN statement is commonly used to select a screen mode appropriate for a particular display-hardware configuration. For example, the supported hardware configuration like IBM Monochrome Display and Printer Adapter (MDPA) with mode 0 is used to connect only to a monochrome display. Programs written for this configuration must be in text mode only.

(vi) Write syntax of CIRCLE statement.

Ans Syntax:

CIRCLE (x, y), radius [, [color] [,[start], [end] [,aspect]]]

(Part-II)

NOTE: Attempt any TWO (2) questions.

Q.5. Define flow chart. Write guideline for drawing a flow chart. (8)
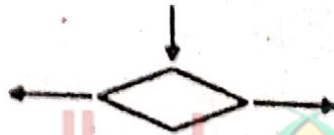
Ans Flow Chart:

"A flow chart is a pictorial representation of an algorithm."

It is a way of visually presenting the flow of data, the operations performed within the system and the sequence in which they are performed. The flow chart is similar to the layout plan of a building.

Guidelines for Drawing a Flow Chart:

(a) In drawing a flow chart, all necessary requirements should be listed in a logical order.

(b) The flow chart should be clear, neat and easy to follow, There should not be any ambiguity in understanding the flow chart.

(c) The usual direction of the flow chart is from top to bottom or left to right.

(d) Only one flow line should come out from a process symbol.

Or
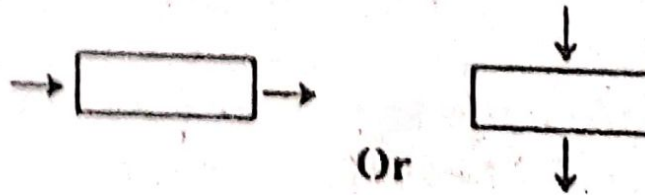
(e) Only one flow line must enter a decision symbol, but two flow lines, one for each possible answer, must leave it.

(f) Only one flow line is used in conjunction with terminal symbol. Ensure that the flow chart has a logical start and end.

(g) Write comments within remarks symbol. We can use the remarks (annotation) symbol to describe steps more clearly.

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(h) If the flow chart becomes complex, it is better to use connector symbols to reduce the number of flow lines. The intersection of flow lines should be avoided to make it more effective and clear.

(i) It is useful to test the validity of the flow chart by passing through it with a simple test data.

Q.6. Write a detailed note on types of variables. (8)

Ans Variables:

Variables are named memory locations (memory cells), which are used to store program's input data and its computational results during program execution.

As the name suggests, the value of a variable may change during the program execution. If a variable is assigned no value, the GW-BASIC assumes the value of variable to be zero in case of numeric variables and null to string variables.

Types of Variables:

There are two basic types of variables:

- Numeric Variables
- String Variables

Numeric Variables:

Numeric variables can store numeric data (Numeric values include both floating point numbers and whole numbers). If we don't specify the type of a numeric variable, GW-BASIC considers it as single-precision. Single-precision variables can actualy handle numbers up to six significant digits, however, it cannot handle seventh significant digit accurately.

String Variables:

A string can be defined as a sequence of characters enclosed in double quotations. A string variable can, therefore, store sequence of characters. The nature of character string is entirely different from the nature of numeric variables. In BASIC, a dollar sign ($) is followed by the name of the string variable. We cannot perform the same set of operations on strings that we can perform on numeric values.

Q.7. Define graphics. Explain different graphics modes. (8)

Ans Graphics:

Graphics is an art to design and produce pictorial representation of information. This facility is provided in almost all the versions of BASIC language. It is displaying information on screen. Graphic is that area of computer programming which is highly in use these days. It depends on the hardware such as input, output and graphic card (Color Graphic Adaptor, Video Graphic Array).

Different Graphics Modes:

BASIC provides three modes of displaying data:

(i) Text Mode:

Text is used for only textual data. In text-based graphic, text and lines can be drawn on the screen. The whole screen is divided into 80 column and 25 rows. It has 16 colors out of any 2 colors palettes. Columns are counted from 0 to 39 or 79 and rows from 0 to 24.

(ii) Medium-Resolution Graphic Mode:

Medium-Resolution Graphic Mode is used in drawing graphic. The display screen is divided into a matrix consisting of 320 columns and 200 rows of pixels. Thus the position of each and every pixel will be determined by its coordinates on x-axis and y-axis of the screen. This graphical mode works with 4 colors. The different four colors are 0, 1, 2, 3, one of 16 color can chosen for background and one for foreground.

(iii) High-Resolution Graphic Mode:

High-Resolution Graphic Mode is used in drawing graphics with matrix of 640 × 200 pixels. We are able to display the text characters in 25 lines of 80 characters in each line.