Inter (Part-II) 2017

Computer Science		PAPER: II
Time: 2.10 Hours	(SUBJECTIVE TYPE)	Marks: 60

SECTION-I

(MS-ACCESS)

2. Write short answers to any SIX (6) questions: (12)

(i) Define data.

Ans Data is a collection of facts, figures and statistics-related to an object, that can be processed to produce a meaningful information. Data may be in the form of numbers, characters, symbols, sounds, images, video clips, etc.

(ii) Write down the basic purpose of using views.

Ans The purpose of using views is purely to keep the data safe and secure from un-authorized and illegal users.

(iii) Define mutual exclusiveness of data.

Ans Mutual exclusiveness of data exists when attributes occur whose values are expressed as Yes/No.

(iv) Differentiate between cardinality and modality.

Ans **Cardinality:**

1. Some occurrences of object-I are related to some occurrences of object-II.
2. It expresses as one-to-one, one-to-many, many-to-many, etc.

Modality:

1. It is a nature of relationship.
2. 0 represents Optional. I represents Mandatory.

(v) Define transitive dependency.

Ans A non-key attribute depends on any other non-key attribute is known as transitive dependency.

(vi) List down any two advantages of MS-Access.

Ans Two advantages of MS-Access are:

1. MS Office integration.

2. Removes duplication of data. Easy to install/integrate etc.

(vii) Define sorting.

Ans Sorting is the process of arranging items in a sequence ordered by some criterion.

(viii) Write down the use of filters in MS-Access.

Ans Filtering is a useful way to see only the data that you want displayed.

(ix) Write down any two differences between file processing and data base approach.

Ans

File processing Approach	Dátabase Approach
(a) Data Redundancy	(a) Reduce Data Redundancy
(b) Isolated Data	(b) Shared Data

C-Language

3. Write short answers to any SIX (6) questions: (12)

(i) List out two advantages or characteristics of C.

Ans Two characteristics of C are:

1. C-language are efficient, fast and easy to understand.
2. C-language has the ability to extend itself.

(ii) Define object code.

Ans The code produced by a compiler from the source code, usually in the form of machine language that a computer can execute directly, or sometimes in assembly language.

(iii) Write the legal characters of an identifier.

Ans Identifiers are names of variables, arrays, functions, structures, and labels etc.

(iv) Define assembly language.

Ans Assembly language is a low-level language. It is one step higher than machine language. In assembly language, machine instructions are replaced with English-like words known as **Mnemonics.** It is pronounced as **Ne-Monics.**

(v) Define variable.

Ans In C-language, variables are simply names used to refer to some location in memory -- a location that holds a value with which we are working.

(vi) Define standard input.

Ans Keyboard is called standard input device and the input which is given through the keyboard is called the standard input.

(vii) Find any two errors of following code:

```
int number = 6
number + +;
print f (% d\n", number);
```

Ans (a) Semicolon (;) missing in first line after 6.
(b) Space between printf function.

(viii) Write down output of the following:

```
float  f = 3.14159;
print f("f = %4.2 f", f);
```

Ans f = 3.14.

(ix) Find error

```
{
Float area, r
Print f ("Enter radius");
}
```


Ans There exists four errors in the program, *i.e.*,

(a) F is capital in float.
(b) ; is missing in 1st line after r.
(c) P is capital in printf function.
(d) Space between printf function.

OR

(Visual Basic)

3. Write short answers to any SIX (6) questions: (12)

(i) Why is it necessary to test a program?

Ans It is necessary to test a program to find out errors or bugs. It helps a programmer to check the logic of the program. It also ensures that the program is error-free and workable.

(ii) What is Assembly Language?

Ans Assembly Languages is a low-level language. It is one step higher than machine language. In Assembly Language, symbols are used instead of binary code.

(iii) Write about object code.

Ans An object code in Visual Basic, is a combination of code and data can be treated as a unit. An object can be a piece of an application, like a control or a form.

(iv) Do you know about Name Space?

Ans By default, every executable file which we create with Visual Basic, contains a Name Space with the same name as our project. For example, if we define an object within a project named ListBoxProject, the executable file ListBoxProject.exe contains a name space called ListBoxProject.

(v) Describe about Meta data.

Ans Meta data in Visual Basic is binary information which describes the characteristics of a resource. During the compile time, Meta data created with Microsoft Intermediate Language (MSIL) and stored in a file called a Manifest.

(vi) Write about Asp.Net.

Ans Asp.Net was developed by Microsoft to allow programmers to build dynamic web sites, web applications and web services.

(vii) Define class, how defines in VB.

Ans A class describes the variables, properties, procedures and events of an object. Objects are instances of classes; you can create as many objects you need once you have defined a class.

(viii) Show output of the following code.

```
Dim x, y As integer
x = 5
y = 7
z = 5 (x + y)
print z
```

Ans Output:

z = 60.

(ix) **Find error in following code.**

```
Dim S1 ; S2 As integer
S1 = 10
S2 = S1 + S1;
Print S2
```

Ans Semicolon cannot be used in the code of Visual Basic.

C-Language

4. Write short answers to any SIX (6) questions: (12)

(i) **Define conditional operator with example.**

Ans Conditional operator is alternative to if else statement. It is very short syntax as compared to if-else statement.

Syntax

Condition? True condition statement: False condition Statement:

Example

```
int a 10;
int b 20;
if (a > b) ? print ("a is greater!"): print f("b is greater! "):
```

(ii) **Find the output of the following code.**

```
# include < stdio.h >
Void main ( )
{
char grade = 'c';
if (grade = = 'a' 11 grade = = 'b' & & grade = = 'c')
print f ("Fail");
else
print f ("Psas");
}
```

Ans Pass

(iii) **Find the errors in the following code.**

```
# include < stdio.h >
void main ( )
```

```
{
float area ; r ;
scan f("% c", & r);
area = 3.14 * r * r;
print f ("area = %f", area);
}
```

Ans There exists four errors in the statement:

(a) ; semi-colon in 1st line after variable area.

(b) Space between scanf function.

(c) %C format specifier is used for floating type variable r.

(d) Space between printf function.

(iv) What is continue statement? Also give an example.

Ans The continue statement causes the loop to go to the next iteration. The continue statement can appear only in loops

Example

```
for(int i 1 ; i < no ; ii1)
{
    if(i%2 ! 0)
      {
          printf("\n Odd Numbers %d \n",i);
        continue;
      {
      printf("\n Even numbers %d \n",i);
}
```

(v) Find output of the following code.

```
# include < stdio.h >
void main ( )
{
int i, p = 1;
for (i = 1 ; i < 6 ; i + = 1)
p * = 2;
print f ("p is = % d" , p);
}
```

Ans p is 32.

(vi) **Convert the following code into while loop.**

```
# include < stdio.h >
  void main ( )
{
  int i;
  while (i < 5)
{
  print f("% d\n" , i);
  i + + ;
  }
}
```

Ans The loop is already in while loop.

(vii) **Differentiate between local and global variables.**

Ans The variables that are declared inside the main function or inside any user-defined function are called local variables. While the variables that are declared outside the main function or any other function are called global variables or external variables.

(viii) **Define function declaration with its syntax.**

Ans A function declaration tells the compiler about a function's name, return type and parameters.

Syntax

```
return type function name (parameter list)
{
Body of the function
}
```

(ix) **Write the name of two types of streams used in files in C language.**

Ans (a) Text Stream (b) Binary Stream

OR

Visual Basic)

4. Write short answers to any SIX (6) questions: (12)

(i) **Define the use of option explicit.**

Ans Option Explicit statement forces explicit declarations of all variables in an application. It means that a variable cannot be

used before it is declared. An error occurs if the user attempts to use an undeclared variable.

(ii) What is the purpose of Val function?

Ans **Val Function:**

Val function is a type of function that takes a numeric string as parameter and converts it to appropriate numeric data to be used in calculations. If S1 = "1" and S2 = "2", the following example will display 12 not 3.

Msg Box S1 + S2

The following example will display 3.

Msg Box Val(S1) + Val(S2)

(iii) What does declaring a variable mean?

Ans **Variable Declaration:**

Specifying the variable name and its type is called variable declaration. A program can have many variables as needed. When a variable is declared, two things are specified:

- The name of the variable.
- The data type of the variable.

Once the variable is declared, the data type cannot be changed during the execution. The value of variable can be changed during the execution. The variables in Visual Basic are declared using **Dim** keyword.

(iv) What is the use of AND operator?

Ans AND operator is used to give two or more conditions in a WHERE clause. The AND operator displays a row if all conditions listed are true.

(v) In Visual Basic, how select case help in coding?

Ans The SELECT CASE helps in coding for multiple selections. It is used when multiple choices are given and one choice is to be selected.

(vi) What is a nested control structure?

Ans You can place control structures inside other control structures, which is called nested control structure.

(vii) When should you use Do-while-loop?

Ans When we check the relational test at the top of the loop, we should use Do-while-loop.

(viii) What is an infinite loop?

Ans A loop in which the ending condition never occurs is called infinite loop. It repeats forever until the user intervenes to stop the loop.

(ix) Which statements are used to terminate DO and FOR loops early?

Ans Exit Do and Exit For statements are used to terminate loops before their natural termination.

SECTION-II

(MS ACCESS)

Note: Attempt any ONE (1) question.

5. Write down the properties of relations in detail. (8)

Ans **Properties of Relation:**

A Relation or a Table is the basis of a Relational DBMS. By definition, relation must have certain inherent properties.

These properties are:

- **No duplicate rows exist:** No two rows can be identical. Why to put two rows (records) for the same entity (*e.g.*, a Person). It will also violate the definition of what a relation represents, as it says by definition that there must be a unique key for each row in a relation/table).
- **The order of Rows is insignificant:** There is no ordering or sequencing of the rows in the tables. The relational implementation of the tables support all required access mechanism *i.e.*, it is not necessary to sequence the rows according to the key field.
- **The order of Columns is insignificant:** Again, the order of the columns/attributes in defining a relation/table has no significance. The later insertions of the columns are made at end of the existing columns by the system itself. The system acquires the data (of columns) by their names.
- **Columns/Attributes are all Elemental or Atomic:** All the intersections of Rows and Columns must have a (single) value. The nulls are inserted by the system at the

SECTION-III

Note: Attempt any TWO (2) descriptive answers (either from "C-Language" or from "Visual Basic") of the following questions.

(C-Language)

7. Write any four steps for writing and executing C-program. (8)

Ans Developing a C Program:

Writing a program in C is not too difficult; however, it requires a good understanding of the development environment of C language. The programmer should also have the knowledge of steps required to prepare a C program for execution.

As a first step, install a compiler for the C language on the computer so that the source program can be compiled and executed. Many compilers for C language are available from number of vendors.

1. Turbo C++ (A Compiler for the C language):

Turbo C++ is a Borland International's implementation of a compiler for C language. In addition to a compiler, TC provides a complete IDE (Integrated Development Environment) to create, edit and save programs is called TC editor. It also provides a powerful debugger that helps in detecting and removing errors in the program.

Once the TC (Turbo C) has been installed, it is very easy to write C programs in its editor. The IDE can be invoked by typing tc on the DOS prompt or by double clicking the TC shortcut. The menu bar of the IDE contains menus to create, edit, compile, execute (Run) and debug a C program. A menu can be opened by either clicking the mouse on it or pressing the first highlighted character of the name of the menu in conjunction with the *Alt* key. For example to open *File* menu, press *Alt+F* (hold down Alt key and then press F key).

2. Creating and Editing a C Program:

To write the first C program, open the edit window of the Turbo C++ IDE. This can be done by selecting *File\New* option

from the menu bar. A window appears on the screen. This window has a double-lined border, and a cursor inside the window represents the starting point to write a program.

We can expand this window by clicking the arrow in the upper right corner, or by selecting Window/Zoom from the menu bar. We can also navigate through the program by using the vertical and horizontal scroll bars or by using arrow keys.

3. Saving a C Program:

After writing the C program, we should save it on the disk. This can be done by selecting *File|Save* command from the menu bar or pressing the *F2* Key. When we select *File|Save*, a dialogue box will appear. At the top of this dialogue box, there is a text box with caption *Save File As*. Type the name of the file in it and press the Enter key. The default path for saving the file in BIN folder. The TC assigns a default name NONAME00.cpp to the file. To save the file in a specific folder / location with a different file name, one has to specify the absolute path.

4. Compiling a C Program:

The computer does not understand source program because instructions in the program are meaningless to the microprocessor, as it understands only the machine language. A program that is to be executed must be in the form of machine language.

C compiler translates the source program into an object program with .obj extension. To invoke Turbo C++ compiler, select *Compile|Compile* from the menu bar or press *Alt+ F9* key. If there is no error in the source program, the program will be translated to object program successfully otherwise, the compiler will report errors in the program.

- The program written in any high level programming language, such as C, is called *source program*.
- The compiler produces an *object program* from the source program.

8. Write a program that inputs a number from user and finds it is positive, negative or zero. (8)

Ans

```
#include <stdio.h>
#include <conio.h>
```

```
void main( )
{  int num;
printf("Enter a number; \n"):
        scanf("%d".&num);
        if (num > 0)
          printf("%d is a positive number \n" . num);
          else if (num > 0)
          printf("%d is a negative number \n" . num);
        else
          printf("0 is neither positive nor negative");
getch( );
}
```

9. Define while loop? Write its syntax and flow chart. Also explain its working with the help of an example. (8)

Ans **"While" Loop:**

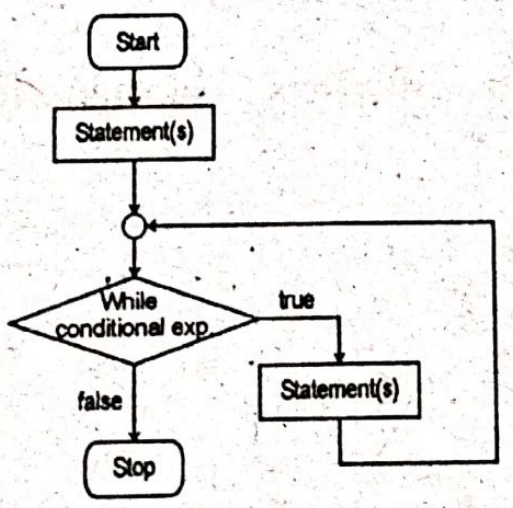
While loop is the simplest loop of C language. This loop executes one or more statements while the given condition remains **True**. It is useful where the number of iterations is not known in advance.

Syntax:

The syntax of while loop is as following:

```
while (condition)
{
        statement;
}
```

Flow Chart:



Condition:

The condition is given as a relational expression. It controls the iteration of loop. The statement is executed only if the given condition is **true**. If the condition is **false**, the statement is never executed.

Statement:

Statement is the instruction that is executed when the condition is **true**. Two or more statements are specified in braces { }. It is called the **body** of the loop.

The syntax for compound statements is as following:

```
While (condition)
{
        Statement 1;
        Statement 2;
        .
        .
        Statement N;
}
```

Working of While loop:

First of all, the condition is evaluated. If it is **true**, the control enters the body of the loop and executes all statements in the body. After executing the statements, it again moves to the start of the loop and evaluates the condition again. This process continues as long as the condition remains **true**. When the condition becomes **false**, the loop is terminated. **While** loop terminates only when the condition becomes **false**. If the condition remains **true**, the loop never ends. A loop that has no end point is known as **infinite loop**.

Example:

A program that displays "Pakistan" for five times using **while** loop:

```
#include <stdio.h>
#include <conio.h>
Void main ( )
{
Int n;
n = 1;
```

```
clrscr ( );
while (n <= 5)
{
Printf ("Pakistan\n");
n++;
}
getch ( );
}
```

Output:

Pakistan
Pakistan
Pakistan
Pakistan
Pakistan

OR

(Visual Basic)

7. Write steps for writing and executing program in Visual Basic. (8)

Ans ***Program Development Process:***

1. Defining and Analyzing the Problem:

In this step, a programmer studies the problem. He decides the best way to solve this problem. Studying a problem is necessary because it helps a programmer to decide about the following things:

- The facts and figures which are necessary for developing the program.
- The way in which the program will be designed.
- The language in which the program will be most suitable.
- What is the desired output and in which form it is needed, etc.

2. Designing the Algorithm:

An algorithm is a sequence of steps that must be carried out before a programmer starts preparing his program. The programmer designs an algorithm to help visualize possible alternatives in a program.

3. Coding or Writing the Program:

The next step after designing the algorithm is to write the program in a high-level language. This process is known as coding.

4. Test Execution:

The process of executing a program to find out errors or bugs is called test execution. It helps a programmer to check the logic of the program. It also ensures that the program is error-free and workable.

5. Debugging:

Debugging is a process of detecting, locating and correcting the bugs in a program. It is performed by running the program again and again.

6. Final Documentation:

When the program is finalized, its documentation is prepared. Final documentation is provided to the user. It guides the user how to use the program in the most efficient way. Another purpose of documentation is to allow some other programmer to modify the code if necessary. Documentation should be done in each step during development of a program.

---

8. Write a program that input a number from user and finds it is positive, negative or zero. (8)

Ans

```
Private Sub Command 1_Click ( )
number_value = Val (Text 1. Text)
If (number_value > = 0) Then
Label4.Caption = "The given number" & number_value & "is a positive Number"
Else
Label4.Caption = "The given number" & number_value & "is a Negative Number."
Else
Label4.Caption = "The given number" & number_value & "is zero."
End If
End Sub
Private Sub Command 2_Click ( )
Text 1.Text = " "
End Sub
```

9. Define WHILE-WEND loop. Draw flow chart and explain its working with the help of an example. (8)

Ans **While...Wend Loop:**

While loop is the simplest iterative structure of Visual Basic. This loop executes one or more statements while the given condition remains **True.**

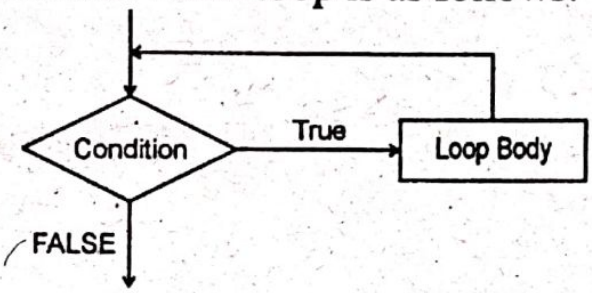
Syntax:

The syntax of while...wend loop is as following:

```
While condition
        Statement(s)
Wend
```

Flowchart:

The flowchart of while loop is as follows:



Working of While...Wend Loop:

First of all, the condition is evaluated. If it is true, the control enters the body of the loop and executes all statements in it. After executing the body, it again moves to the start of the loop and evaluates the condition again. This process continues as long as the condition remains true. The keyword **Wend** indicates the end of loop body.

Example:

A program that prints "IT Series" five times on form using while...wend loop.

Program:

1. Start a new standard EXE project.
2. Place a command button on the form.
3. Double click the button and add the program code in its Click event.
4. Run the project and click the button.

How it Works:

The above example is a counter-controlled loop. It uses a counter variable n to control the iterations of the loop. The variable n is initialized to 1. When the condition is evaluated first time, the value of n is 1. The condition is true, so the control enters the body of the loop that contains two statements. The first statement prints "IT Series" on the form and the second statement increments the value of n by 1, making it 2. Then the control moves back to the condition. This process continues for five times. When the value of n becomes 6, the condition becomes false and the loop terminates.