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Subject: → Introduction to Computer programming.

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Exam: → Final term (summer)

Date: → 29th, Sep, 2020.

Q1(a): → write a program for your Grading System using "if-else statement".

^a
Ans: →

```
#include <iostream.h>
#include <conio.h>
int main()
{
    int marks;

    cout << "Program to find Grade" << endl;
    cout << "Enter marks: ";

    cin >> marks;

    if (marks > 90 && marks < 90)
        cout << "Your grade is A+";
    else if (marks >= 80 && marks < 90)
        cout << "Your grade is A";
```

```
else if (marks >= 70 && marks < 80)
```

```
cout << "Your grade is B";
```

```
else if (marks >= 60 && marks < 70)
```

```
cout << "Your grade is C";
```

```
else if (marks >= 50 && mark < 60)
```

```
cout << "Your Grade is D";
```

```
else if (marks >= 0 && marks < 50)
```

```
cout << "Your Grade is F";
```

```
else cout << "Invalid marks";
```

```
return 0;
```

```
}
```

Q1(b): → Differentiate between "if statement" and "if-else statement" Page 3)

Ans: → if statement

→ Sometimes we want to selectively execute a block of code.

→ The C++ syntax of the if statement is;

```
if (logical expression)
{
// Block of code to execute
if expression is true
}
```

→ The block of code should be indented 3-4 spaces to aid program readability

→ If the block of code is only one ~~line~~ line long the {} brackets can be omitted.

if-else statement

→ Sometimes we need to handle two alternatives in our code.

→ The C++ syntax of the if-else statement is

```
if (logical expression)
{
// Block of code to
execute if expression is true
}
else
{
// Block of code to execute
if expression is false
}
}
```

→ The two blocks of code should be indented 3-4 space to aid program readability.

→ If either block of code is only one line long the {} brackets can be omitted.

~~if~~ if statement

- The "if statement" is used to execute (or ignore) a set of statement after a condition.
- The "if statement" evaluates a condition if the given condition is true the statement (or a set of statements) following.
- The "if-statement" is executed. If the given condition is false the statement (or a set of statements) following
- The "if-statement" condition is ignore and control transfer to the next statement.

if-else statement.

- This is another form of the "~~if~~ statement" it is used for making to way decisions, in this statement one condition and two-blocks of statement are given.
- Either one of the two block of statement is executed after evaluating a condition.
- The "if-else statement" tests the given relational conditional if the ~~given~~ condition is true then the first block of statement is executed - if the conditions is false then the first block of statement is ignored and the second block following the else is executed.

Q2(a): → write a Program to display a menu to perform various functions using "switch statement" Page 15

Ans: →

```
#include <iostream.h>
#include <conio.h>
main()
{
clrscr();
int choice;
cout << "1: Program to input data" << endl;
cout << "2: Program to print data" << endl;
cout << "3: program to generate report" << endl;
cout << "4: Exit Exit" << endl << endl;

cin >> choice;
switch (choice)
{
case 1:
cout << "You have selected the first option";
break;

case 2:
cout << "You have selected the second option";
```

```
break;
```

Case 3:

```
cout << "You have selected the third option";
```

```
break;
```

Case 4:

```
cout << "You have selected to exist";
```

```
break;
```

```
}
```

```
cout << "In OK";
```

```
getch();
```

```
}
```

Q2(b): → Differentiate between "Nested if-else statement" and "switch statement".

Ans: →

Nested if-else statement

- When an if else statement is present inside the body of another "if" or "else" then this is called nested if else.
- It become complicated for multiple selection.
- It uses an independent expression for each case.
- The test conditions can be given in a specified range of value. If the given conditions matches then the statements under to it will be executed.

switch statement.

- In computer programming language a switch statement is a type of selection control mechanism used to allow the value of a variable or expression to change the control flow of program execution via search and map.
- It is easy to understand for multi-selections.
- It uses a single expression for all cases but each case must have a constant value of integer type or character type.
- Only a single expression is given in the switch statement which returns a single value. The test condition cannot be given in a specified range. It is the major drawback of the switch statement.

Q3: ^(a) → Differentiate between "Relational operator" and "Relational expression". Page 18)

(a)
Ans

Relational Expression.

→ A condition or logical expression is an expression that can only take the value true or false

→ Simple form of logical expression is the relational expression.

→ The following is an example of relational expression.

$$x < y$$

Relational operator.

→ Relational operators are used to compare value of two expressions depending on their relation. An expression that contains relational operators is called relational operator.

→ If the relationship is true then the value of the relation is 1 and if the relation is false then the value of expression is 0.

→ The relational operators are

< less than

> greater than

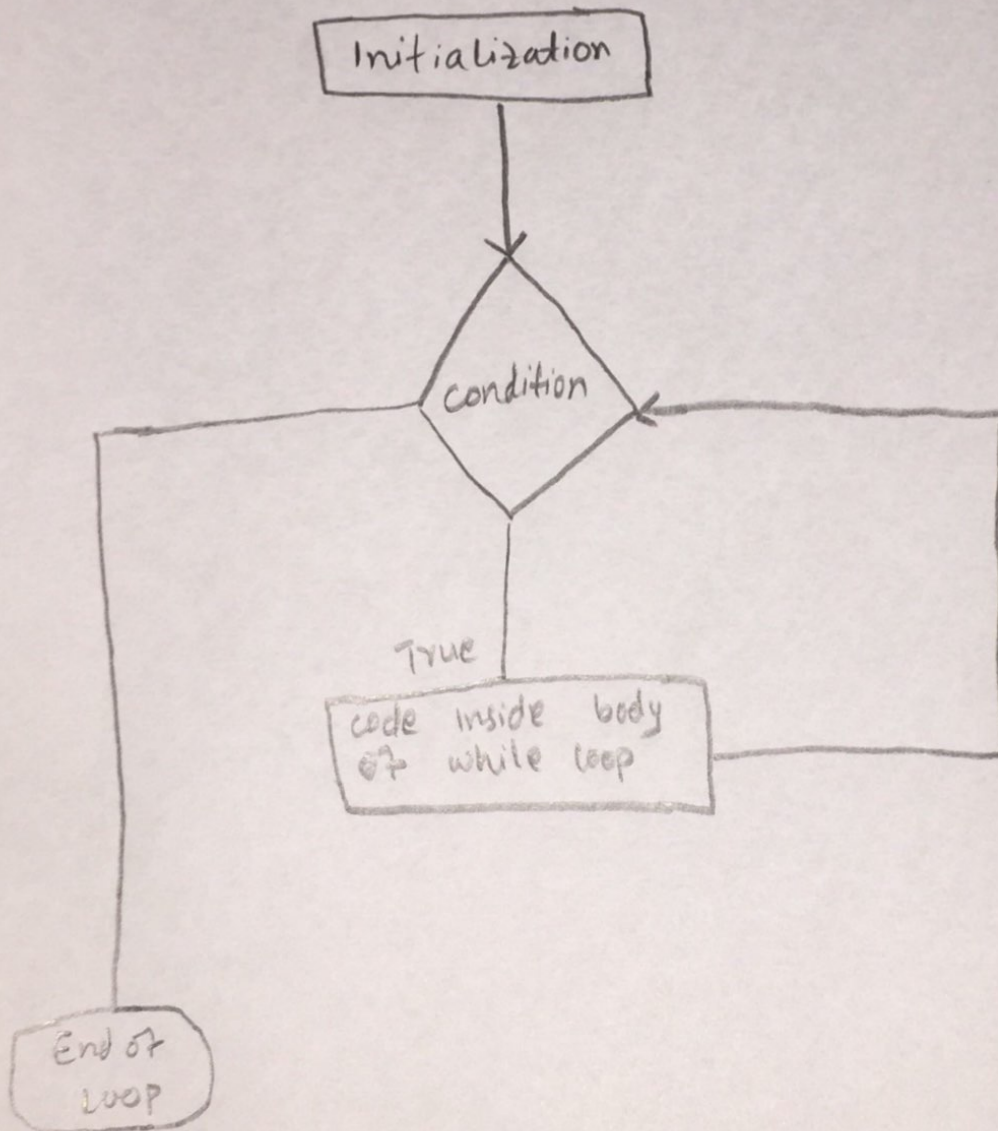
<= less than or equal

== is equal to

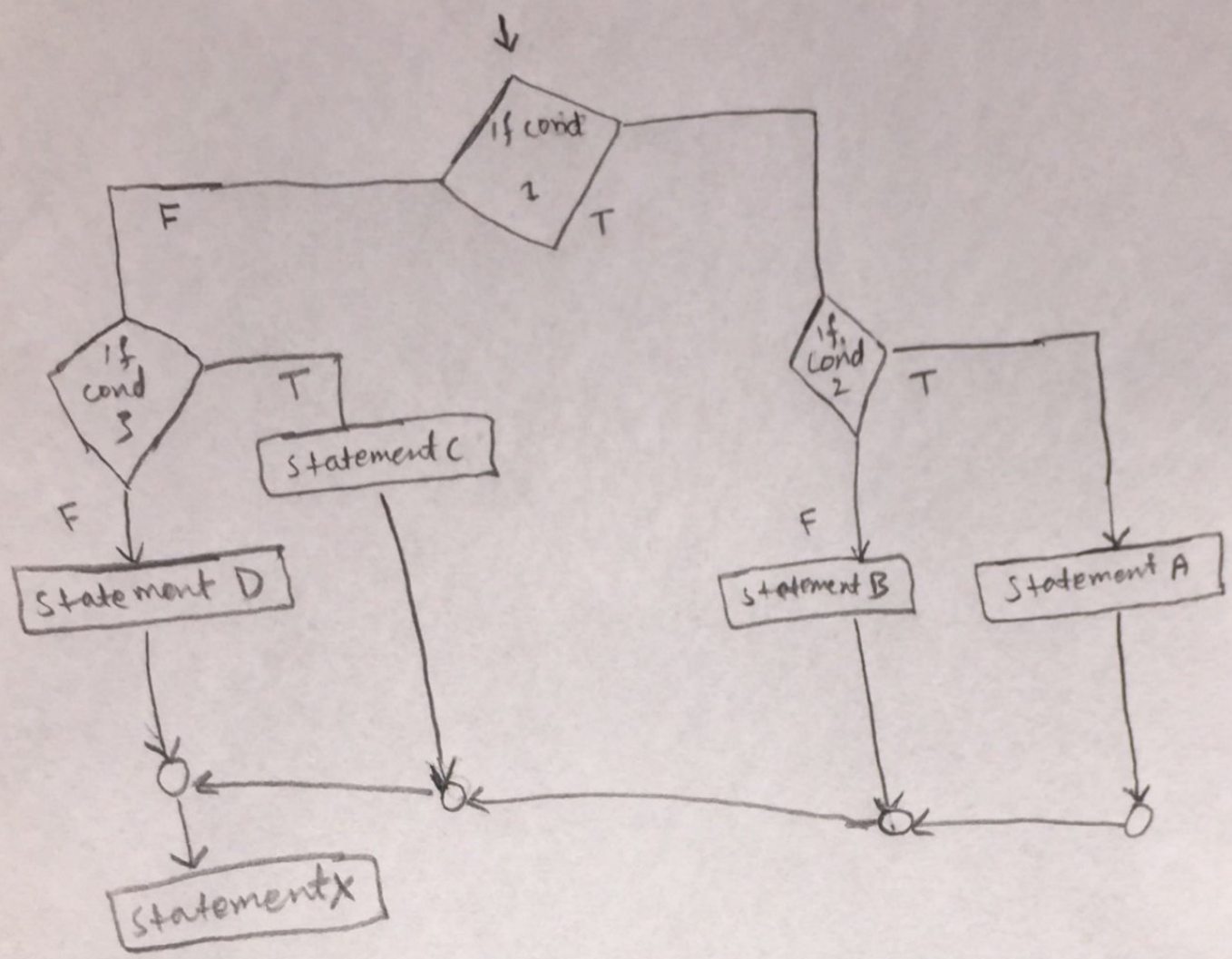
!= is not equal to

Q3(b): → Draw the Flow chart for "while loop" Page (9)
and "Nested if. statement".

^(b)
Ans: → Flow chart for "while loop": →



*):→ Flow chart of Nested if Statement:→



Q4(a): → write a program in C++ to find the value of a cylinder?

Ans: → #include <iostream.h>

#include <conio.h>

main()

{

float Radius, Height, volume, surface Area,

P.I = 3.14;

cout << "Enter Radius of cylinder = ";

cin >> Radius;

cout << "Enter the height = ";

cin >> height;

Volume = 3.14 x Radius x Radius x height;

~~cout~~ Surface Area = 2 x 3.14 x Radius * (R + H);

cout << "volume of cylinder = " << volume;

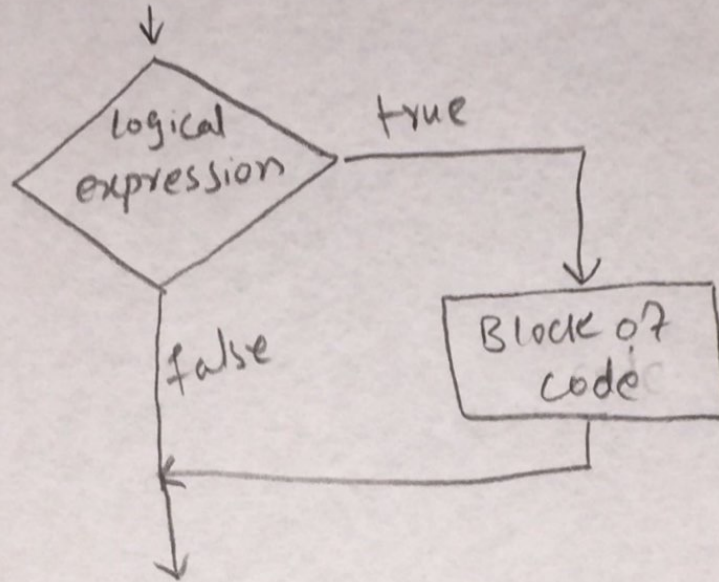
cout << "surface Area of cylinder = " << surface area

getch();

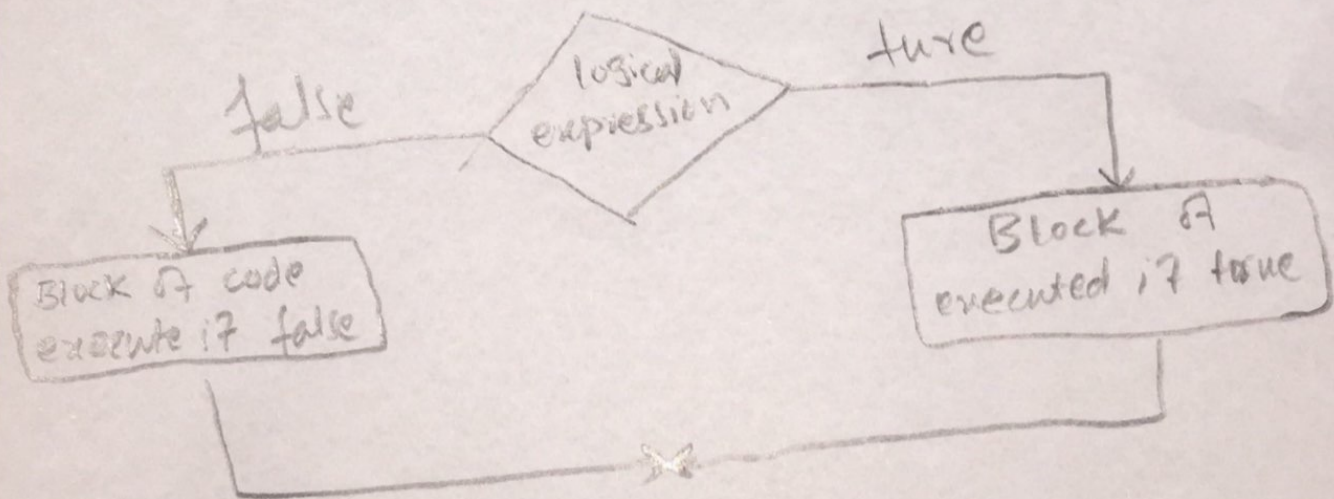
}

Q4(b) :-> Draw the flow chart for "if statement" and "if-else statement"

Ans :-> Flow chart for if statement :->



*1) :- Flow chart for if-else statement :->



Q5(a) :-> What is sequential statement?

Ans :-> Sequential statements :->

Sequential statements like $A := 3$ are interpreted one after another in the order in which they are written. VHDL ~~statements~~ sequential statements can appear only in a process or subprogram.

- > A VHDL process is a group of sequential statements, a subprogram is procedure or function.
- > To familiarize yourself with sequential statement consider the following:
 - > Assignment statements -> variable assignment statements
 - > single Assignment statements.
 - > case statement -> loop statement.
 - > next statement -> exit statement
 - > subprograms.

Q5(b) :-> Write a program which performs the arithmetic operation by using all arithmetic operation.

Ans :->

```
#include <iostream.h>
#include <conio.h>
void main ()
{
int a, b, c, d, e, f, g;
clrscr ();
cout << "In Enter first number a: ";
cin >> a;
cout << "In Enter second number: ";
cin >> b;
c = a + b;
d = a - b;
e = a * b;
f = a / b;
g = a % b;
```

```
cout << "Addition = " << c << "\n";  
cout << "subtraction = " << d << "\n";  
cout << "multiplication = " << e << "\n";  
cout << "Division = " << f << "\n";  
cout << "modulus = " << g << "\n";  
getch();  
}
```