A-1

Q1. Variables declared on same line are written on separate lines and initialization is also written on different lines.

Q2. Complex expressions are divided into subexpressions and evaluated separately using temporary variables.

c= a\*b + 25

Temp1= a\*b

C=Temp1+25

However, a variable which must live in memory cannot appear in an expression; its value is explicitly loaded into a temporary first. Similarly, storing the value of an expression to a memory variable goes through a temporary.

Q3. Float or doubles are represented in scientific notation.

When we assign float value to an integer type variable, it takes only integer part and assign it to the variable.

Q4. q=z is only assignment(single) operation whereas in z=z+1 there are two operations and hence temporary variable comes in picture.

A-2

Q1. In if-blocks goto commands are involved.

Conditional goto is used with if and else conditions and unconditional goto is used to skip some part of code and execute remaining.

Q2. In GIMPLE if-else statement is written on same line and in cfg it is written properly with indentation which makes code easy to understand.

Additional que.

?: expression is converted into an if statement with each branch assigning to the same temporary. So,

a = b ? c : d;

becomes

if (b == 1)

T1 = c;

else

T1 = d;

a = T1;

A-3.

Q1. Basic blocks <bb3> and <bb4> corresponds to while loop.

In GIMPLE, while loop is converted into if-else statements with each condition having separate block to execute.

Q2. <bb5>, <bb6>, <bb7>, <bb8>, <bb9>, <bb10>, <bb11> these basic blocks are used in for loop.

<bb2>, <bb5>, <bb6> are used for initialization.

<bb4>, <bb8>, <bb10> are used for condition.

<bb7>, <bb9> are used for increment.

A-4.

Q1. Arrays are declared with number of elements present in it in a square bracket.

In a separate basic block, elements are assigned with separate statements.

Q2. For assignment of variables which are stored in memory, a temporary variable is used explicitly.

A-5.

Q1. Yes, each usage of local variable as an operand uses a suffix.

Q2. Syntax for PHI statement: (variable to be assigned) = PHI < (variable for assignment in case 1), (variable for assignment in case 2), ………………………>