Answers to the 10 theory question on iteration
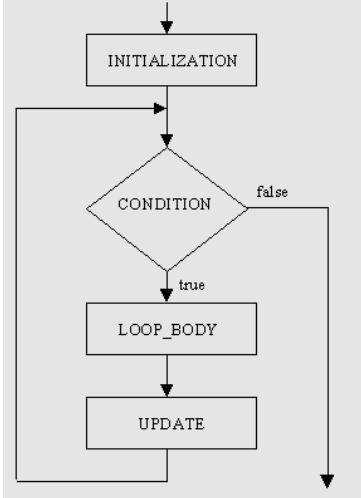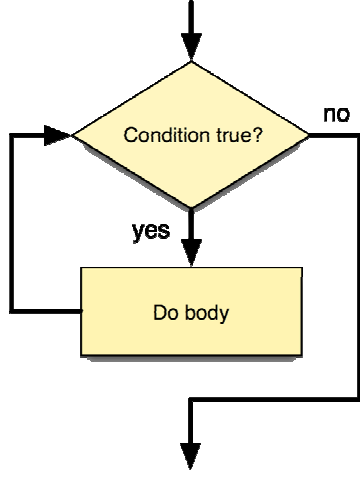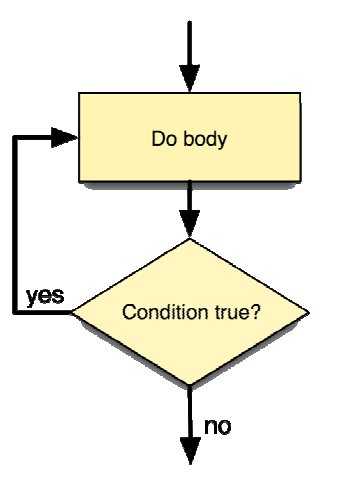
Q1. Initialization – Condition – Body – Update.

Q2. Syntax – Example(to print 1 to 5) - Flowchart

For	While	Do-While

for(init; cond; updt)
{ body;
}
	init;
	while(cond)
	{ body;
	   update;
	}
		init;
		do
		{ body;
		   update;
		} while(cond);

for(int i=1; i<=5; i++)
{ System.out.println(i);
}
	int i=1;
	while(i<=5)
	{ System.out.println(i);
	   i++;
	}
		int i=1;
		do
		{ System.out.println(i);
		   i++;
		} while(i<=5);

 for Flowchart	 while flowchart	 do/while flowchart

Q3. (i) for(int i=1, j=10; i<=10; i++, j--)
(ii) for(; i<=10 ;)
(iii) for(; ;)
(iv) for(int i=1; i<=10; i++);
(v) for(int i=1; i<=10; i++) { Sop(i) } ; // i cannot be accessed outside the loop
(vi) for(int i=1; i<=10; i++); Sop(i); Output=11, because the value of loop variable on exit is always next in the series.

Q4. Time delay loop – purpose is to delay program execution for some time.
    N=1
    while(N++ < 1000000) ;

Q5. One – infinite loop.

Q6. Entry controlled / top/pre tested – condition checked before body. Exit... after body.

Q7. Nested Loop - Loop inside a loop.

Classic		Right Aligned	

1
12
123
1234
12345
	`for(int i=1; i<=5; i++)`
	`  {  for(int j=1; j<=i;`
	`      {  System.out.print(j);`
	`      }`
	`      System.out.println();`
	`  }`
		1
		12
		123
		1234
		12345
			`int b=5;`
			`  for(int i=1; i<=5; i++)`
			`  {   for(int j=1; j<=b; j++)`
			`      {   System.out.print(" ");`
			`      }`
			`      for(int j=1; j<=i; j++)`
			`      {   System.out.print(j);`
			`      }`
			`      System.out.println();`
			`      b--;`
			`  }`

Side Mirror		Bottom Mirror	

1   1
12   21
123   321
1234   4321
1234554321
	`int b=8;`
	`for(int i=1; i<=5; i++)`
	`{   for(int j=1; j<=i; j++)`
	`    {   System.out.print(j);`
	`    }`
	`    for(int j=1; j<=b; j++)`
	`    {   System.out.print(" ");`
	`    }`
	`    for(int j=i; j>=1; j--)`
	`    {   System.out.print(j);`
	`    }`
	`    System.out.println();`
	`    b-=2;`
	`}`
		*
		***
		*****
		*******
		*********
		*******
		*****
		***
		*
			`int b=5;`
			`for(int i=1; i<=9; i+=2)`
			`{   for(int j=1; j<=b; j++) Sop(" ");`
			`    for(int j=i; j>=1; j--) Sop("*");`
			`    System.out.println();`
			`    b--;`
			`}`
			`b=2;`
			`for(int i=7; i>=1; i-=2)`
			`{   for(int j=1; j<=b; j++) Sop(" ");`
			`    for(int j=i; j>=1; j--) Sop("*");`
			`    System.out.println();`
			`    b++;`
			`}`

Q8. FOR – When number of times are known.

WHILE – When number of times are not known.

DO-WHILE – When the loop is to be executed at least once.

Q9.   Similarity-   both are jump statements., both ignore statements after them.

Difference-   Break – terminates a loop. Continue – Starts the next iteration.

Q10. Label – Name given to a statement.

Way of giving- label: *statement*

When we wish to exit the outer loop in a nested loop structure.

E.g. – the following will exit the outer loop.

```
outer:  for(int i=1; i<=5; i++)
        {        for(int j=1; i<=3; j++)
                {        if(i==2) break outer;
                }//j
        }//i
```

<div align="center">END</div>