1. Show the symbol table for the following C program at the three points indicated by the comments **(a)** using lexical scope and **(b)** using dynamic scope. What does the program print using each kind of scope rule?

```
#include <stdio.h>
int a,b;
int p(){int a, p;
/* point 1 */

a = 0; b = 1; p = 2;
return p;
}
void print(){
printf("%d\n%d\n",a,b);
}
void q (){
int b;
/* point 2 */
a = 3; b = 4;
print();
}
main(){
/* point 3 */
a = p();
q();
}
```

2. Explain the concept of scope hole and shadow with an example code.

3. Draw the box and circle diagram at point-1, point-2, and point-3. What is the output of the program given below.

```
#include<stdio.h>
#include<alloc.h>
#include<stdlib.h>
#include<conio.h>
void main()
{
int ***A;
int **B;
int *C;
int D;
clrscr();
A=(int ***) malloc(sizeof(int ***));
B=(int **) malloc(sizeof(int **));
C=(int *)malloc(sizeof(int *));
*C=D;
D=8;
***A=*C;
A=&B;
/*point-1*/
printf("%d\n",***A);
**B=5;
*C=9;
D=7;
/*point-2*/
printf("%d\n",***A);
**B=*C;
**A=*B;
/*point-3*/
printf("%d\n",***A);
getch(); }
```

4. A. State the reasons to have static type checking.
   B. Do array subscripts always start with zero? If it is yes, explain.

5. A. What is environment? Explain environment organization of C.