Name: Riya Talwar
Course: BCA 6B
University Roll no: 32
Subject: Computer graphics
Exam type: Regular
Paper type: Regular

Ques 3: SP3 Algorithm:-

Step 01: $X_0 = 0$ $Y_0 = R$

Step 02: $P_0 = 3 - 2 * R$

Step 03: Suppose the current point is (X_k, Y_k) and the next point is (X_{k+1}, Y_{k+1}).

Find the next point of the first octant depending on the value of decision parameter P_k.

follow the below two cases -

Two cases —

Case-01 $P_k < 0$ →

$X_{k+1} = X_{k+1}$

$Y_{k+1} = Y_k$

$P_{k+1} = P_k + 4 * X_{k+1} + 6$

Case-02 $P_k >= 0$

$X_{k+1} = X_{k+1}$

$Y_{k+1} = Y_k - 1$

$P_{k+1} = P_k + 4 * (X_{k+1} - Y_{k+1}) + 10$

Step 04: If the given centre point (X_0, Y_0) is not $(0, 0)$ then do the following and plot the point.

Date
Page No

$X_{plot} = X_c + X_0$
$Y_{plot} = Y_c + Y_0$

Step 05: keep repeating step-03 and step-04 until $X_{plot} \geq Y_{plot}$.

Step 06: generates all the points for one octant.

Program:

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

void drawCircle (int xc, int yc, int x, int y)
{
putpixel (xc+x, yc+y, RED);
putpixel (xc-x, yc+y, RED);
putpixel (xc+x, yc-y, RED);
putpixel (xc-x, yc-y, RED);
putpixel (xc+y, yc+x, RED);
putpixel (xc-y, yc+x, RED);
putpixel (xc+y, yc-x, RED);
putpixel (xc-y, yc-x, RED);
}

void circleBres (int xc, int yc, int r)
{
int x=0, y=r;
int d=3-2*r;
```

Date
Page No.

```
draw circle (xc, yc, x, y);
while (y > x)
{
x++;
if (d < 0)
{
y--;
d = d + 4 * (x - y) + 10;
}
else
d = d + 4 * x + 6;
draw circle (xc, yc, x, y);
delay (50);
}

int main ()
{
int xc = 50, yc = 50, r2 = 30;
int gd = DETECT, gm;
initgraph (&gd, &gm, "");
circleBres (xc, yc, r);
return 0;
}
```

Enter radius of circle
70