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TYPE OF PAPER:- REGULAR

Qus 2:-

MID - POINT CIRCLE DRAWING ALGORITHM

```c
#include <stdio.h>
#include <graphics.h>
void drawcircle (int x0, int y0, int radius)
{
    int x = radius;
    int y = 0;
    int err = 0;
    while (x >= y)
    {
    putpixel (x0+x , y0+y, 7)
    putpixel ( x0 + y , y0+x ,7);
    putpixel ( x0 -y , y0+x, 7);
    putpixel ( x0 - x1 , y0 + y ,7);
    putpixel ( x0 - x , y0 - y , 7)
    putpixel ( x0 - y , y0 - x , 7)
    put pixel ( x0+ y , y0 - x ,7);
    putpixel ( x0+ x , y0 -y, 7);
    if ( err <= 0)
    {
     y += 1;
    err + = 2*y +1;
    }
    if ( err > 0).
```

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```c
{
    x-= 1;
    error_ = 2*x+1;

    }
    }

}

int main ()
{
    int gd = DETECT, gm, error, x, y, r;
    printf (" Enter radius of Circle :");
    scanf ("%d", &r);

    printf ("Enter Co-ordinates of centre (x &y):");
    scanf ("%d %d ", & x, &y);
    initgraph (&gd, &gm, " ");
    drawcircle (x, y, r);
    delay (9999999);
    return 0;
}.
```

Algorithm

Step 1: - Start algorithm

Step 2: - ~~Declare~~ V. Given

Centre of Circle in point = (X_0, Y_0)

Radius of Circle = R.

Step 3   According to starting point coordinates (x_0, y_0) as

$X = radius$

$Y = 0$

Step 4: -   Calculate the value of initial decision parameter as —

$$P_0 = 1 - R.$$

Step 5: -   Suppose the current point is (x_k, y_k) and the next point is (x_{k+1}, y_{k+1}), find next point of first Octant depending on P_k.

Case 1: -   If err ≤ 0.

$y+ = 1$

$err+ = 2*y + 1;$

if $(err > 0)$.

$x- = 1;$

$err-- = 2*x + 1;$

Step 6   If the given centre point (x_0, y_0) is not $(0,0)$
then $x_{plot} = x_c + x_0 . $ & $y_{plot} = y_c + y_0.$

Step 7: -   Keep repeating Step 5 & 6. until $x_{plot} >= y_{plot}.$

Step 8: -   Generates all the points for one octant.

Step 9: - Stop.

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