Set B

Bresenham Circle Drawing Algorithm:-

Q3 ~~Floodfill Algorithm using 8-Connected Approach~~ :-

Given → Centre of circle (X_0, Y_0), Radius R

Step 1: Assign Starting point (X_0, Y_0) as $(0, R)$

Step 2: Calculate decision Paramter P_0 as $P_0 = 3 - 2 \times R$

Step 3: Suppose current point (X_0, Y_0) is next point (X_{k+1}, Y_{k+1})
Plot next point on first octant depending on following:-

Case 1: If $P_k < 0$, Then
$$X_{k+1} = X_k + 1$$
$$Y_{k+1} = Y_k$$
$$P_{k+1} = P_k + 4 \times X_{k+1} + 6$$

Case 2: If $P_k >= 0$, Then
$$X_{k+1} = X_k + 1$$
$$Y_{k+1} = Y_k - 1$$
$$P_{k+1} = P_k + 4 \times (X_{k+1} - Y_{k+1}) + 10$$

Step 4: If given centre point (X_0, Y_0) is not $(0, 0)$, then
plot → $X_{plot} = X_c + X_0$
$Y_{plot} = Y_c + Y_0$
(X_{plot}, Y_{plot}) → Current point on circle

Step 5: Repeat Steps 3 and 4 until $X_{plot} => Y_{plot}$

Step 6: Step 5 generates all points for one octant
Use 8-Symmetry property of circle for rest of the points.