Some questions (Assertion–Reason type) are given below. Each question contains **Statement – 1 (Assertion)** and **Statement – 2 (Reason)**. Each question has 4 choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct. So select the correct choice :***Choices are :***

(A)**Statement – 1** is True, **Statement – 2** is True; **Statement – 2 is** a correct explanation for **Statement – 1**.
(B)**Statement – 1** is True, **Statmnt – 2** is True; **Statement – 2 is NOT** a correct explanation for **Statement – 1**.
(C) **Statement – 1** is True, **Statement – 2** is False.
(D) Statement – 1 is False, Statement – 2 is True.

253. Tangents are drawn from the origin to the circle $x^2 + y^2 - 2hx - 2hy + h^2 = 0$ $(h \geq 0)$
Statement 1: Angle between the tangents is $\pi/2$
Statement 2: The given circle is touching the co-ordinate axes.

254. Consider two circles $x^2 + y^2 - 4x - 6y - 8 = 0$ and $x^2 + y^2 - 2x - 3 = 0$
Statement 1: Both circles intersect each other at two distinct points
Statement 2: Sum of radii of two circles in greater than distance between the centres of two circles

255. C_1 is a circle of radius 2 touching x–axis and y–axis. C_2 is another circle of radius greater than 2 and touching the axes as well as the circle c_1.
Statement–1 : Radius of circle $c_2 = \sqrt{2}(\sqrt{2}+1)(\sqrt{2}+2)$
Statement–2 : Centres of both circles always lie on the line y = x.

256. From the point $P(\sqrt{2}, \sqrt{6})$, tangents PA and PB are drawn to the circle $x^2 + y^2 = 4$.
Statement–1 : Area of the quadrilateral OAPB (obeying origin) is 4.
Statement–2 : Tangents PA and PB are perpendicular to each other and therefore quadrilateral OAPB is a square.

257. **Statement–1 :** Tangents drawn from ends points of the chord x + ay – 6 = 0 of the parabola $y^2 = 24x$ meet on the line x + 6 = 0
Statement–2 : Pair of tangents drawn at the end points of the parabola meets on the directrix of the parabola

258. **Statement–1 :** Number of focal chords of length 6 units that can be drawn on the parabola $y^2 - 2y - 8x + 17 = 0$ is zero **Statement–2 :** Lotus rectum is the shortest focal chord of the parabola

259. **Statement–1** : Centre of the circle having x + y = 3 and x – y = 1 as its normal is (1, 2).
Statement–2 : Normals to the circle always passes through its centre.

260. **Statement–1** : The number of common tangents to the circle $x^2 + y^2 = 4$ and $x^2 + y^2 - 6x - 8y - 24 = 0$, is one
Statement–2 : If $C_1C_2 = |r_1 - r_2|$, then number of common tangents is three. Where C_1C_2 = Distance between the centres at both the circle and r_1, r_2 are the radius of the circle respectively

261. **Statement–1** : The circle having equation $x^2 + y^2 - 2x + 6y + 5 = 0$ intersects both the coordinate axes.
Statement–2 : The lengths of x and y intercepts made by the circle having equation $x^2 + y^2 + 2gx + 2fy + c = 0$ are $2\sqrt{g^2 - c}$ and $2\sqrt{f^2 - c}$ respectively.

262. **Statement–1** : The number of circles that pass through the points (1, – 7) and (– 5, 1) and of radius 4, is two.
Statement–2 : The centre of any circle that pass through the points A and B lies on the perpendicular bisector of AB.

263. The line OP and OQ are the tangents from (0, 0) to the circle $x^2 + y^2 + 2gx + 2fy + c = 0$.
Statement–1 : Equation of PQ is fx + gy + c = 0.
Statement–2 : Equation of circle OPQ is $x^2 + y^2 + gx + fy = 0$.

264. **Statement–1 :** $x^2 + y^2 + 2xy + x + y = 0$ represent circle passing through origin.
Statement–2 : Locus of point of intersection of perpendicular tangent is a circle

265. **Statement–1 :** Equation of circle touching x–axis at (1, 0) and passing through (1, 2) is $x^2 + y^2 - 2x - 2y + 1 = 0$
Statement–2 : If circle touches both the axis then its center lies on $x^2 - y^2 = 0$

266. **Statement-1:** Let C be any circle with centre $(0, \sqrt{2})$ has at the most two rational points on it

Statement-2: A straight line cuts a circle at atmost two points

267. Tangents are drawn from each point on the line $2x + y = 4$ to the circle $x^2 + y^2 = 1$
Statement-1: The chords of contact passes through a fixed point
Statement-2: Family of lines $(a_1x + b_1y + c_1) + k\,(a_2x + b_2y + c_2) = 0$ always pass through a fixed point.

268. **Statement-1:** The common tangents of the circles $x^2 + y^2 + 2x = 0$ and $x^2 + y^2 - 6 = 0$ form an equilateral triangle
Statement-2: The given circles touch each other externally.

269. **Statement-1:** The circle described on the segment joining the points (-2, -1), (0, -3) as diameter cuts the circle $x^2 + y^2 + 5x + y + 4 = 0$ orthogonally
Statement-2: Two circles $x^2 + y^2 + 2g_1x + 2f_1y + c_1 = 0$ $x^2 + y^2 + 2g_2x + 2f_2y + c_2 = 0$ orthogonally if $2g_1g_2 + 2f_1f_2 = c_1 + c_2$

270. **Statement-1 :** The equation of chord of the circle $x^2 + y^2 - 6x + 10y - 9 = 0$, which is bisected at (-2, 4) must be $x + y - 2 = 0$.
Statement-2:In notations, the equation of the chord of the circle S = 0 bisected at (x_1, y_1) must be$T = S_1$.

271. **Statement-1 :** If two circles $x^2 + y^2 + 2gx + 2fy = 0$ and $x^2 + y^2 + 2g'x + 2f'y = 0$ touch each other, then $f'g = fg'$
Statement-2 : Two circles touch other, if line joining their centres is perpendicular to all possible common tangents.

272. **Statement-1 :** Number of circles passing through (1, 2), (4, 7) and (3, 0) is one.
Statement-2 : One and only circle can be made to pass through three non-collinear points.

273. **Statement-1 :** The chord of contact of tangent from three points A, B, C to the circle $x^2 + y^2 = a^2$ are concurrent, then A, B, C will be collinear.
Statement-2 : A, B, C always lies on the normal to the circle $x^2 + y^2 = a^2$

274. **Statement-1 :** Circles $x^2 + y^2 = 144$ and $x^2 + y^2 - 6x - 8y = 0$ do not have any common tangent.
Statement-2 : If one circle lies completely inside the other circle then both have no common tangent.

275. **Statement-1 :** The equation $x^2 + y^2 - 2x - 2ay - 8 = 0$ represents for different values of 'a' a system of circles passing through two fixed points lying on the x-axis.
Statement-2 : S = 0 is a circle & L = 0 is a straight line, then $S + \lambda L = 0$ represents the family of circles passing through the points of intersection of circle and straight line. (where λ is arbitrary parameter).

276. **Statement-1 :** Lengths of tangent drawn from any point on the line $x + 2y - 1 = 0$ to the circles $x^2 + y^2 - 16 = 0$ & $x^2 + y^2 - 4x - 8y - 12 = 0$ are equal
Statement-2 : Director circle is locus of point of intersection of perpendicular tangents.

277. **Statement-1 :** One & only one circle can be drawn through three given points
Statement-2 : Every triangle has a circumcircle.

278. **Statement-1 :** The circles $x^2 + y^2 + 2px + r = 0$, $x^2 + y^2 + 2qy + r = 0$ touch if $\frac{1}{p^2}+\frac{1}{q^2}=\frac{1}{r}$
Statement-2 : Two circles with centre C_1, C_2 and radii r_1, r_2 touch each other if $r_1 \pm r_2 = c_1c_2$

279. **Statement-1 :** The equation of chord of the circle $x^2 + y^2 - 6x + 10y - 9 = 0$ which is bisected at (-2, 4) must be $x + y - 2 = 0$
Statement-2 : In notations the equation of the chord of the circle s = 0 bisected at (x_1, y_1) must be $T=S_1$.

280. **Statement-1 :** The equation $x^2 + y^2 - 4x + 8y - 5 = 0$ represent a circle.
Statement-2 : The general equation of degree two $ax^2 + 2hxy + by^2 - 2gx + 2fy + c = 0$ represents a circle, if a = b & h = 0. circle will be real if $g^2 + f^2 - c \geq 0$.

281. **Statement-1 :** The least and greatest distances of the point P(10, 7) from the circle $x^2 + y^2 - 4x - 2y - 20 = 0$ are 5 and 15 units respectively.
Statement-2 : A point (x_1, y_1) lies outside a circle $s = x^2 + y^2 + 2gx + 2fy + c = 0$ if $s_1 > 0$ where $s_1 = x_1^2 + y_1^2 + 2gx_1 + 2fy_1 + c$.

282. **Statement-1 :** The point (a, –a) lies inside the circle $x^2 + y^2 - 4x + 2y - 8 = 0$ when ever $a \in (-1, 4)$

Statement-2 : Point (x_1, y_1) lies inside the circle $x^2 + y^2 + 2gx + 2fy + c = 0$, if $x_1^2 + y_1^2 + 2gx_1 + 2fy_1 + c < 0$.

283. **Statement-1 :** If $n \geq 3$ then the value of n for which n circles have equal number of radical axes as well as radical centre is 5.

Statement-2 : If no two of n circles are concentric and no three of the centres are collinear then number of possible radical centre = ${}^nC_3$.

284. **Statement-1 :** Two circles $x^2 + y^2 + 2ax + c = 0$ and $x^2 + y^2 + 2by + c = 0$ touches if $\frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{c}$

Statement-2 : Two circles centres c_1, c_2 and radii r_1, r_2 touches each other if $r_1 \pm r_2 = c_1c_2$.

285. **Statement-1 :** Number of point $(a+1, \sqrt{3}a)$ $a \in I$, lying inside the region bounded by the circles $x^2 + y^2 - 2x - 3 = 0$ and $x^2 + y^2 - 2x - 15 = 0$ is 1.

Statement-2 : Sum of squares of the lengths of chords intercepted by the lines $x + y = n$, $n \in N$ on the circle $x^2 + y^2 = 4$ is 18.

253. A	**254. B**	**255. D**	**256. A**	**257. A**	**258. A**	**259. D**
260. C	**261. D**	**262. D**	**263. D**	**264. D**	**265. A**	**266. A**
267. A	**268. A**	**269. A**	**270. D**	**271. C**	**272. D**	**273. C**
274. A	**275. A**	**276. B**	**277. A**	**278. A**	**279. D**	**280. A**
281. B	**282. A**	**283. A**	**284. A**	**285. B**		