**Parabola**

**MCQ-Single Correct**

1. Let P be the point on the parabola,  which is at a minimum distance from the centre C of the circle, . Then the equation of the circle, passing through C and having its centre at P is :

(1)  (2) 

(3)  (4)  **[2016]**

2. The centres of those circles which touch the circle, , externally and also touch the x-axis, lie on :

(1) an ellipse which is not a circle. (2) a hyperbola.

(3) a parabola. (4) a circle **[2016]**

3. Let O be the vertex and Q be any point on the parabola, . If the point P divides the line segment OQ internally in the ratio , then the locus of P is :

(1)  (2) 

(3)  (4)  **[2015]**

4. The slope of the line touching both the parabolas  and is

(1)  (2) 

(3)  (4)  **[2014]**

5. If two tangents drawn from a point P to the parabola  are at right angles, then the locus of P is

(1)  (2) 

(3)  (4)  **[2010]**

6. The area of the region bounded by the parabola , the tangent to the parabola at the point (2,3) and the x-axis is

(1) 3 (2) 6

(3) 9 (4) 12 **[2009]**

7. A parabola has the origin as its focus and the line x = 2 as the directrix. Then the vertex of the parabola is at

(1) (0,2) (2) (1,0)

(3) (0,1) (4) (2,0) **[2008]**

8. The locus of the vertices of the family of parabolas  is

(1)  (2) 

(3)  (4)  **[2006]**

9. Let P be the point (1,0) and Q a point on the locus . The locus of mid point of PQ is

(1)  (2) 

(3)  (4)  **[2005]**

10. If and the line passes through the points of intersection of the parabolas and , then

(1)  (2) 

(3)  (4)  **[2004]**

11. The normal at the point  on a parabola meets the parabola again in the point , then

(1)  (2) 

(3)  (4)  **[2003]**

12. Two common tangents to the circle  and parabolaare

(1)  (2) 

(3)  (4)  **[2002]**

**Assertion-Reason Type**

1. Statement-I is True; Statement-II is true; Statement-II is **not** a correct explaination of Statement-I.
2. Statement-I is True; Statement-II is False.
3. Statement-I is False; Statement-II is true
4. Statement-I is True; Statement-II is true; Statement-II is a **correct** explaination of Statement-I.

1. Given : A circle, and a parabola, .

**Statement-I** : An equation of a common tangent to these curves is 

**Statement-II** : If the line,   is their common tangent, then m satisfies 

2. **Statement-I** : An equation of a common tangent to the parabola and the ellipse  is .

**Statement-II** : If the line , is a common tangent to the parabola  and ellipse , then m satisfies .

3. Let the tangent to the parabola be , .

Now, its distance from the centre of the circle must be equal to the radius of the circle.

So, 



So, the common tangents are  and .