MASTER’S P.U COLLEGE, HASSAN, 573201.

KCET ONLINE TEST-17, MAY-2020  **MATHEMATICS** **TIME: 45Mins MARKS: 30**

**TOPIC**: **PARABOLA, ELLIPSE, HYPERBOLA.**

**KEY**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| **C** | **D** | **D** | **A** | **C** | **B** | **C** | **D** | **B** | **A** | **D** | **C** | **A** | **D** | **D** |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| **B** | **D** | **A** | **C** | **B** | **A** | **B** | **D** | **C** | **C** | **A** | **C** | **C** | **C** | **D** |

**HINTS AND SOLUTIONS**

1. (c) Since the axis of parabola is *y-*axis

∴ Equation of parabola 

Since it passes through (6, – 3)

∴ 36 

∴ Equation of parabola is .

1. (d) Let , then 

⇒  ⇒  and 

1. (d) Clearly; 

Length of latus rectum = 4*a* .

1. (a) Given equation,

 ⇒ 

Length of latus rectum = 2.

1. (c) 

⇒.

1. (b) Given equation of parabola written in standard form, we get



where, 

 …..(i)

For focus 



, Focus.

1. (c) 

Equation of latus rectum is  ⇒ .

1. (d) **Trick :** There will be no constant term in a curve which passes through (0,0). So none is correct.
2. (b) does not meet, if ⇒ .
3. (a) If we replace *x* by *y* and *y* by *x*, then the line is and parabola . Hence 
4. (d) Line perpendicular to given line, 

.

Here, 

If we compare  with  then ,

Condition for tangency is,



Required equation is; .

1. (c) Given , , 

Hence, .

1. (a) Foci . Directrix 

So,  ⇒  and 

Therefore, 

Hence equation is .

1. (d) Here the ellipse is .

Latus rectum .

1. (d) Major axis = 3(Minor axis)

⇒ ⇒ ⇒.

1. (b) Latus rectum (Major axis)

⇒ ⇒ ⇒ .

1. (d) Given *i.e.* ,

⇒

Distance between the pins 

Length of string .

1. (a) Let point *P* 

So,

⇒ 

⇒ 

⇒ ⇒,

Locus of  is , which is equation of an ellipse.

1. (c) In the first case, eccentricity 

In the second case, 

According to the given condition,



, 

⇒ 

1. (b) Check and .
2. (a) Given equation of conic is 







 .

1. (b) .
2. (d) For  equation of normal at point ,

⇒; ∴

 or  *i.e., y*-axis.

1. (c) Here, . ∴ By formula, 

∴ ; ∴ .

1. (c) Multiplying both, we get

 ⇒ 

which is the standard equation of hyperbola.

1. (a) Directrix of hyperbola ,

where 

Directrix is, ⇒ 

1. (c) Obviously 

and

Hence it is a hyperbola.

1. (c)  ⇒ 

Equation of directrices of  are 

Here 

Hence  ⇒ .

1. (c) If  is tangent to given hyperabola, then .
2. (d) Equation of ‘director-circle’ of hyperbola is . Here 

 12 is the required ‘director circle’