MASTER’S P.U COLLEGE, HASSAN, 573201.

KCET ONLINE TEST-32, JUNE-2020  **MATHEMATICS**  **TIME: 45Mins MARKS: 30**

**TOPIC**: **1st PU GEOMETRY, TRIGONOMETRY (Including I.T.F), MATHEMATICAL REASONING, STATISTICS, PROBABILITY. DATE: 02/06/2020**

**KEY**

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

**HINTS AND SOLUTIONS**

1. (b) The expression reduces to 

If *n* is even, answer is (b) and if *n* isodd answer is (c).

1. (b) Let But.

Hence the maximum value of *i.e.*, of .

⇒ .

1. (d) Since  we have  and

Hence, .

1. (d)    

   or .

1. (b) = .
2. (c) The first equation can be written as 

 Either  or  or  Thus .

When  we have to reject  and check with the options or  and solve it with  or  which gives  or  as the possible solution. Again solving with , we get  and solving with , we get  as the other solution. Thus we have six pairs of solution for and .

1. (b) Let 

Thus, = 

= = = .

1. (a) (Putting 

= 

.

1. (b) We have But ∴ and 

⇒ is the unique solution.

1. (a) We have 

= 



= = .

1. (a) Here, equation of line is , 

Length of the perpendicular drawn on line from point 

; .

1. (c) Lines are concurrent, if ⇒ 

⇒ ∴ .

1. (a) Equation of the line passing through (3, 8) and perpendicular to is . The intersection point of both the lines is (1, 2).

Now let the image of be then point (1, 2) will be the mid point of .

⇒  and ⇒ . Hence the image is (–1, –4).

1. (d) . .  or .
2. (a) If the line  touches the circle , then the perpendicular from centre of circle on line is equal to the radius of circle *i.e.*,  or .
3. (c) Given , ,  Hence, .
4. (a) Given parabola is 

It can be written as , ∴ vertex is 

1. (b) .
2. (d) The point does not lie on ellipse .
3. (d) Equation of ‘director-circle’ of hyperbola is . Here 

 12 is the required ‘director circle’.

1. (b) *p* : examination is difficult, *q* : I shall pass, *r* : I study hard

Given result is :  Now , 

The examination is difficult and I study hard but I shall not pass.

1. (c)  is false, when *p* is true and *q* is false.

Since *q*, *r* are false ∴  is false.

Since *r* is false ∴ ~*r* is true.

Since  is true ∴ *p* is true.

1. (c)  is true iff *p*, ~*q* are both true or both false. [ *q* true ⇒ ~*q* false ∴ *p*, ~*q* are both false].
2. (d)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *p* | *q* | ~*q* | *p*⋀~*q* | ~(*p*⋀~*q*) |  |
| T | T | F | F | T | T |
| T | F | T | T | F | F |
| F | T | F | F | T | T |
| F | F | T | F | T | T |

Result is neither tautology nor contradiction.

1. (d) Coefficient of variation ****.
2. (a) Mean 

S.D. 

.

1. (a) , 

Increase in , then 

Increase in , then



∴ Variance  .

1. (c) Let the two unknown items be *x* and *y*, then

Mean ⇒  .....(i)

and variance = 5. 2 ⇒ 





 .....(ii)

Solving (i) and (ii) for  and *y*, we get

 or .

1. (a) Favorable ways 

Hence required probability 

1. (c) To be both boys the probability 