MASTER’S P.U COLLEGE, HASSAN, 573201.

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

**TOPIC**: **1ST PU GRAND TEST. DATE: 29/05/2020**

**KEY**

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

**HINTS AND SOLUTIONS**

1. (a) Clearly, *A* = {2, 3}, *B* = {2, 4}, *C*  = {4, 5} *B* ∩ *C*  = {4}

 *A*  × (*B* ∩ *C*) = {(2, 4); (3, 4)}.

1. (c) Let number of newspapers be *x*. If every students reads one newspaper, the number of students would be 

Since, every students reads 5 newspapers ∴ Numbers of students , .

1. (c) Here *A* and *B* sets having 2 elements in common, so  and  have  *i.e.*, 4 elements in common.

Hence, .

1. (c) ,  .
2. (d) We have,  

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Hence least positive integral value of *m* is 3.

1. (c)  ⇒  ⇒ , which is not possible and 

⇒ .

1. (a) For A, B, C to speak in order of alphabets, 3 places out of 10 may be chosen first in ways.

The remaining 7 persons can speak in  ways. Hence, the number of ways in which all the 10 person can speak is 

1. (a) If we distribute 2 marks to each 8 questions out of 30 marks then remaining 14 marks can be distributed to any of 8 questions in =. Ways
2. (a) Check through options, the condition  is valid for .
3. (b) We have 

 .

1. (b) ⇒ 

⇒ .

1. (d)  ⇒****⇒ ****, ****⇒ ****

Again 



Hence, .

1. (d) If A+B=90 then 

Therefore from the complementary rule, we find 

Therefore,

.

1. (a) ,  , 

  or  and 

The second value  is included in the value given by .

1. (b)   

  .

1. (b) 

.

1. (d) 

, (as given)

Hence there is no solution.

1. (d) and . Hence lines and are perpendicular to each other. Therefore the parallelogram is rhombus.
2. (a) Solving  we get 

*x* is an integer if 

∴ . So, *m* has two integral values.

1. (a) Let equation of circle be . If  lies on this circle, then  or 

This is a fourth degree equation in *m* having  as its roots.

Therefore, product of roots .

1. (b) Since normal passes through the centre of the circle.

 The required circle is the circle with ends of diameter as (3, 4) and (– 1, – 2).

 It's equation is   

1. (d) By symmetry the quadrilateral is a rhombus. So area is four times the area of the right angled triangle formed by the tangent and axes in the Ist quadrant. Now, 

⇒ Tangent (in first quadrant) at end of latus rectum  is  *i*.*e*., 

Area  *sq*. *unit.*

1. (c) The parabola is .

Putting  the equation is 

∴ The directrix is *i.e.* .

But  is the directrix. So,  

1. (d) The condition for the line  will touch the hyperbola  is 

Here ,   ∴ We get 

1. (d) Clearly  and  = , 
2. (b) Sum of 100 items = 45×100 = 4500

Sum of items added = 19 +31 = 50

Sum of items replaced = 91+ 13 = 104

New sum = = 4446

∴ New mean = 44.46

1. (c) Let *a*, *a*, ........*n* times and – *a*, – *a*,– *a*, – *a*, ........*n* times *i.e.,* mean = 0 and S.D.

. Hence .

1. (c) Obviously  = .
2. (b)  means .
3. (c) To be both boys the probability 