# Dr.K.K.R GOWTHAM (E.M) HIGH SCHOOL :: GUDIVADA

**Class : X State**                                                                                          **Marks : 50**

**Sub : Mathematics**                          *MODEL PAPER – II*                          **Time: 2 ½ hrs**

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## SECTION – A (12× ½ = 6M)

1.  Find the distance between points A (2, 0) B (5, 0 )
2.  Write the signs of two co-ordinates in the $3^{rd}$ quadrant .
3.  Give an example to similar triangles.
4.  Write the S.A.S criterion for similarity of triangles.
5.  In given figure what is the value of $x$ if two triangles are similar
6.  In how many points a tangent to a circle intersects.
7.  What is the angle between tangent and radius at point of contact
8.  What in the value of $\tan 90^{0}$
9.  A man is observers a building of height 15mts with an angle of elevation $45^{0}$. What is the distance between building and the observer.
10. Which is the reference to consider angle of elevation or angle of depression
11. What is the probability of on impossible event.
12. Match the following.
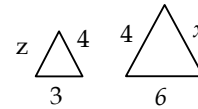
   i) Mode                              a) $a + \dfrac{\sum fiui}{\sum fi} \times h$

   ii) Median                         b) $l + \left[ \dfrac{f_1 - f_0}{2f_1 - f_0 - f_2} \right] \times h$

   iii) arithmetic mean   c) $l + \left[ \dfrac{\dfrac{n}{2} - cf}{f} \right] \times h$

   A) i – a ii – b iii – c          B) i– c ii – a iii – b
   C) i – b ii – c iii – a          D) i – b ii – a iii – c

## SECTION – B (8× 1 = 8 M)

13. What is the midpoint of line segment. Joining (2, 7) and (12, -7)

14. What is the value of $x$ in the adjacent figure if $\Delta ABC$ and $\Delta ADE$ are similar.
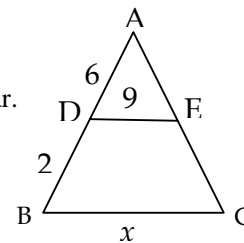
15. Radius of a Circle is 9cm. Find length of a tangent. Which is drawn from a point at a distance of 15 cm away from the centre of the circle.

16. Find the value of $\sin 45^{0} + \cos 45^{0}$

17. Prove that $(A+B)=90^{0}$. If $\sin A = \cos B$

18. Length of the shadow of 15 meter height pole is $5\sqrt{3}$ meters at 7O′ clock in the morning then what is the angle of elevation of the sun rays. With the ground at that time.

19. A bag contains 3 red and 5 black balls. A ball is drawn at random from the bag. What is the probability of the ball drawn is (i) Red ? (ii) Not Red ?

20. How can you decide median class

## SECTION – C (8× 2 = 16 M)

21. Find a point on the Y – axis which is equidistant from both the points A (6, 5) and B (-4, 3)
22. The perimeters of two similar triangles are 30cm and 20cm respectively if one side of the first triangle is 12cm determine the corresponding side of the second triangle.
23. Two concentric circles of radii 5cm and 3cm are drawn. Find the length of the chord of the larger circle which touches the smaller circle
24. If $\sin \sin (A - B) = \dfrac{1}{2}, \cos (A + B) = \dfrac{1}{2}, 0^0 < A + B \le 90^0, A > B$ find A and B.
25. Find the value of $\sec 16^0 \operatorname{cosec} 74^0 - \cot 74^0 \tan 16^0$
26. A boat has to cross a river. It crosses the river by making an angle of $60^0$ with the bank of the river due to the stream of the river and travels a distance of 600m to reach the another side of the river. What is the width of the river?
27. One card drawn from a well shuffled deck of 52 cards. Find the probability of getting (i) a king of red colour (ii) a club.
28. Find the median of 15, 29,21,19,16,27

## SECTION – D ( 5× 4 = 20 M)

29. a) If $\cos ec\theta + \cot \theta = K$ then prove that $\cos \theta = \dfrac{K^2 - 1}{K^2 + 1}$

(Or)

   b) Prove that the points (7, 3) (6, 1) (8, 2) and (9, 4) taken in order are the vertices of a parallelogram
30. a) The angles of elevation of the top of a tower from two points at a distance of 4m and 9m, find the height of the tower from the base of the tower and in the same straight line with it complementary

(Or)

   b) A car has two wipers which do not overlap. Each wiper has a blade of length 25cm. Sweeping through an angle of $115^0$. Find the total area cleaned at each sweep of the blades. $\left( USE \pi = \dfrac{22}{7} \right)$
31. a) The hypotenuse of a right triangle is 6 m more than twice of the shortest side. If the third side is 2m less than the hypotenuse find the sides of the triangle.

(Or)

   b) A lot of 20bulbs contain 4 defective ones. One bulb is drawn at random from the lot. What is the probability that bulb is defective. Suppose the bulb drawn in previous case is not defective and is not replaced. Now one bulb is drawn at random from the rest. What is the probability that this bulb in not defective?
32. a) Find the area of the triangle formed by the points. (1, 1) (1, 4) and (5, 1) by using herons formula

(Or)

   b) If the median of 60 observations, given below is 28.5 find the value of *x* and y.

| Class Interval | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 |
|---|---|---|---|---|---|---|
| Frequency | 5 | X | 20 | 15 | Y | 5 |

33. a) Construct a triangle of sides 4cm, 5cm, 6cm, then construct a triangle similar to it whose sides are 2/3 of the corresoning sides of the first triangle.

(Or)

   b) The folloiwng table shows the ages of the patients admitted in a hospital during a year.

| Age (in years) | 5-15 | 15-25 | 25-35 | 35-45 | 45-55 | 55-65 |
|---|---|---|---|---|---|---|
| No. of patients | 6 | 11 | 21 | 23 | 14 | 5 |

Find the mode and the mean of the data given above.