

KOMARASAMY GOUNDER MAT.HR.SEC.SCHOOL – KURUMANDUR**Second 20 % portion test****X – STANDARD- A&B****TIME : 1.30 HOURS****MATHEMATICS (18.10.2023)****MAXIMUM MARKS : 50****PART – A****I.CHOOSE THE CORRECT ANSWER :****6 X 1 = 6**

- A tower is 60 m height. Its shadow is x metres shorter when the sun's altitude is 45° than when it has been 30° , then x is equal to
a) 41.92 m b) 43.92 m c) 43 m d) 45.6 m°
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- The angle of elevation of a cloud from a point h metres above a lake is β . The angle of depression of its reflection in the lake is 45° . The height of location of the cloud from the lake is
a) $\frac{h(1+\tan \beta)}{1-\tan \beta}$ b) $\frac{h(1-\tan \beta)}{1+\tan \beta}$ c) $h \tan(45^\circ - \beta)$ d) none of these
- The standard deviation and mean of a data are 6.5 and 12.5 respectively. Find the coefficient of variation is
a) 42 % b) 52 % c) 25 % d) 24 %
- If the ratio of the radii of two cylinder of equal height is 1 : 3. What is the ratio of their curved surface area ?
a) 1 : 4 b) 3 : 1 c) 1 : 3 d) 1 : 5
- Find the matrix X if $2X + \begin{bmatrix} 1 & 3 \\ 5 & 7 \end{bmatrix} = \begin{bmatrix} 5 & 7 \\ 9 & 5 \end{bmatrix}$
a) $\begin{bmatrix} -2 & -2 \\ 2 & -1 \end{bmatrix}$ b) $\begin{bmatrix} 2 & 2 \\ 2 & -1 \end{bmatrix}$ c) $\begin{bmatrix} 1 & 2 \\ 2 & 2 \end{bmatrix}$ d) $\begin{bmatrix} 2 & 1 \\ 2 & 2 \end{bmatrix}$

PART – B**II.ANSWER ANY FIVE OF THE FOLLOWING :****5 X 2 = 10****QUESTION NO "12" IS COMPULSORY.**

- The standard deviation of 20 observations is $\sqrt{6}$. If each observation is multiplied by 3, find the standard deviation and variance of the resulting observations.
- If the mean and coefficient of variation of a data are 15 and 48 respectively, then find the value of standard deviation.
- The range of a set of data is 27.89 and the largest value is 69.23. Find the smallest value.
- Find the number of spherical lead shots, each of diameter 6 cm that can be made

from a solid cuboids of lead having dimensions 24cm X 22cm X 12cm.

11. A man goes 18cm due east and then 24 m due north . Find the distance of his current position from starting point ?
12. The length of the tangent to a circle from a point P , Which is 25 cm away from the center is 24 cm. What is the radius of the circle ?
13. A 1.2 m tall girls spots a balloon moving with the wind in a horizontal line at a height of 88.2m from the ground. The angle of elevation of the balloon from the eyes of girls at an instant is 60° . After some time the angle of elevation reduces to 30° . Find the distance travelled by the balloon during the interval.

PART - C

III.ANSWER ANY FOUR OF THE FOLLOWING :

4 X 5 = 20

(QUESTION NUMBER "18" IS COMPULSORY)

14. A teacher asked the students to complete 60 pages of a record note book. Eight students have completed only 32, 35, 37, 30, 33, 36, 35 and 37 pages. Find the standard deviation of the pages completed by them.
15. If $n = 5$, $\bar{x} = 6$, $\sum x^2 = 765$, then calculate the coefficient of variation.
16. Two dice are numbered 1,2,3,5,6 and 1,1,2,2,3,3 respectively .They are rolled and sums of number on them is noted. Find the probability of getting each sum from 2 to 9 separately.
17. A card is drawn from a pack of 52 cards . Find the probability of getting a queen or a face and or a black card.
18. To a man standing outside his house , the angles of elevation of the top and bottom of a window are 60° and 45° respectively . If the height of the man is 180 cm and if he is 5m away from the wall, what is the height of the window? ($\sqrt{3} = 1.732$).

PART - D

IV.ANSWER THE FOLLOWING :

2 X 7 = 14

19. Draw a tangent to the circle from the point P having radius 3.6cm , and centre at O. Point P is at a distance 7.2cm from the centre.

Or

Draw a circle of radius 3 cm . Take a point P on this circle and draw a tangent at P.

20. Draw the graph of $y = x^2 - 4$ and hence solve $x^2 - x - 12 = 0$.

Or

Draw the graph of $y = 2x^2$ and hence solve $2x^2 - x - 6 = 0$.

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