සියලු ම හිමිකම් ඇවිරිණි
முழுப் பதிப்புரிமையுடையது.
All Rights Reserved

SLGURU.LK

බස්නාහිර පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
மேல் மாகாணக் கல்வித் திணைக்களம்
**Department of Education - Western Province**

වර්ෂ අවසාන ඇගයීම
ஆண்டிறுதி மதிப்பீடு - 2020
**Year End Evaluation**

| ශ්‍රේණිය தரம் Grade | 11 | විෂයය பாடம் Subject | Mathematics | පත්‍රය வினாத்தாள் Paper | I | කාලය காலம் Time | 2 Hours |
|---|---|---|---|---|---|---|---|

Index Number :- .....

Certified correct

.....
Signature of Invigilator

**Important :**

- This paper consisit of 8 pages.
- Write your **index number** correctly in the appropriate places on **this page** and on **page three.**
- Answer **all** questions **on this paper itself**.
- Use the page provided under each question for working and writing the answer.
- Indicate the **relevant steps** and **correct units** when answering the questions.
- Marks are awarded as follows:
  **In Part A**
  2 marks for each question.
  **In part B**
  10 marks for each question
- Blank papers can be obtained for scratch work

**For marking examiners' use only**

| Question Numbers | | Marks |
|---|---|---|
| A | 1 - 25 | |
| B | 1 | |
| | 2 | |
| | 3 | |
| | 4 | |
| | 5 | |
| Total | | |

.....
Marked by

SLGURU.LK

For Educational Purpose Only

SLGURU.LK

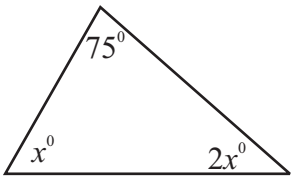
## Part - A

Answers all questions on this paper itself.

(01) A man deposited Rs. 2000 at an annual simple interest rate of 7% in a certain bank. What is the interest that he gets at the end of the first year ?

(02) Find the factors. $4x^2 - 25$

(03) According to the information given in the figure, find the value of $x$.

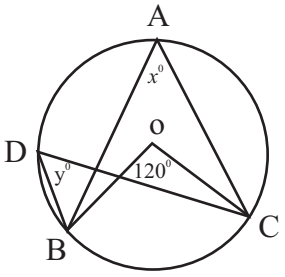



(04) From the following values, select the first approximation of $\sqrt{52}$.

7.3 7.2 7.6 7.7

(05) What is the speed that a car should maintain, in order to travel a distance that it goes in 3 hours at a speed of 80 kilometers per hour, in two hours?

(06) Points A, B, C and D are located on the circle with the center O. If $\hat{BOC} = 120^0$, find the values of $x$ and $y$.

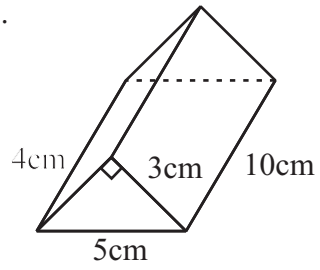



SLGURU.LK
For Educational Purpose Only

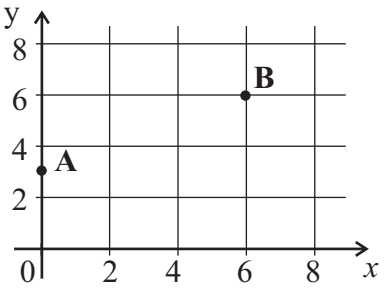
Name / index no. .....

SLGURU.LK

(07) Measurements of a right solid prism is given in the figure. Calculate the volume of it.

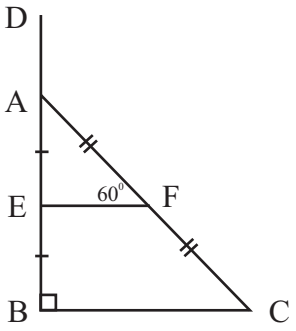



(08) Find the gradient of the straight line which passes through the points A and B shown in the cartesian plane.




(09) Find the minimum value of $x$ which satisfies the inequality, $2x - 1 \geq 3$.

(10) In the right angular triangle ABC, side BA is produced to D. Mid points of AB and AC are E and F respectively. If $A\hat{F}E = 60^0$, find the magnitude of $D\hat{A}F$.



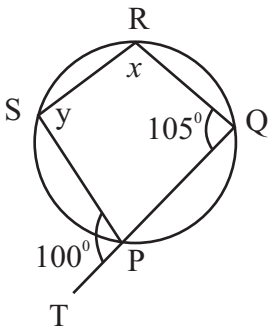

(11) Find the least common multiple of the three algebraic terms given below.
$2xy, 4y^2, x^2$

(12) It is estimated that 12 men take 10 days to concrete a road. How many men will be needed to complete the job in 8 days ?

SLGURU.LK
For Educational Purpose Only

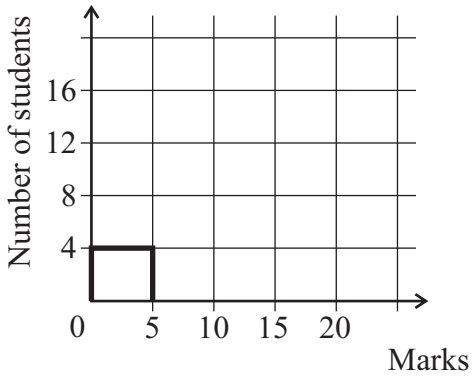
SLGURU.LK

(13) Figure shows a cyclic quadrilateral PQRS. Side QP is produced to T. $S\hat{P}T = 100^0$ and $P\hat{Q}R = 105^0$. According to the given information, find the value of $x$ and y.



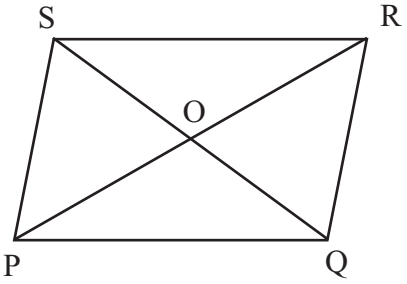

(14) A frequency distribution prepared from the marks obtained by some students in a certain class is given in the table. Using the given information, complete the histogram.

| Marks | Number of Students |
|---|---|
| 0 - 5 | 4 |
| 5 - 10 | 6 |
| 10 - 20 | 16 |




(15) $40 = 10^{1.6021}$. Find the value of lg 40.

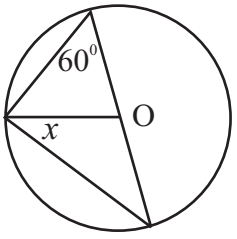
(16) In the figure, PQRS is a parallelogram. If the following statements are true mark '✓' and if it is false mark '×' infront of it.




| | | |
|---|---|---|
| (i) | PO = OR and QO = OS. | |
| (ii) | The diagonal PR bisects $S\hat{R}Q$ | |

(17) Solve. $\frac{7}{a} - \frac{1}{a} = 2$

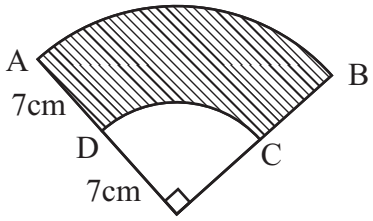
(18) O is the center of the given circle. According to the information given in the figure, find the value of $x$.




SLGURU.LK
For Educational Purpose Only

SLGURU.LK

(19) If AB arc length is 22cm, find the perimeter of the shaded region ABCD.

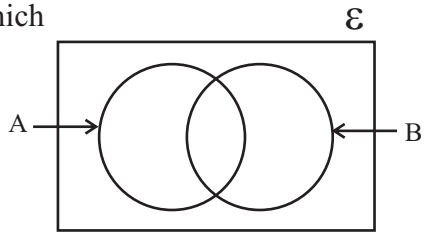



(20) Number of passengers in a bus is 25. Probability of a passenger who gets off from the bus at the next station, being a woman is $\frac{3}{5}$. How many women are there in the bus ?

(21) Fill in the blanks in the given statement, using correct geometric terms.
Chord of a circle is ..... by the ..... drawn from the center of the circle to the chord.

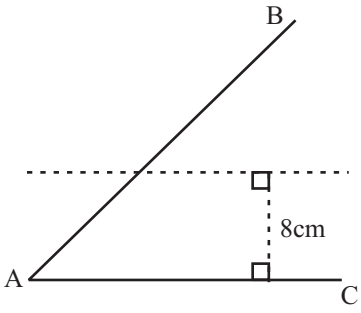
(22) If $\begin{pmatrix} 1 & x \\ 0 & 2 \end{pmatrix}\begin{pmatrix} 2 \\ -1 \end{pmatrix} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$, find the value of $x$.

(23) In the given Venn diagram, shade the region which represents $A' \cap B'$.




(24) It takes 60 minutes to fill a tank of capacity 2400$l$ completely with water, using a certain pipe. Find the rate that the water flows through the pipe.

(25) According to the information given in the figure, draw a sketch to locate a point equidistant to A and B and 8cm away from AC.




SLGURU.LK
For Educational Purpose Only

SLGURU.LK

## Part - B

**Answer all the questions on this paper itself.**

(01) Mr. Perera spends $\frac{3}{8}$ of his monthly salary for food and $\frac{3}{5}$ of the remaining for the education of his children.

(i) What fraction of the whole amount is remained after spending for food ?

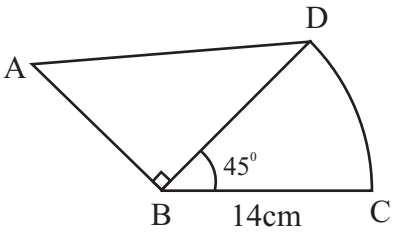
(ii) What fraction of the whole amount is spent for the education of his children ?

(iii) After spending for food and education , he has a balance of Rs. 20 000. Find the total monthly salary of Mr. Perera.

(iv) Every month Mr. Perera pays a loan installment for the housing loan that he has taken. If that amount is Rs. 10 000 less than the amount he spends for education, what fraction of the whole salary is his loan installment ?

(02) Figure shows a right angle triangle combined with a sector with the radius 14 cm and the angle at the center of the sector $45^0$. (take $\pi = \frac{22}{7}$ )

(i) Find the area of the sector.




(ii) If the area of the triangle ABD is equal to the area of the sector , find AB length .

(iii) Find the arc length DC.

(iv) Taking AD length as 17.8 cm , find the perimeter of the combined figure ABCD.

SLGURU.LK

For Educational Purpose Only

SLGURU.LK

(03) Mr Kaasim who is a share market investor , invests Rs. 90 000 to buy shares of a certain company where the market price is Rs. 60 per share. The company pays an annual dividend of Rs. 7 per share.

(i) Find the number of shares that Mr. Kaasim bought.

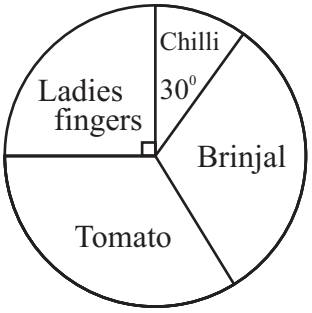
(ii) Find the annual dividend income he receives.

(iii) After one year, if he gets a capital gain of Rs. 4500 by selling all his shares, find the selling price of a share.

Mr. Kaasim deposited the total amount he received as dividend and the capital gain, in a certain bank which pays an annual compound interest rate of 12%, for two years.

(iv) After two years, find the total amount in his account.

(04) Following pie chart represents the different types of vegetable plants chose by Mrs. Padmini for her vegetable garden. Number of tomato plants are equal to the number of brinjal plants.




(i) Find the magnitude of the angle at the center of the sector which represents the number of tomato plants.

(ii) Number of chilli plants in the garden is 15. Find the number of brinjal plants.

(iii) Find the total number of vegetable plants represented in this pie chart.

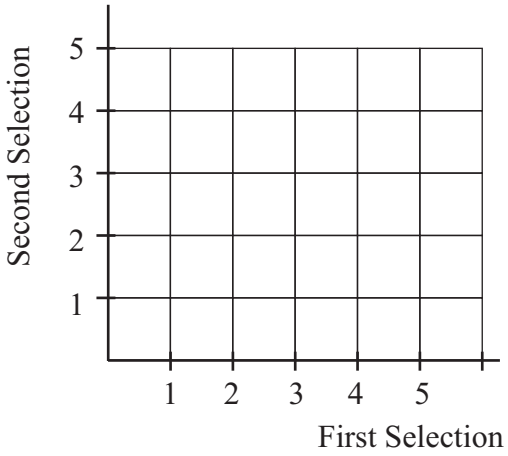
(iv) One month after starting her vegetable garden, 30 ladies finger plants got destroyed due to a pest threat. In a pie chart which is drawn using new information, find the angle at the center of the sector which represents the number of tomato plants.

SLGURU.LK
For Educational Purpose Only

SLGURU.LK

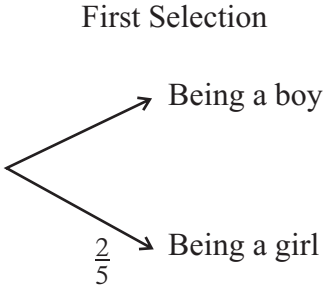
(05) Out of five contestants who hold numbers 1 to 5, two singers should be selected randomly for the final round of a singing reality show.

(i) Show the sample space of selecting two singers in the grid using '×' mark.




(ii) Circle the area in the grid which represents the two singers who were selected, hold even numbers and find its probability.

(iii) If there were two girls among the five finalists , complete the following tree diagram which is drawn to illustrate the event, selecting two singers for the final round.




(iv) Find the probability of the two singers selected for the final round being a boy and a girl.

SLGURU.LK
For Educational Purpose Only

“The beautiful thing about learning is that nobody can take it away from you.” — B. B. King




Visit SLGURU.LK to download papers and notes.

සියලු ම හිමිකම් ඇවිරිණි
முழுப் பதிப்புரிமையுடையது.
All Rights Reserved

SLGURU.LK

බස්නාහිර පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
மேல் மாகாணக் கல்வித் திணைக்களம்
**Department of Education - Western Province**

වර්ෂ අවසාන ඇගයීම
ஆண்டிறுதி மதிப்பீடு - 2020
**Year End Evaluation**

| ශ්‍රේණිය தரம் Grade | විෂයය பாடம் Subject | පත්‍රය வினாத்தாள் Paper | කාලය காலம் Time |
|---|---|---|---|
| 11 | **Mathematics** | **II** | **3 hours** |

- ❖ Answers 10 questions selecting 05 questions from part A and 05 questions from part B.
- ❖ Each question carries 10 marks.
- ❖ Volume of a cylinder with the radius $r$ and the height $h$ is $\pi r^2 h$. Volume of a cone is $\frac{1}{3}\pi r^2 h$.

## Part - A

**Answer 05 questions only.**

(01) (a) (i) Annual assessed value of a house is Rs. 250 000. If the annual rates charged by the urban council is 6%, find the quarterly rates to be paid.

(ii) After few years the assessed value of the house was changed. The rates charged by the urban council was also increased upto 8%. Accordingly, if the quarterly rates also increased by 250 rupees, find the new assessed value of the house.

(b) Mr. Senaka who decided to buy a photocopy machine worth Rs. 90 000, agreed to pay a down payment of Rs. 30 000 and pay the remainder within two years in equal monthly installment of Rs. 3000.

(i) Find the total interest that he should pay.

(ii) What is the number of month units ?

(02) An incomplete table of values prepared to draw the graph of the function $y = (3+x)(1-x)$ is given below.

| $x$ | -4 | -3 | -2 | -1 | 0 | 1 | 2 |
|---|---|---|---|---|---|---|---|
| $y$ | -5 | 0 | 3 | ..... | 3 | 0 | -5 |

(i) Find the value of $y$, when $x = -1$.

(ii) By taking 10 small divisions along x - axis and y - axis as one unit as the scale, draw the graph of the above function in a graph paper.

(iii) Write the range of values of $x$, where the function is positive.

(iv) Using the coordinates of the turning point, express the function in the form $y = a - (x+b)^2$

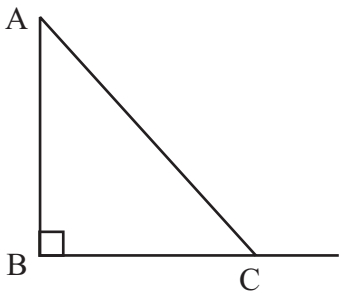
(v) Explain the behavior of the function in the range $-1 < x \leq 1$.

(03) Diagonals of a rhombus bisect each other perpendicularly. The difference between the lengths of the two diagonals of a rhombus is 4 cm and the area of it is $14cm^2$ . When the length of the short diagonal is taken as $2x$ centimeters , show that it satisfies the equation $x^2 + 2x - 7 = 0$ and by giving reasons show that $x$ can take only one value. Taking $\sqrt{2} = 1.41$, find the length of the short diagonal.

SLGURU.LK
For Educational Purpose Only

SLGURU.LK

(04) A communication tower AB and a 50m supportive metal wire tied to a point C, which is on the level ground as the foot of the tower is shown in the figure. It is decided to fix a communication antenna on the tower in the point D, which is situated 2m below the point A. The angle of elevation of A from C is $53^0 4'$.




(i) Copy the diagram to your answer sheet and mark the given data in it.

(ii) Using trigonometric tables, find the height of the communication tower AB to the nearest whole number.

(iii) A tool box which is on the horizontal ground, 20m away from B is observed by a mechanic who went to the point D to fix the antenna, with on angle of depression of $\theta$. Mark the angle $\theta$ in the diagram and using the nearest value obtained in above (ii) and the trigonometric tables , find the value of $\theta$.

(Ignore the height of the observer)

(05) (a) A flower pots manufacturer prepared a certain concrete mixture to make cement flower pots by mixing cement and sand to the ratio 2 : 13. He makes 60 pans of concrete mixture at a time.

(i) By taking the number of pans of cement used to make the mixture as $x$ and the number of pans of sand as $y$, build up a pair of **linear simultaneous equations** including $x$ and $y$. (Ignore the changes take place when using water.)

(ii) **Solve the pair of simultaneous equations** and find the number of pans of sand and the number of pans of cement that he used.

(b) Simplify $\dfrac{2x^2}{x^2 - 1} \div \dfrac{x}{x+1}$

(06) Information collected on the number of shirts produced by a certain garment factory during 50 days is given below in the frequency distribution.

| Number of shirts | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 |
|---|---|---|---|---|---|---|
| No of days. | 6 | 7 | 10 | 12 | 8 | 7 |

The garment factory earns a profit of Rs. 150 from a shirt. They expect to do the production as mentioned above for 100 days and earn a profit of Rs. 1 000 000. Calculate the mean number of shirts produced in one day and by giving reasons state whether their expectation can be fulfilled.

SLGURU.LK
For Educational Purpose Only

SLGURU.LK

**Answer 05 questions only.**

(07) (a) Sunimal who started writing a novel, wrote 8 pages on the first week, 11 pages on the second week and 14 pages on the third week. Starting from the first week, the number of pages he wrote in each week lie an arithmetic progression.

(i) How many pages were written on the tenth week ?

(ii) If he finished the book in 30 weeks, what is the total number of pages in the book?

(iii) When printing the book, Sunimal decided to print the pages with page numbers multiple of 5 in pink colour papers and all the other pages in blue colour papers. If there are 1200 pages in the book after printing it, how many blue colour pages are there ?

(b) First term of a geometric progression is 4. If the common ratio of it is ½, find the $10^{th}$ term.

(08) For the following constructions use only a pair of compasses and the straight edge with the scale mm/cm. Show the construction lines clearly.

(i) Construct a straight line segment PQ = 7cm and construct the perpendicular bisector of PQ.

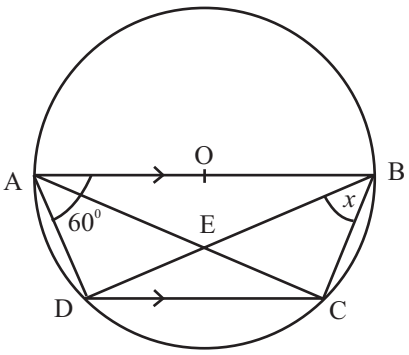
(ii) Construct $O\hat{P}Q = 60^0$, where O lies on the perpendicular bisector of PQ.

(iii) If the intersection point of PQ and the perpendicular bisector is R, construct the circle with the center O, which touches PQ at R.

(iv) Join OQ and write the magnitude of $R\hat{O}Q$.

(v) Construct another tangent PS to the circle that you have drawn above. Giving reasons show that PROS is a cyclic quadrilateral

(09) In the circle with the center O, ABCD is a cyclic quadrilateral. The diagonals AC and BD are joined. $B\hat{A}D = 60^0$ and $D\hat{B}C = x$. Copy the given diagram in your answer sheet.




(i) Show that $ADC\Delta \equiv BCD\Delta$

Intersection point of AC and BD is E.

(ii) Show that AEB is an isosceles triangle.

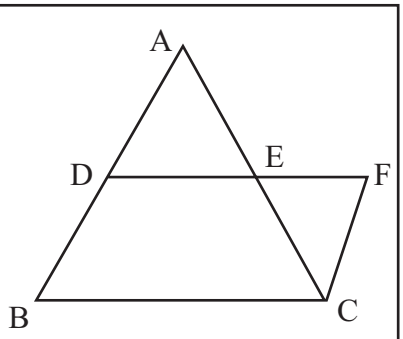
(iii) If there is a tangent PQ drawn to the circle at D and $x = 30^0$, show that AC // PQ.

SLGURU.LK

For Educational Purpose Only

SLGURU.LK

(10) In the figure , ABC is an equilateral triangle. Mid point of AB is D. The line drawn parallel to BC from D meets the side AC at E. The point F is on produced DE, such that DE = EF. Mark the above data in the diagram. Show that ADCF is a rectangle and show the area of it is equal to the area of the triangle ABC.



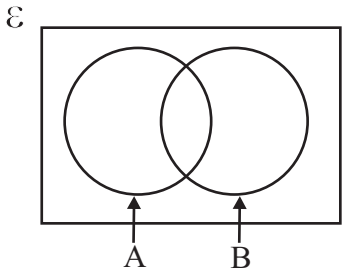

(11) A survey done on 40 grade 11 students regarding how they have selected the three geometry questions in mathematics question paper - II in a certain term test, following information is revealed.

A = {Students who selected construction question}

B = {Students who selected structured question containing proofs }

C = {Students who selected essay type question}

An incomplete Venn diagram drawn to represent the sets A and B is given in the figure.




(i) If all the students who have selected the essay type question, also have selected at least either one of the other two question types,
Copy the Venn diagram in the answer sheet and draw the subset C in it.

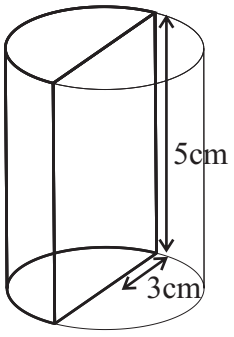
- Only 31 students have selected the geometry questions.
- There are 26 students in set A and 20 students in set B. The number of students who selected all the three questions is 10.

(ii) Include the above information in the Venn diagram and find the number of students belong to only A and B.

(iii) If $n(A \cap C) = 14$, represent it in the Venn diagram and find the number of students who selected only the construction question.

(iv) If the number of students who selected the structured question is 2, find the probability that a student selected randomly from the class has done the essay question.

(12) A right semi - cylindrical solid metal bar with the radius of the base 3cm and the height 5cm as shown in the figure, is melted and a solid metal cone is made without wasting any metal. If the radius of the cone is $r$, and the perpendicular height is three times of the radius, show that, $r = \sqrt[3]{\frac{45}{2}}$ cm and using logarithmic tables find the value of $r$ to the nearest second decimal place.




SLGURU.LK
For Educational Purpose Only

විභාග අංකය/ නම - Index No/Name - சுட்டெண/பெயர் :- SLGURU.LK.....

SLGURU.LK
For Educational Purpose Only

“The beautiful thing about learning is that nobody can take it away from you.” — B. B. King




Visit SLGURU.LK to download papers and notes.