සියලු ම හිමිකම් ඇවිරිණි
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மேல் மாகாணக் கல்வித் திணைக்களம்
Department of Education - Western Province

වර්ෂ අවසාන ඇගයීම
ஆண்டிறுதி மதிப்பீடு - 2015
Year End Evaluation

ශ්‍රේණිය தரம் Grade	විෂයය பாடம் Subject	පත්‍රය வினாத்தாள் Paper	කාලය காலம் Time
10	Mathematics	I	02 Hours

Name / Index No : .....

.....
Signature of invigilator

Important :

- This paper consist of 8 pages.
- Write your **index number** correctly in the appropriate place on **page one** and **page three.**
- Answer all questions **on this paper itself.**
- Use the space provided under each question for working and writing the answer.
- It is necessary to write relevant steps and correct units.
- Marks will be awarded as follows:

  one mark each for questions 1 - 10 and

  two marks each for questions 11 - 30 in part A

  10 marks each for questions in part B

For marking examinor's use only

Question number		Marks
A	1 - 10	
	11 - 30	
B	1	
	2	
	3	
	4	
	5	
Total		

.....
Marked by

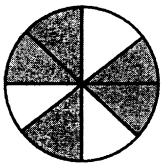
Part A

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

(01) If the price of 250g of sugar is Rs. 22, what is the price of 1kg of sugar?

(02) Solve. $\frac{x}{5} = 3$

(03) Write the shaded portion of the figure as a fraction.



(04) How many millimeters are there in 2.7 cm?

(05) Solve the inequality $x + 3 > 7$

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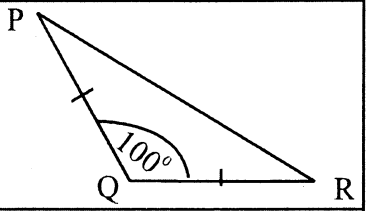
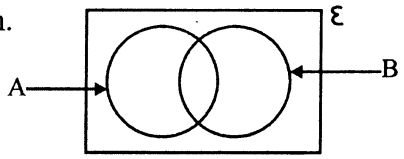
(06) In the triangle PQR, PQ = QR.
Find the magnitude of $P\hat{R}Q$.



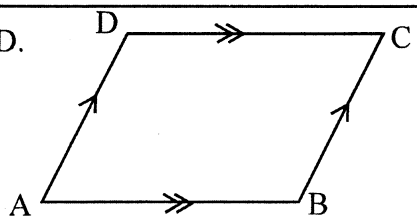
(07) What is the distance a motor car will travel in $2\frac{1}{2}$ hours, when it travels at a speed of 50 kilometers per hour?

(08) Shade the region $(A \cup B)'$ in the given Venn diagram.



(09) Find the Least Common Multiple of the numbers 2, 3 and 6.

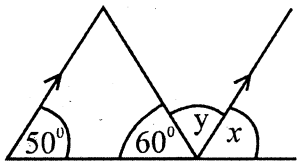
(10) Name a pair of equal sides in the parallelogram ABCD.



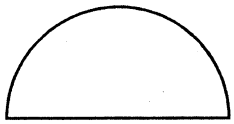
 Index No .....

(11) Simplify. $\dfrac{x^5 \times x^8 \times x^{-4}}{x^7}$

(12) According to the information given in the diagram, find the values of x and y.



(13) If the arc length of the semi circle is 44cm, find the diameter of it.



(14) Factorize $x^2 - 8x + 15$

(15) Simplify. $\dfrac{2}{3x} - \dfrac{1}{2x}$

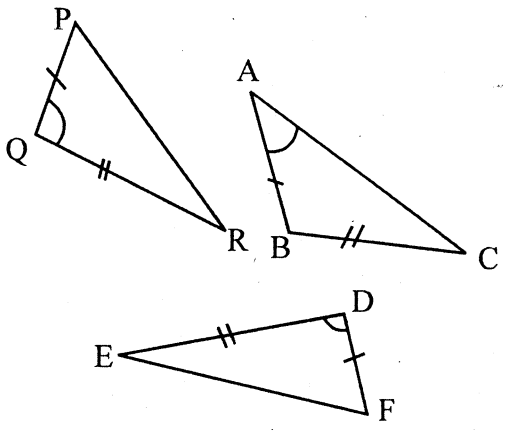
(16) Find the median of the collection of data represented on the stem and leaf diagram.

stem	leaf
0	6
1	2 3 9
2	0 6 8
3	3 5 7

(17) Among the triangles represented in the figure,

(i) Name a pair of congruent triangles.

(ii) Write the case of congruent.



(18) Make 'a' the subject of the formula $x=\sqrt{a^2+b^2}$

(19) A and B are mutually exclusive events. If $P(A)=\frac{1}{2}$ and $P(B)=\frac{1}{3}$, find $P(A\cup B)$.

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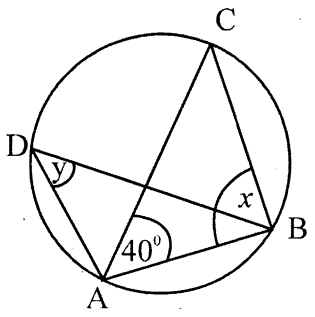
(20) If AC is a diameter of the circle shown in the figure, find the values of x and y.

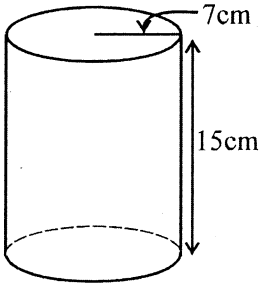


(21) Write down in order, the keys that should be operated to perform the following calculations using a scientific calculator. $(15+12)\div 9$

(22) What is the total interest that Limasha has to pay in five months, if she borrowed Rs. 6 000 at a monthly simple interest rate of 5% ?

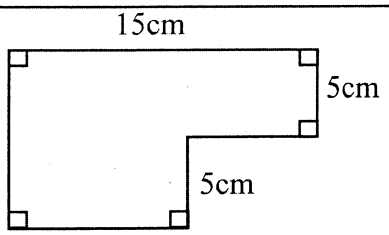
(23) It takes 2 hours and 40 minutes to completely fill a water tank of the capacity $8m^3$. What is the rate at which water flows through the water supply line in litres per minute ?

(24) If the area of the curved surface of a cylinder of radius r and height h is given by $2\pi rh$, calculate the area of the curved surface of the cylinder given in the figure.

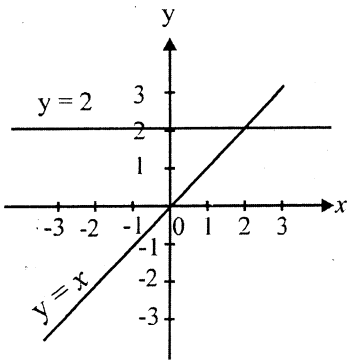


(25) If $T_n = 5n - 2$ represents the n^{th} term of a sequence of numbers, write the first two terms of the sequence.

(26) Find the perimeter of the figure.



(27) The straight lines $y = 2$ and $y = x$ are marked on the given coordinate plane.
Shade the area common to both inequalities $y > x$ and $y < 2$.



(28) Simplify. $\log_a 20 + \log_a 24 - \log_a 15$

(29) Write the gradient and the intercept of the straight line represented by $3y = 2x + 9$.

(30) If x, y and z are three distinct positive integers which are less than 10 and which satisfy $\frac{1}{x} - \frac{1}{y} = \frac{1}{z}$, write two suitable values for x and y.

Part B

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

(01) (a) Simplify. $\left(1\frac{2}{3} - \frac{1}{2}\right) \div 1\frac{1}{6}$

(b) A farmer used $\frac{1}{6}$ of his land to grow tomatoes and $\frac{1}{3}$ of his land to grow chillies. $\frac{1}{3}$ of the remaining portion of the land is used to grow onions.

(i) What fraction of the whole land is used to grow tomatoes and chillies ?

(ii) What fraction of the whole land is used to grow onions ?

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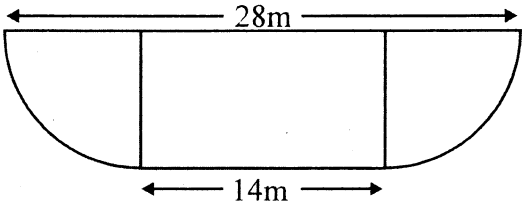
(iii) After allocating the land for the above crops, if the remaining portion of $45m^2$ of the land is used to grow bananas, find the total area of the land reserved for cultivation.

(02) The figure shows a stage having a rectangle and two sectors which was prepared for a concert.



(i) What is the radius of a sector ?

(ii) Calculate the length of a curved edge of the stage.

(iii) Find the area of the stage.

(iv) If a carpet with 3.5 m in width is used to completely cover the rectangular portion of the stage, draw the way to lay the carpet on the diagram with relevant measurements, without cutting it from the width side.

(03) (a) A and B are two brands of concentrated fruit juice which are sold in the market. The price of one litre of juice from brand A is Rs. 195 and this type of juice and water can be mixed to the ratio 1 : 2. The price of one litre of juice from brand B is Rs. 280 and this type of juice and water can be mixed to the ratio 1 : 3.

(i) How many litres of fruit juice can be made using 1 litre of the juice from brand A?

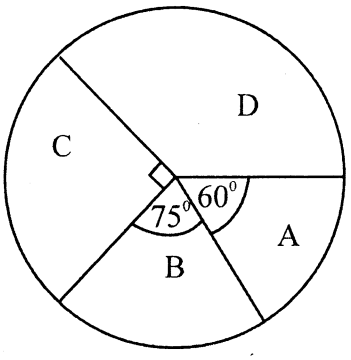
(ii) To make fruit juice, if sugar and other flavors are not needed to be added and by assuming that there is no expense for water, calculate the amount of money need to make one litre of fruit juice from brand B ?

(iii) Kamal states that it is more profitable to buy juice from brand B. Do you agree with his statement ? or not ? Explain your answer.

(b) Damith invested Rs. 15 000 and Dimuthu invested Rs. 20 000 to start a business. After 4 months Dasun joined to the business by investing Rs. 30 000. Find the ratio in which their profits have to be divided at the end of the year.

(04) The following pie chart is drawn to illustrate the number of votes received by four political parties A, B, C and D at an election.

(i) Find the angle of the sector which denotes the votes received by the party D.



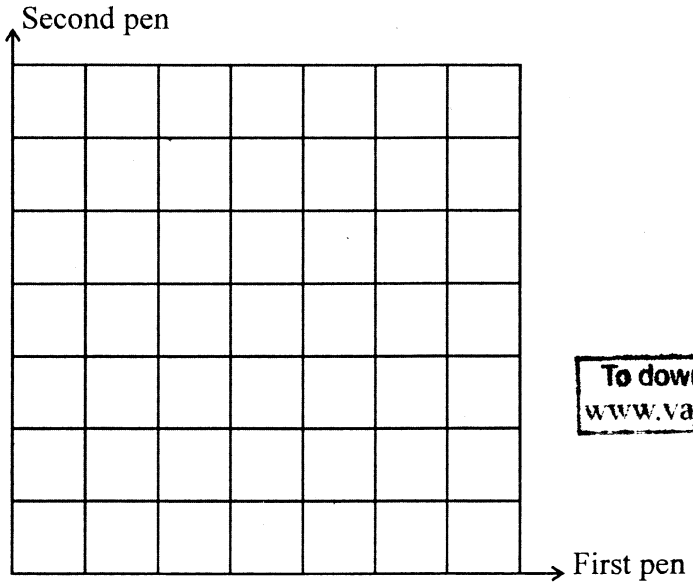
(ii) Which party received $\frac{1}{4}$ of the total valid votes ?

(iii) If the party A received 15 000 votes in total, find the number of votes received by the party in first position.

(iv) How many more votes were received by the party C than the party B ?

(05) (a) In a container, there are 3 blue pens and 4 red pens with the same shape and size. A pen is taken randomly, its colour is recorded and then put back in the container. Then another pen is taken from the container and its colour is recorded.

(i) Show all the possible outcomes in the grid.



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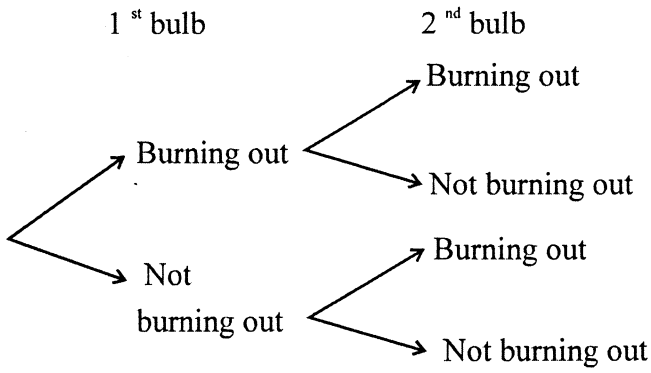
(ii) Find the probability that the first pen being red.

(iii) Find the probability that both pens taken out being blue.

(b) (i) An electric bulb manufacturer claims that the probability of his electric bulbs last more than 1000 hours is $\frac{5}{6}$. Two bulbs from the above mentioned type was bought. Mark the relevant probabilities of "burning out the bulb before 1000 hours" and "not burning out the bulb before 1000 hours" on the tree diagram given below.



(ii) Find the probability that at least one bulb lasts more than 1000 hours.

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மேல் மாகாணக் கல்வித் திணைக்களம்
Department of Education - Western Province

වර්ෂ අවසාන ඇගයීම
ஆண்டிறுதி மதிப்பீடு - 2015
Year End Evaluation

ශ්‍රේණිය தரம் Grade	විෂයය பாடம் Subject	පත්‍රය வினாத்தாள் Paper	කාලය காலம் Time
10	Mathematics	II	$2\frac{1}{2}$ Hours

* Answer 10 questions , selecting **five questions** from part A and **five questions** from part B.

* Each question carries 10 marks.

Part A

Answer **five questions** only.

(01) (a) The imported value of a motor cycle is 1500 American dollars. The government charges a duty of 20%, when a motor cycle of this type is imported.

(i) Find the imported price of a motor cycle, when the value of an American dollar is Rs. 130.

(ii) How much that has to be paid as duty, when a motor cycle is imported ?

(iii) What is the value of the motor cycle after the custom duty is paid ?

(iv) At what price should the motor cycle be sold by the importer, to make a profit of 10% ?

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(b) If Rs.500 is charged as quarterly rates for a house of assessed annual value Rs. 40 000, calculate the percentage charges as rates.

(02) An incomplete table prepared to draw the graph of the function $y = 3 - 2x^2$ is given below.

x	-3	-2	-1	0	1	2	3
y	-15	-5	1	.....	1	-5	-15

(a) (i) Find the value of y, when $x = 0$.

(ii) Taking 10 small divisions in x axis as one unit and 10 small divisions in y axis as two units, draw the graph of the function.

(b) Using the graph,

(i) Write the equation of the axis of symmetry.

(ii) Write whether the turning point is a maximum or a minimum and write the coordinates of it.

(iii) Find the interval of values of x for which $y > 1$.

(iv) Find the positive root of $3 - 2x^2 = 0$.

(03) (a) Number of 2 rupee coins Ashen has is twice the number of 5 rupee coins he has. The total value of the 2 rupee coins and 5 rupee coins he has is Rs. 18.

(i) Taking the number of 2 rupee coins he has as x and number of 5 rupee coins he has as y , construct a pair of simultaneous equations.

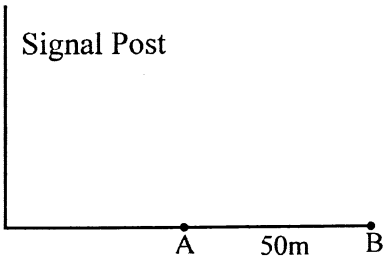
(ii) By solving the above pair of simultaneous equations find separately the number of 2 rupee coins and number of 5 rupee coins he has.

(b) Solve $x^2 - x - 6 = 0$

(04) (a) An observer standing at a point A on a horizontal ground, observes the top of a telephone signal post with an angle of elevation 70^0. When he moves to the point B which is 50m away from A , the angle of elevation of the top of the telephone signal post from B is 40^0. (According to the figure)

(i) Draw a scale diagram to represent the above information taking the scale as 1cm representing 10m.

(ii) Find the height of the telephone signal post using the scale drawing.



(b) The time taken by a train of length 40m to pass a bridge is 6 seconds, when it is traveling at a speed of $72kmh^{-1}$.

(i) What is the distance traveled by the train in one second in meters ?

(ii) Calculate the length of the bridge.

(05) (a) (i) Expand $(2x - 1)^2$

(ii) Find the least common multiple of $(x - y)$ and $(x^2 - y^2)$.

(b) Solve.

$$\frac{2}{(a-2)} + \frac{1}{2(a-2)} = 1$$

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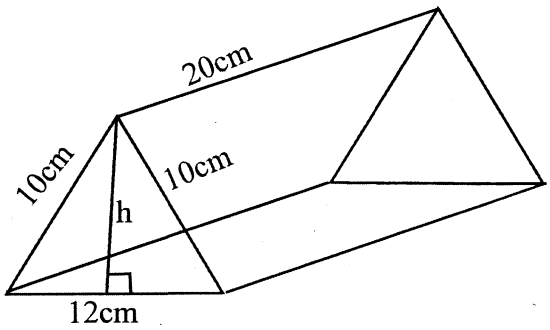
(06) (a) The figure shows a glass prism with the measurements.



(i) Find the value of h.

(ii) Find the area of a cross section of the prism.

(iii) Calculate the volume of the prism.

(b) Find the value using logarithmic tables. $\frac{97.89 \times 7.62}{209.5}$

Part B

Answer **five questions** only.

(07) (a) A sportsman who is practicing daily, practices 30 minutes on the first day and 45 minutes on the second day. In this way, he increases his practice time daily by 15 minutes more than the previous day.

(i) Write in order, the time he practices on first four days in minutes.

(ii) How many minutes will he practice on the 10^{th} day ?

(iii) After how many days will he spend 2 hours for his practice ?

(b) Show that the total time he spent for his practice within the first week is more than 8 hours.

(08) (a) Do the following constructions using the pair of compasses and a straight edge with a cm/mm scale.

(i) Construct the triangle ABC such that AB = 6cm, $A\hat{B}C = 90^{0}$ and BC = 6cm.

(ii) Construct the perpendicular bisector of AB and name the point of intersection of the bisector and AC as O.

(iii) Draw a circle with the radius OA and the center O.

(b) (i) Measure and write the length of the side AC.

(ii) Write a relationship between the sides AB, BC and AC.

(iii) Hence obtain a value for $\sqrt{72}$.

(09) Following table represents the time taken by some students to solve a certain mathematics problem, to the nearest minute.

Class Intervals (minutes)	0 - 3	4 - 7	8 - 11	12 - 15	16 - 19	20 - 23	24 - 27
Frequency (No of students)	1	4	7	11	9	5	3

(i) What is the modal class of the time taken by a student to solve the problem?

(ii) By taking the mid value of the modal class as the assumed mean, calculate the mean time taken by a student to solve the problem.

(iii) Express the number of students who took more than 20 minutes to solve the problem as a fraction of the total number of students and write it in the simplest form.

(10) (a) $M = \{x : x \text{ is a square number}, 0 < x < 20\}$

(i) Write the above set using another two methods.

(ii) Find the value of n(M).

(iii) Write two subsets of M.

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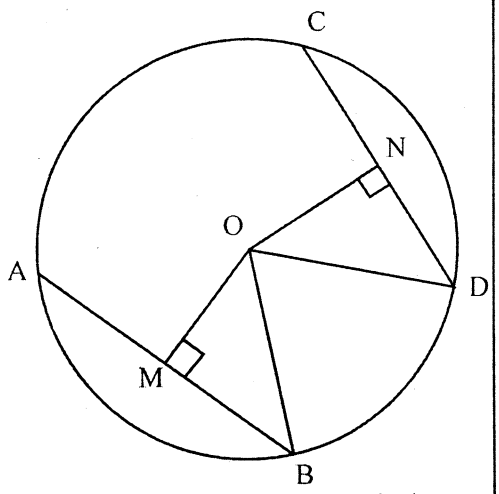
(b) Out of 35 students in a class, 17 had red pens, 22 had blue pens and 5 had neither a red pen nor a blue pen.

(i) Represent the above information on a Venn diagram.

(ii) Hence calculate the number of student who had both colours of pens.

(11) In the figure, AB and CD are two equal chords of the circle with the centre O. M and N are the foots of the perpendiculars drawn from O to AB and CD respectively.



(i) Write a relationship between AM and BM.

(ii) Show that BM = DN.

(iii) Show that the triangles OBM and ODN are congruent.

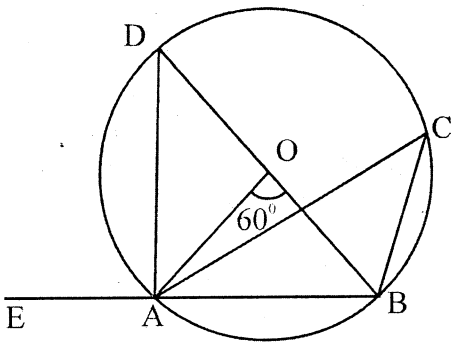
(iv) If OM = 5cm, find the length of ON.

(v) From the above proof write a conclusion you can arrive at about the location of two equal chords in a circle.

(12) (a) Write the relationship between the angle subtended by an arc of a circle at the centre and the angle subtended by it at the remaining arc of the circle. Explain the relationship using a diagram.

(b) In the circle with the centre O, the points A, B, C and D are situated on the circumference of the circle.

BA is produced to E. $A\hat{O}B = 60^0$.



(i) Name an equilateral triangle, isosceles triangle and a right angled triangle shown in the diagram.

(ii) Using the given information find the magnitude of the following angles.

$A\hat{D}B$, $A\hat{C}B$, $O\hat{A}B$, $O\hat{A}D$ and $D\hat{A}E$