සියලුම හිමිකම් ඇවිරිණි/முழுப் பதிப்புரிமையுடையது/All Rights Reserved

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தென் மாகாணக் கல்வித் திணைக்களம்
Department of Education, Southern Province

අවසාන වාර පරීක්ෂණය - 2025
இறுதி தவணைப் பரீட்சை - 2025 / Year End Term Test - 2025

ශ්‍රේණිය தரம் Grade	11	MATHEMATICS - I	කාලය நேரம் Time	2 hours

නම பெயர் Name ..... විභාග අංකය சுட்டிலக்கம் Index No. .....

Name / Index No:.....

Certified Correct

.....

Signature of Invigilator

Important

- This paper consists of 8 pages.
- Write your name and index number.
- Answer all the questions on this paper itself.
- Use only the space provided under each question to write the answer and show the steps taken to obtain the answer.
- It is necessary to indicate the **relevant steps** and **correct units** in answering the questions.
- 2 marks for each correct answer for the questions in part **A** .
  10 marks for each question in part **B.**

For Marking Examiner's Use Only

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

.....

Marked by

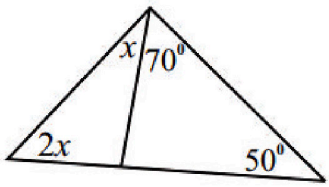
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Part A

Answer all the questions on this paper itself.

01) The amount of work estimated to paint a building is 240 man-days. $\frac{1}{6}$ of the work could be completed in 4 days. What is the number of men employed for this?

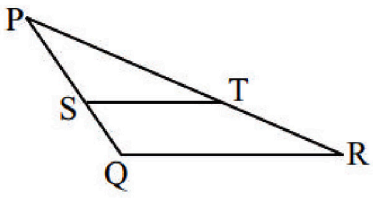
02) Find the value of x.



03) Solve $\frac{1}{4x} + \frac{1}{5x} = \frac{3}{40}$

04) A discount of 10% is given when the total amount of annual rates is paid at the beginning of the year. A house owner who paid the annual rates in this way received a discount of Rs. 480. If he pays this quarterly, find the quarterly rates for that house.

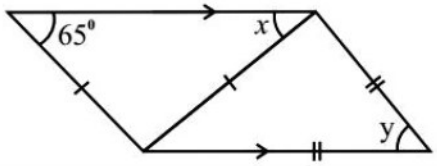
05) In the triangle PQR shown in the figure, the length of ST which joins the midpoints of the sides PQ and PR is 8 cm and the perimeter of triangle PST is 24 cm. Find the perimeter of the quadrilateral STRQ.



06) What is the smallest algebraic term that is exactly divisible by the algebraic terms $2a^2$ and $6ab$?

07) Find the suitable positive integer for x such that the first approximation of $\sqrt{x}$ is 4.1

08) Find the values of x and y according to the information given in the figure.



09) Write $75.3=10^{1.8768}$ in logarithmic form.

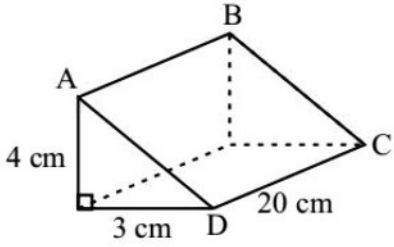
10) Simplify. $\frac{2xy}{3} \div \frac{8y}{6x}$

11) The interquartile range of a set of data is 4 and the third quartile is 10.

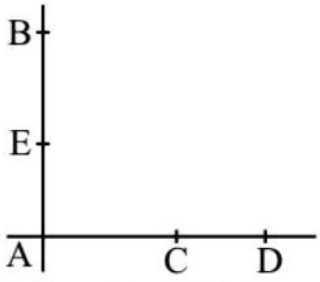
i) Find the first quartile.

ii) If the first quartile is the 5^{th} data, find the number of data.

12) Draw the face ABCD of the prism with its measurements

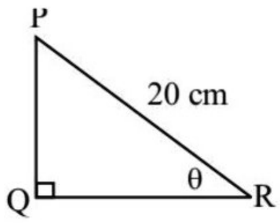


13) AB is a vertical tower on a flat ground. C and D are two points on the ground. E is an electric lamp fixed on AB.



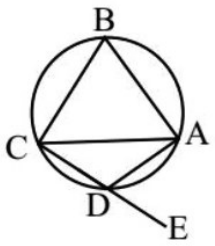
The angle of depression of C from B is 55^0 and the angle of elevation of E from D is 22^0. Mark this information on the figure given above.

14) If $\sin\theta=0.35$ in the figure, find the length of PQ



15) In the cyclic quadrilateral ABCD, the side CD is extended to E.

If $A\widehat{D}E=50^0$ and AB = BC, find the magnitude of $B\widehat{A}C$.



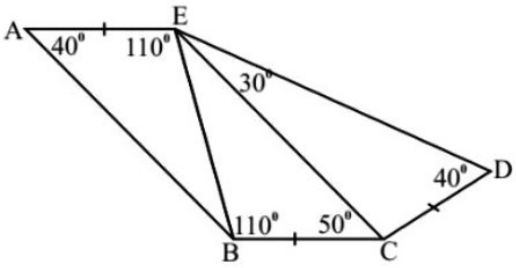
16) If $(x - 2)$ is a factor of $2x^2 - x - 6$, find the other factor.

17) Choose and underline the pair of congruent triangles based on the information shown in the figure.

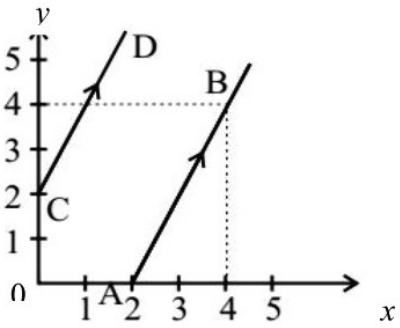
i) ABE and BCE Triangles

ii) BCE and CDE Triangles

iii) ABE and CDE Triangles



18)

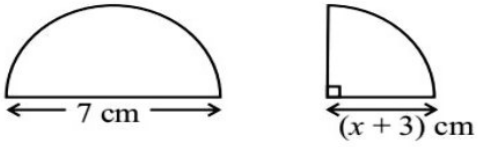


i) Find the gradient of the straight line AB.

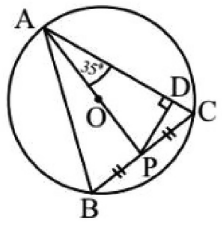
ii) If AB // CD, write the equation of the straight line CD.

19) The number of blue pens is twice the number of red pens andthe number of black pens is three times the number of red pens in a container. Find the probability that a randomly taken pen being a blue pen.

20) If the arc lengths of these two sectors are equal, find the value of$x$.

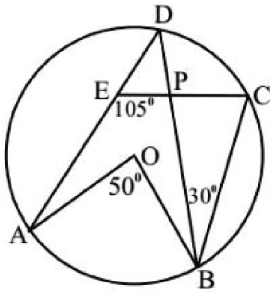


21) Find the magnitude of $D\hat{P}C$ using the information given in the figure.

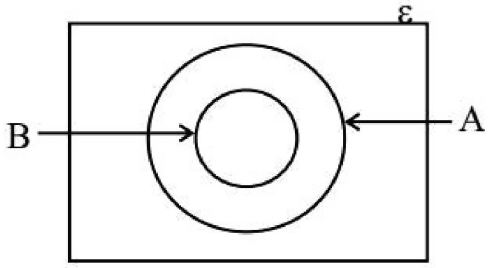


22) A = [3 -1] and B = $\begin{bmatrix} 2 \\ 0 \end{bmatrix}$ are two matrices. Find the matrix represented by AB.

23) The points A, B, C, and D are located on the circle with center O. BD and CE intersect at P. Find the magnitude of $B\hat{C}P$ using the information given in the figure.

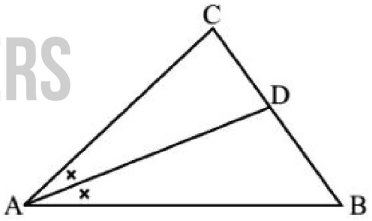


24) In the given Venn diagram, shade the region represented by $(B' \cap A)'$.



25) The locus of a point moving equidistant from the boundaries AB and AC of the triangular plot of land ABC meets the boundary BC at D. Nimal intends to erect a light pole P to illuminate the land at night, such that P is on the above locus and equidistant from the points A and B. Using the knowledge of loci, locate the position of P on the figure.

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Part B

Answer all questions on this question paper itself.

01) Mahiru has planted tea on $\frac{2}{5}$ of his land and cinnamon on $\frac{1}{3}$ of his land.

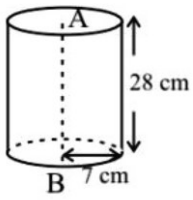
i) What fraction of the land is used to plant both types? (02 marks)

ii) If $\frac{3}{8}$ of the remaining land is used to plant bananas, what fraction of the total land is used to plant bananas? (02 marks)

iii) If the area of the land which is not used to plant any of the above crops is 400 m^2, find the total area of the land. (03 marks)

iv) Due to a road widening, $\frac{1}{4}$ of the portion planted with tea was lost. What fraction of the total land is planted with tea now? (03 marks)

02) (a) A student who needed to cut a circle from a metal sheet intends to use the cylindrical tin without lid shown here for that purpose.

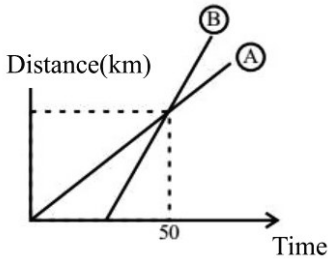


i) Find the circumference of its circular base. (02 marks)

ii) Draw a rough sketch with measurements of the metal sheet obtained when the base of the tin is removed and the curved surface is cut along the line AB and separated. (01 mark)

iii) Find the area of the remaining part of the sheet after the largest possible circle is cut and removed from that sheet. (03 marks)

(b) The movement of two vehicles starting from a location P is shown in the distance-time graph. Vehicle A starts first and after travelling some time, vehicle B starts and it passes vehicle A.

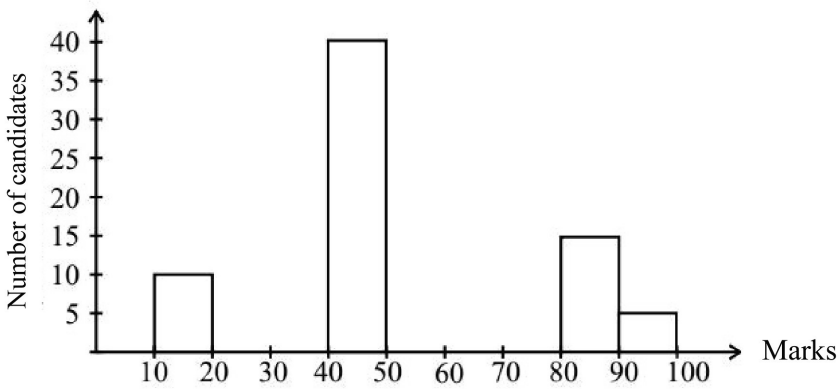


i) If the speed of vehicle A is 60kmh^{-1}, find the distance traveled by the two vehicles when they meet. (02 marks)

ii) If the speed of vehicle B is 100kmh^{-1}, find the time elapsed after vehicle A started, when vehicle B started its journey. (02 marks)

03) An incomplete frequency distributor and an incomplete histogram showing the marks obtained by 200 candidates in an aptitude test are given below. (Here 10 – 20 means greater than or equal to10 and less than 20)

Class intervals	Number of candidates
10 - 20	10
20 - 40	40
40 - 50	.....
50 - 80	.....
80 - 90	15
90 - 100	5



i) Fill in the blanks in the table using the information from in the histogram. (02 marks)

ii) Complete the histogram using the given information. (02 marks)

iii) Draw the frequency polygon on the same histogram (03 marks)

iv) If the pass mark of this aptitude test is 80, find the central angle of the sector representing the number of candidates who passed in a pie chart drawn to show this information (03 marks)

04) At the beginning of a year, Samith sold 2000 shares which he had bought for Rs. 55 each of a company named C.A.T. for Rs. 60 each.

i) Find the amount of money he received from selling the shares. (01 mark)

ii) Find the capital gain he received from it. (01 mark)

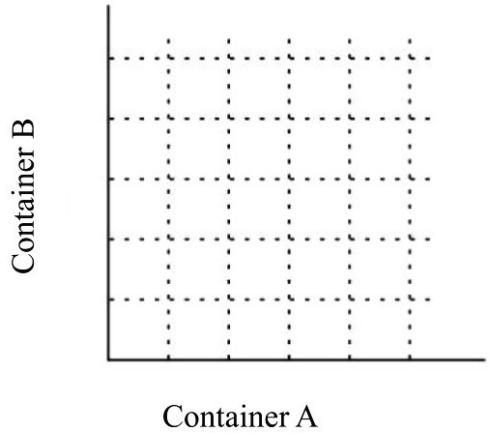
Samith invests a portion of the money received from selling the shares to buy 500 shares of company A at Rs. 30 each and 700 shares of company B at Rs. 50 each. At the end of the year, company A paid a dividend of Rs. 6 per share and company B paid a dividend of Rs. 8 per share.

iii) Find the amounts of money invested in company A and B separately. (02 marks)

iv) Find the dividend income he received from both companies at the end of the year. (02 marks)

v) If the remaining amount after investing in both companies A and B was deposited in a bank that pays 10% compound interest for a period of 2 years, find the total amount received from it at theend of the two years. (04 Marks)

05) There are 2 red balls, one white ball and 2 blue balls named as R1, R2, W1, B1, B2 in the container A. There are 3 red balls and 2 white balls named as R3, R4, R5, W2, W3 in container B .



i) All these balls are identical. A ball is taken from container A first and then a ball is taken from container B. Represent the possible outcomes in the grid. (03 marks)

ii) Encircle the event of getting white balls from both containers A and B on the grid and find its probability. (1 mark)

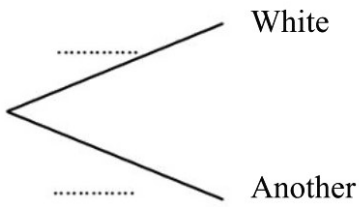
(b) An incomplete tree diagram representing the events of a ball drawn from container A being white or another colour is shown below.

i) Write the relevant probabilities on the branches. (02 marks)

ii) The ball taken from the container A is put into the container B and again take a ball from the container B. Extend the tree diagram to show the ball taken from container B being white or another colour.

(02 marks)

Taking from container A



iii) Hence find the probability of getting a white ball at least once. (2 Marks)

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தென் மாகாணக் கல்வித் திணைக்களம்
Department of Education, Southern Province

අවසාන වාර පරීක්ෂණය - 2025
இறுதி தவணைப் பரீட்சை - 2025 / Year End Term Test - 2025

ශ්‍රේණිය தரம் Grade	11	MATHEMATICS - II	කාලය நேரம் Time	3 hours

Extra 10 minutes for reading

නම பெயர் Name ..... විභාග අංකය சுட்டிலக்கம் Index No. .....

Important

- ***Answer 10 questions by selecting 5 questions from part A and 5 questions from part B.***
- ***Write relevant steps and the correct units when writing the answers.***
- ***Each question carries 10 marks.***
- ***The volume of a sphere of radius r is*** $\frac{4}{3}\pi r^3$.
- ***The volume of a prism with cross section area A and length l is Al.***

PART A

Answer five questions only.

01) A generator worth Rs. 300 000 can be purchased by making a down payment of Rs. 60 000 the remainder in 15 equal monthly installments under the reducing balance method at an annual interest rate of 18%. Saman bought that generator and rents it out to a tourist bungalow for a monthly rent of Rs. 20 000. After how many months will the total rental income exceed the total amount spent on the generator?

02) An incomplete table prepared to draw the graph of the function $f(x) = 4 - (x - 1)^2$ is given below.

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

(a) i) Find the value of y when $x = 2$

ii) Draw the graph of $f(x)$ using a suitable scale and the standard system of axes.

(b) Using the graph,

i) Introduce the point (1, 4)

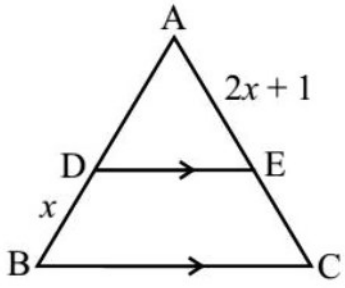
ii) Describe the behavior of $f(x)$ in the interval of $-1 < x < 1$

iii) Find the positive root of the quadratic equation $(x - 1)^2 = 4$.

iv) When the graph is shifted one unit along the positive direction of the x-axis, express the equation of the new function obtained in the form $y = f(x) = x(a - x)$, where a is a positive integer to be determined.

03) A person maintaining a private vehicle park earned Rs. 1 500 from 45 motorbikes and 12 three-wheelers parked on a certain day. The next day, the income he gained from 60 motorbikes parked was equal to the income gained from 24 three-wheelers.
Using the above information, construct a pair of simultaneous equations by taking the daily charge for a motorbike as x and the daily charge for a three-wheeler as y. By solving the equations show that the difference between the income received on each day does not exceed Rs. 1 000.

04) In the triangle shown, DE is drawn parallel to the side BC.
BD = x and AE = $2x$ +1. The length of AD is 7 units less than three times the length of BD and the length of EC is 2 units less than the length of BD.

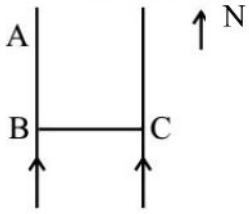


i) Write the lengths of AD and EC in terms of x.

ii) If $\frac{AD}{DB} = \frac{AE}{EC}$, show that x satisfies the quadratic equation
$x^2 - 14x + 14 = 0$

iii) Solve the quadratic equation and find the suitable solution using the values obtained.
($\sqrt{35} = 5.91$)

05) The figure shows two parallel banks of a river running in the North-South direction. A is the foot of a large tree.
B and C are two ferries. The ferry C is located due East of ferry B .
The bearing of C from A is 125^0 and AC= 40 m.



i) Copy the figure onto your answer sheet and include the given information.

ii) Using trigonometric tables, find the width of the river BC to the nearest whole number.

iii) If ferry D is located to the South of B such that BD = 50m, find the value of $B\hat{D}C$ to the nearest degree and find the bearing of D from C.

06) The monthly water consumption of 40 houses in a housing complex is shown in the frequency table below.

No. of water units	6 - 10	10 - 14	14 - 18	18 - 22	22 - 26	26 - 30	30 - 34	34 - 38
Number of houses	2	3	8	11	6	3	5	2

i) Write the modal class.

ii) By taking the midpoint of 18 - 22 class as the assumed mean or by another method, find the mean of the monthly water consumption of a house to the nearest water unit.

iii) Accordingly, what is the amount of water required for the housing complex for the period of next 3 days in liters? (1 unit = 1000 l)

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Part B

Answer only 5 questions.

07) In a large rose flower bed of a park, the first row consists of 125 rose plants and each subsequent row consists of 4 rose plants less than the previous row. The last row consists 5 plants.

i) Write down the number of rose plants in the first 4 rows respectively.

ii) Find the number of rows of rose plants in the bed.

iii) The last 10 rows consist of red rose plants and all the initial rows consist of only white rose plants. Find the number of white rose plants in the bed.

iv) 15 white rose plants in the middle row of the bed had to be removed due to a disease. Find the number of remaining rose plants in that row.

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

i) Construct the triangle ABC such that AB = 9 cm, $A\hat{B}C = 120^0$ and BC = 5 cm.

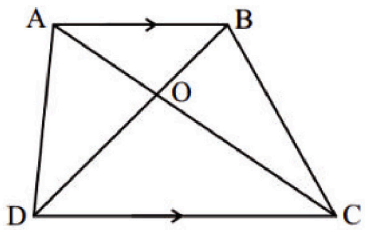
ii) Construct the circle that touches the side AB at B and passes through C. Name the point where it meets AC as D.

iii) Construct another tangent to the circle from A and name it as AE.

iv) Construct a perpendicular from C to extended AB and name the foot of the perpendicular as X.

v) Determine the radius of the circle passing through the vertices B, C and X.

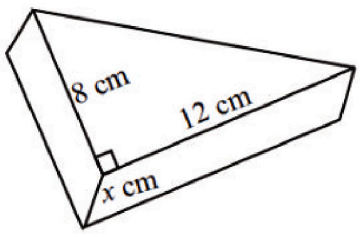
09) In the trapezium ABCD, the sides AB and DC are parallel and the diagonals intersect at O. The straight line drawn through O which is parallel to AB intersects AD at X.
Copy the given figure on to your answer sheet.



i) Show that the Area of AOD Δ = Area of XOC Δ + Area of XOBΔ

ii) Hence or otherwise, prove that,
2 Area of AOD Δ = Area of BXC Δ

10) The figure shows a solid metal prism with a right-angled triangular cross-section and thickness x cm. It is melted down without any metal wastage of metal to form two solid metal spheres of radius r.



Assuming no metal volume is wasted, show that $r = \sqrt[3]{\frac{18x}{\pi}}$
and find the value of r to the nearest first decimal place using logarithmic tables by taking $x = 0.92$ *cm* and $\pi = 3.142$.

11) The points A, B, C, D and E lie on the circle as in the figure. The straight line HG touches the circle at A. The straight line HG and the extended DE and HG meet at F.

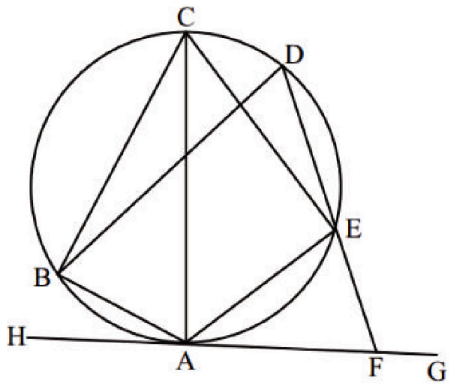
i) Name an angle equal to $A\hat{E}F$ with reasons.

ii) Name an angle equal to $E\hat{A}F$ with reasons.

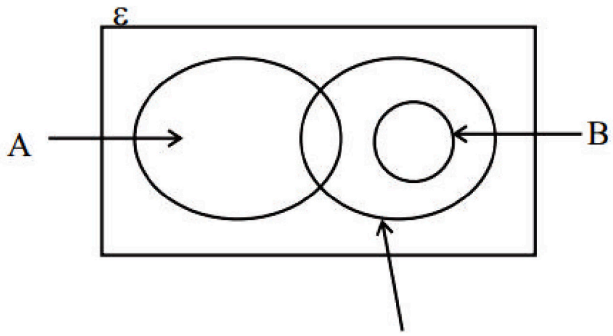
iii) Show that $E\hat{F}G = A\hat{C}E + A\hat{B}D$.

iv) Show that $B\hat{C}E = B\hat{A}H + E\hat{A}F$.

v) Show that $A\hat{B}C - B\hat{A}E = B\hat{D}E - A\hat{E}C$.



12) An incomplete Venn diagram representing information about the number of vehicles imported by a vehicle import company during the first quarter of 2025 is given below.



Electric-powered vehicles

i) If all the motorbikes imported by the company are only electric-powered and cars are powered by only electricity or only other fuels, name the sets A and B .

ii) Include the following information in the Venn diagram:

- The total number of vehicles imported is 2250.
- The number of electric-powered vehicles is 1780.
- The total number of cars imported is 550 and 400 of them were electric-powered.

iii) If the number of motorbikes imported is 900, shade the region in the Venn diagram representing other electric-powered vehicles (excluding cars and motorbikes) and find that number.

iv) Show that the number of non-electric vehicles exceeds 20% of the total number of vehicles imported.

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