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Department of Examinations, Sri Lanka

Question. No.	Marks
1–5	
6–12	
13–18	
19–20	
Total Marks	

2562 – Mulika Piriven Final Examination – 2018 December

NEW **(New Syllabus)** **06 E I**

(06) Mathematics

Paper I

2018.12.24 / 08.30–09.30

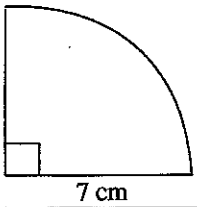
One hour

* Answer **all** the questions **on this paper** itself.
* *Each question carries **02** marks. (02 × 20 = 40 marks)*

Index No : .....

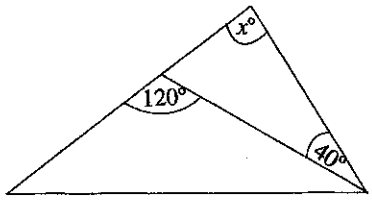
1. Find the square root of 3969 using prime factors.

2. Find the perimeter of the sector shown in the figure. (Use $\frac{22}{7}$ for the value of π.)

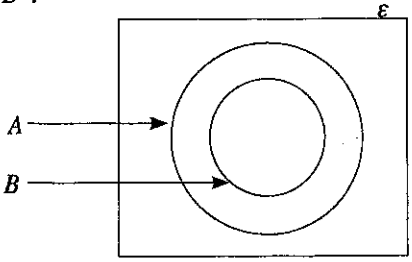


3. Solve : $2(x - 3) + 5 = 11$

4. Find the value of x based on the information given in the figure.



5. In the given Venn diagram, shade the region representing $A \cap B'$.



[See page two

6. If $\begin{pmatrix} 2 & -1 \\ 3 & 0 \end{pmatrix} + \begin{pmatrix} 1 & y \\ x & -1 \end{pmatrix} = \begin{pmatrix} 3 & 4 \\ 5 & -1 \end{pmatrix}$, then find the value of x and y.

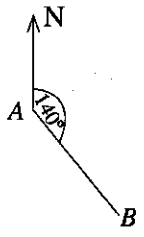
7. Place the mark '√' in front of the correct statements and the mark '×' in front of the wrong statements, from the statements on rhombuses given below.

The diagonals bisect each other perpendicularly.	
The diagonals are equal in length.	
The area of a rhombus is divided into two equal parts by each diagonal.	

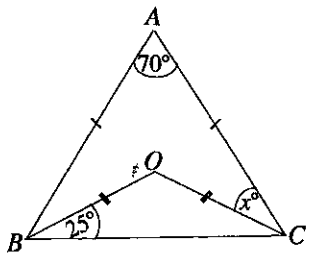
8. Find the profit percentage that is gained by selling an item that is bought for 2500 rupees at the price of 2750 rupees.

9. Find the term that should be added to $x^2 - 6x$ to make it a perfect square.

10. The bearing of ***B*** from ***A*** shown in the figure is 140°. Find the bearing of ***A*** from ***B***.



11. Find the value of x based on the information given in the figure.



12. Write $5^3 = 125$ in logarithm form.

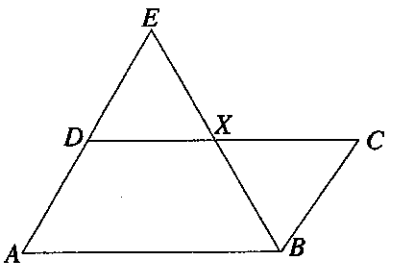
[*See page three*

13. Find the least integral value of x that satisfies the inequality $2x + 3 > 5$.

14. A portion of a frequency distribution is shown here. Write the class limits of the class interval 15–19.

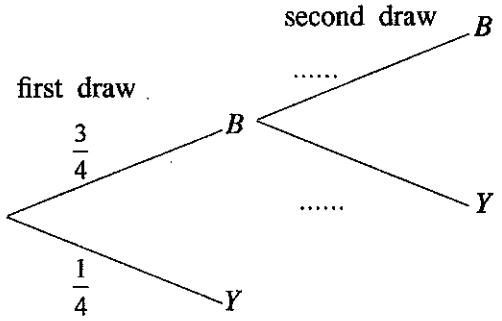
Class Interval	Frequency
10 – 14	3
15 – 19	5
20 – 24	4

15. $ABCD$ in the figure is a parallelogram. $AD=DE$, $E\hat{X}D = C\hat{X}B$ in the triangles DEX and BXC. Write two other sets of elements in these triangle which if equal will prove that the two triangles are congruent, and write the condition under which they are congruent.



16. A map has been drawn to the scale 1 : 50 000. What is the actual distance in kilometres between two cities which are 2 cm apart in the map?

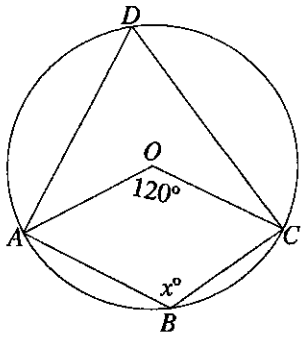
17. There are 3 blue balls and a yellow ball of the same size and shape in a box. Two balls are drawn randomly one after the other. Complete the given tree diagram using these information.



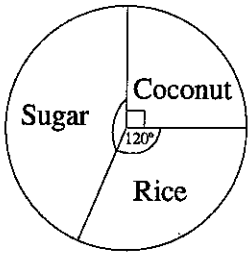
18. Write the equation of the straight line that passes through the two points (0 , 3) and (2 , 7), in the form $y = mx + c$.

[*See page four*

19. A, B, C and D are 4 points that lie on the circle with centre O. Find the value of x.



20. Information on the number of people that brought each of the items, rice, sugar and coconuts to a programme collecting these items to distribute to displaced persons is shown in this pie–chart.



(i) Find the magnitude of the central angle of the sector that represents those who brought sugar.

(ii) If 200 people brought coconuts, what is the total number of people who brought these items?

* * *

Question. No.	Marks
1	
2	
3	
4	
Total Marks	

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Department of Examinations, Sri Lanka

2562 – Mulika Piriven Final Examination – 2018 December
(New Syllabus)

NEW **06 E II**

(06) Mathematics
Paper II

Three hours

2018.12.24 /12.30 – 15.40

Additional Reading Time – 10 minutes

Use **Additional reading time** to go through the question paper, select the questions and decide on the questions that you give priority in answering.

* *Answer **all** questions in **Part A** and **five** questions from **Part B**.*

* Use $\frac{22}{7}$ for the value of π .

Index No :

.....

Part A

● Answer **all** the questions in part **A on this paper itself** and attach with answer scripts of part **B** and hand over.
*Each question carries **05** marks.* *(05 × 4 = 20 marks)*

1. In a meditation training programme, the training time increases daily as follows. On the first day 15 minutes, on the second day 20 minutes, on the third day 25 minutes and so on. If the above numbers indicating the training times are in an arithmetic progression,

(i) Find the common difference of this progression.

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(ii) Find the training time on the seventh day.

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(iii) On which day is the training time one hour?

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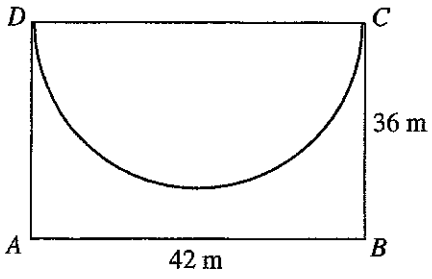
2. The figure shows a rectangular land *ABCD*. A semi–circular pond has been built in it such that *CD* is a boundary.



(i) What is the radius of the pond?

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(ii) What is the area of the land apart from the pond?

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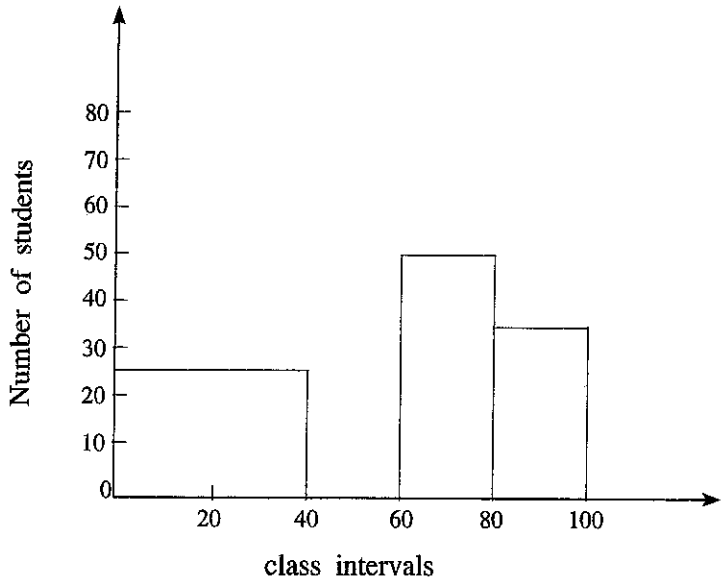
[See page two

3. An incomplete histogram showing the marks that a group of students obtained for mathematics at an examination is shown here. (40–60 indicates 40 or more and less than 60. Likewise the other class intervals)



(i) How many students obtained marks between 0 and 40?

.....

(ii) If there were 175 students in this group, complete the histogram.

(iii) If the students who passed in mathematics at this examination are those who obtained 40 marks or more, find the percentage of students who passed in Mathematics.

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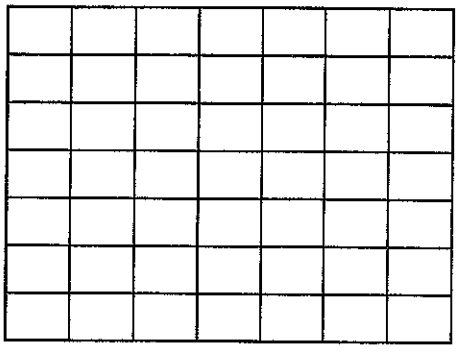
4. In a box there are 3 rose scented incense sticks and 2 jasmine scented incense sticks.

(i) Two incense sticks are drawn randomly from this box one after the other. (The first stick is not replaced)

Represent the sample space of this experiment in the given grid.



(ii) Encircle the event of both sticks that are drawn being jasmine scented and write its probability.

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[*See page three*

Please detach from here

Part B

● Answer only **five** questions from this section. **08** marks are awarded for each question.

(08 × 5 = 40 marks)

(The volume of a right circular cylinder of base radius r and height h is $\pi r^2 h$)

5. (i) Saman invested Rs. 50000 to buy shares in a company of which the market price of a share was 25 rupees. The company pays a dividend of 1.50 rupees per share annually.

(a) How many shares did he buy?

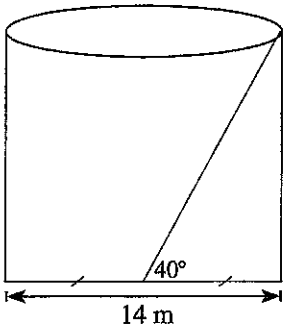
(b) What is the dividend income he gets at the end of the year?

(ii) A man gives $\frac{1}{4}$ of a land he owns to his wife and $\frac{1}{2}$ of the remaining portion to his son.

(a) What fraction of the total land is the land remaining after giving his wife?

(b) Show that the portion that he left with after giving his wife and his son is equal to the portion that he gave his son.

6. A water tank in the shape of a right circular cylinder of base diameter 14 m as shown in the figure, is filled with water to a height which is half the base radius.



(i) Find the height of the water in the tank.

(ii) If the water in the tank is completely removed due to maintenance purposes then find the volume of water that is removed.

After the water in the tank is removed, a ladder which is required for maintenance purposes is placed as shown in the figure, at the centre of the base, and leaning with an inclination of 40° to the horizontal.

(iii) Using trigonometric ratios, find the height of the tank in metres to the nearest first decimal place.

7. An incomplete table containing x and y values suitable to draw the graph of the function $y = 6 - (x + 1)^2$ is shown below.

x	-4	-3	-2	-1	0	1	2
y	-3	2	5	6	5	.....	-3

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

(b) Select a suitable scale and draw the graph of the above function on the given graph paper.

(ii) Using the graph,

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

(b) Find the roots of the equation $6 - (x + 1)^2 = 0$

(c) Find the interval of values of x for which the function is positive.

8. Do the following constructions using only a straight edge with a cm / mm scale and a pair of compasses.

(i) Construct the triangle ABC such that $AB = BC = 7$ cm and $A\hat{B}C = 90°$.

(ii) Measure and write the length of AC in centimetres to the first decimal place.

(iii) Construct the perpendicular bisector of AB.

(iv) Construct the circle that passes through the points A, B and C.

(v) Obtain the value of $\sqrt{2}$ in centimetres to the first decimal place using the length of AC.

[*See page four*

9. Of the crowd that arrived at a temple in an hour on a Poya day, 50 people offered flowers. 14 people offered lamps. 20 people offered incense sticks. 5 people offered only incense sticks and 10 people offered flowers and lamps. 8 people offered all of these. 5 people did not offer any of these. The number of people who offered flowers and incense sticks was equal to the number of people who offered only incense sticks.

(i) Represent this information in a Venn diagram.

(ii) How many people offered flowers and incense sticks?

(iii) How many people in total arrived at the temple in that hour?

(iv) How many people offered **at least two** of these types?

10. (i) The price of 4 guavas and 3 apples is 320 rupees. 5 apples can be bought with the money needed to buy 4 guavas.

(a) Take the price of a guava as Rs. x and the price of an apple as Rs. y and construct a pair of simultaneous equations.

(b) By solving them, find the price of a guava and the price of an apple separately.

(ii) Simplify : $\frac{2}{x-2} - \frac{1}{2(x-2)}$

(iii) Factorize : $4x^2 - 25$

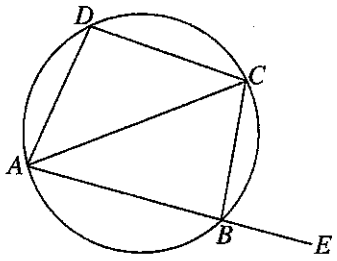
11. $ABCD$ is a cyclic quadrilateral. $D\hat{A}B = 80°$. Moreover, $D\hat{A}B$ and $D\hat{C}B$ are bisected by AC. The side AB has been produced to E.

(i) Giving reasons find the magnitude of each of the following angles.

(a) $B\hat{C}D$

(b) $A\hat{D}B$

(c) $C\hat{B}E$



(ii) Show that $AC^2 = AB^2 + BC^2$

12. Information on the amount of money spent by 40 grade 6 students of a certain school to buy short eats during the interval in a particular day is shown below.

Amount spent (Rupees)	0 – 20	20 – 40	40 – 60	60 – 80	80 – 100
Number of Students (frequency)	8	10	12	7	3

(i) According to the table, write the class interval, which contains the amounts spent by the most number of students.

(ii) Prepare a table which includes the mid–value (x), frequency (f) and fx columns.

(iii) There by find the mean amount of money spent by a student in a day.

(iv) Find the amount of money that can be expected to be spent in a day on short eats by 600 students who study in this school.

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