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சபரகமுவ மாகாண கல்வித் திணைக்களம்
Sabaragamuwa Provincial Department of Education

Third Term Test 2020   **Grade 11**

Mathematics I		*Two hours*

Index Number

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Important

*This question paper consist of 8 papers

*Write your index number in the appropriate places on this paper and on page three

*Answer all questions on this paper it self

*Use the space provided under each question for working and writing the answer

*Marks are awarded as follows
  In part A - 2 marks for each question
  In part B – 10 marks for each question

		Question numbers	Marks
Paper 1	A	1-25	
	B	1	
		2	
		3	
		4	
		5	
		Total	
Paper II	A	1	
		2	
		3	
		4	
		5	
		6	
	B	7	
		8	
		9	
		10	
		11	
		12	
		Total	

| Total marks (I and II)	
Final mark	%

Part A

Answer all questions on this paper itself . 2 marks are awarded for one question

01. Simplify. $\dfrac{1}{3x}+\dfrac{3}{x}$

02. To finish a certain work it needs 50 man days to be worked . What is the remaining part of the work in man days when 4 men worked for 9 days .

03. Following Venn diagram shows the information obtained from the members of a sports club about their willingness for volleyball and football games . Describe the shaded region in words .

volleyball → ⟨diagram⟩ ← football
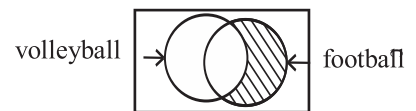
04. $2x - 1 \leq 3$ Solve the inequality and write all positive integer solutions of it .

05. In the diagram $AC = BC$. If $A\hat{C}D = 130^0$ find the value of $A\hat{B}C$.
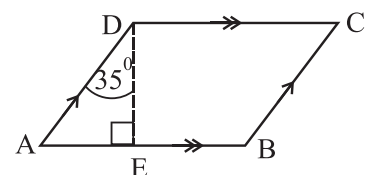
A

B x 130^0 D
   C
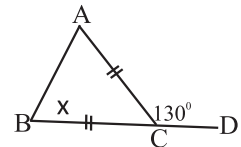
06. Express in logarithm form $2^{-3} = 0.125$

07. Find the time it takes to fill an empty tank with water by a tube in which water is flowing at the rate of 40 liters per a minute.

08. Find the factors. $100 - x^2$

09. ABCD is a parallelogram . Find the value of $B\hat{C}D$

D C

35^0

A B
  E

10. If $A = \begin{bmatrix} 3 & -1 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 1 \\ 1 & 3 \end{bmatrix}$ find AB.

11. Showing in the given figure, there is a semicircular sector upon one side of an equilateral triangle. Find the perimeter of the composite figure.

14 cm

12. The assessed annual value of a shop building is Rs. 60 000. Rs. 2 250 was paid as rates for a quarter for it . What is the percentage of rates charged by that local government authority?

13. Fill in the blanks with suitable geometrical terms .

The line joining the mid points of two sides of a triangle is ………………… to the remaining side , and it is equal to the …………….. of the length of the remaining side .

14. Find the common ratio of the geometric progression in which the first term is 2 and the fourth term is 54 .

15. AB is a chord of the circle in which the center is O. Mid point of AB is T. According to the data shown on the diagram mark (✔) if the expression in the table is correct and mark (✗) if it is wrong.

$A\hat{T}O = 90^0$	
$A\hat{O}T = B\hat{O}T$	

16. Write the equation of the straight line PQ shown on the diagram.

17. Triangles ABC and PQR are congruent. According to the data shown on the diagram,

(i) State the case of conguency
(ii) What is the equal side for the side BC?

18. What is the probability of having an odd number when a fair cuboid shaped dice in which numbers from 1 to 6 are marked, is tossed once.

19.	A,B,C,D are four points on the circle in which the center is O . According to the given data find the values of x and y
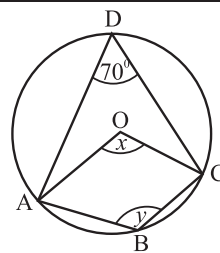
|	
20.	Solve $5 - \dfrac{6}{x} = 2$

|	
21.	AP and BQ are two houses and P and Q are two windows of them.AB is a flat land. According to the data marked on the diagram name the angle of depression of A when observed from Q and find the magnitude of it .
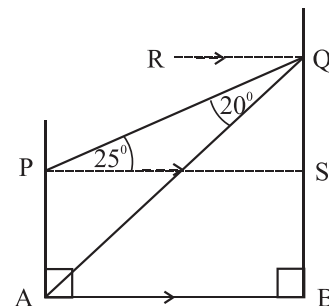
|	
22.	The histogram given here represents the information about the number of hours spent for studying at home by a group of students. Accordingly complete the blanks of the given table.

Hours	number of students
0-2	4
2-4	----
4-8	----
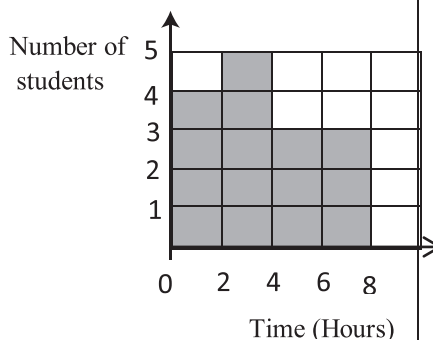
23.	P,Q,R,S, are points on the circle in which the center is O . Find the value of x
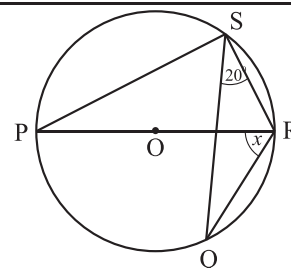
24.	The area of the cross section of a right solid prism is 240 cm^2 . If the height of it is 15 cm find the volume of the prism

|	
25.	ABCD is a rectangular lamina . A small hole P is to be made there with a 7 cm distance from the AB edge and 10 cm distance from the point D . Show by a rough sketch on this diagram , how to locate the point P
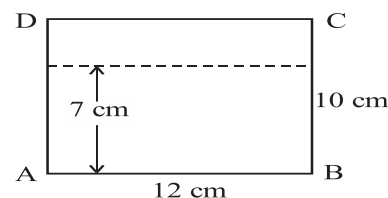
Part B

01. Raja spends a certain portion of the annual profit of his business for welfare activities . $\frac{1}{3}$ of it is to be spent for religious activities and $\frac{1}{4}$ is for developing the education facilities of the area . He intends to donate $\frac{2}{5}$ of the remainder to volunteer organizations in the area .

    i.   What fraction of the total amount is spending for religious and educational activities ?

    ii.   What fraction of the whole amount is separated for volunteer organizations ?

    iii.   If Rs. 30 000 is remaining after separating for religious and educational activities and volunteer organizations , what is the total amount of money separated for all welfare activities.

2.   A rough sketch of a compound in the shape of a sector is shown in the diagram

    i.   Find the length of the arc AC

    ii.   Flower plants are planted in the area of the segment separated by the straight line AC .What is the area of that segment ?

14 cm
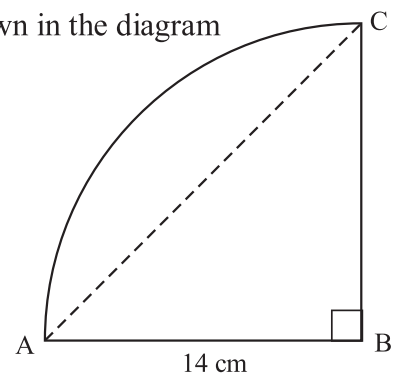
    iii.   Another rectangular part equal to three times of the area where flowers are planted , is to be added to the compound . AB must be one boundary of it . Draw the rough sketch of it on the given diagram showing the relevant measurements

    iv.   Find the perimeter of the whole compound including the newly added part also .

3. Mayura invested money on shares of companies A and B . The market price of a share and the dividend paid per a share in each company is shown in the table given below

	Market price of a share	dividend per a share
Company A	Rs. 80	Rs. 6
Company B	Rs. 120	Rs. 8

   i.   If 240 shares of company A is bought find the dividend income of received from A

   ii.   If the dividend income of company B is Rs. 720 find the amount invested in company B

   iii. Find the total amount invested in both companies .

   iv. If he has invested the total amount in company A only , by what amount the dividend income would be increased

4. (a) Number of marks obtained by grade 10 students in a test for aesthetic subject are as follows

       2 ,2 ,3 ,3 ,4 ,6 ,6 ,7 ,8 ,8 ,8 ,9 , 9 ,10 , 12

Find the first and third quartiles of this group of marks, and then find the interquartile range of it

(b) The number of students in the above group is separated in to four equal class intervals

Marks obtained	students	angle of the sector
1 - 3	4	96^0
4- 6	3	72^0
7- 9	---	----
10-12	---	----
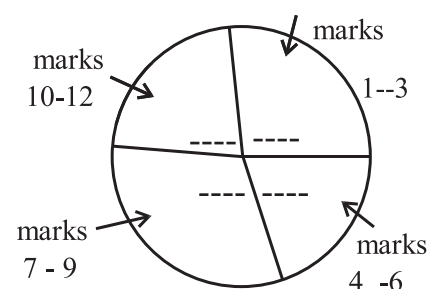
   i.   Complete the column of students

   ii.   Complete the column "angle of the sector"

   iii. According to the completed columns enter the magnitudes of angles in the pie chart

   iv. Because of a correction of marks ,angle of the sector of the class interval $4 - 6$ is changed to 120^0. How many students are increased in that class interval ?

5.   (a) Ruvini bought 5 plants of Anthuriams .Three of them are blossoming red flowers(R) and two of them are blossoming white flowers(W). To plant them she bought five flower vases also.Three of the vases are red (R) in colour and two vases are black in colour (B)

i.   One plant is planted by selecting a plant and a vase at random. Mark the sample space of all possible outcomes of selecting a plant and a vase, by" × 'marks on the given grid.

Colour of the vase

Colour of the flower
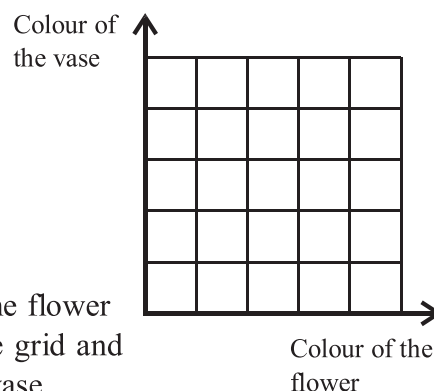
ii. Indicate the events that shows selecting the colour of the flower and the colour of the vase are same by encircling it in the grid and find the probability of selecting a same colour plant and a vase.

(b) There are 12 workers in a certain work place. 8 workers out of them are trained workers and the others are untrained. Manager of the work place selected a worker at random and appointed him to a certain work to finish within one week .

i.   Complete the following tree diagram to represent the probabilities of the selected worker being a trained one or untrained one

Trained worker

- - - - -
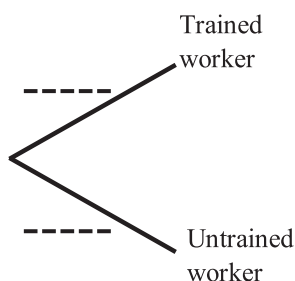
Untrained worker

ii.   It is believed that ,if the selected worker is a trained one the probability of finishing the given work in one week is $\frac{3}{4}$ and if the selected worker is an untrained one ,the probability of finishing the work in one week is $\frac{1}{2}$ .Extend the given tree diagram to represent the relevant probabilities .

iii. Find the probability of the selected worker being able to finish the given work in one week time .