



ලේඛන අංකය

11

Second Term Test- 2018

Mathematics - I

පාසලේ නම :

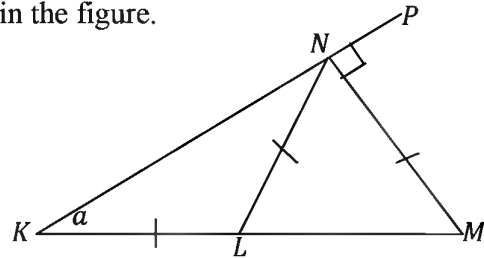
Time – 2 hours

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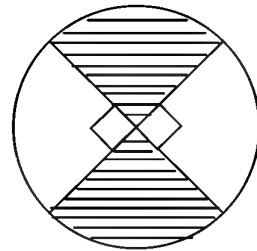
Answer all questions here itself.

(01). A motor vehicle travels at uniform speed of 40 km per hour . Find the time it takes to Travel 120 km.

(02). Find the value of a , according to the information in the figure.

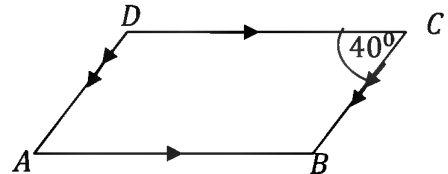


(03). The area of the circle with center o is 616 cm^2 . Two Sectors of 90° are shaded . Find the area of the shaded parts.



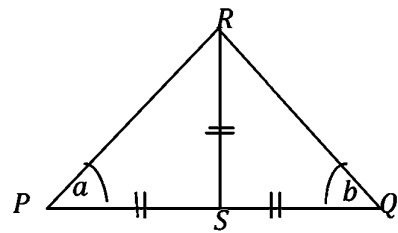
(04). Solve $\frac{x+3}{4}=2$

(05). Find the value of $\hat{A}D$, according to the information in the figure.



(06). Find the least common multiple of , $3xy$ and $9y^2$

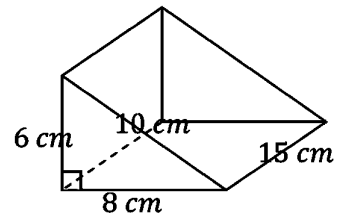
(07) .Find the value of $a + b$, according to the information in the PQR Triangle.



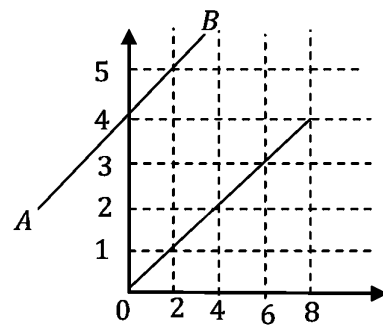
(08) .Simplify, $\frac{x}{2} + 3y + \frac{x}{2} - y$

(09) .The sample space of a random experiment with equally likely event is S, If A is an event And $P(A) = \frac{1}{3}$, $n(A) = 6$ Find $n(S)$.

(10) . A prism with a triangular cross section is given in the Figure with measurements . Draw the face with measurements which has maximum area.



(11) . Two straight lines given on the Cartesian plane are parallel lines . Write the equation of the straight line AB



(12) . A person pays Rs 3000 as the simple interest for an year , for a loan which is taken at 6% Annual simple interest rate. Underline the expression , which represents the loan amount,

(i). $3000 \times 100 \times 6$

(ii). $\frac{100}{6} \times 3000$

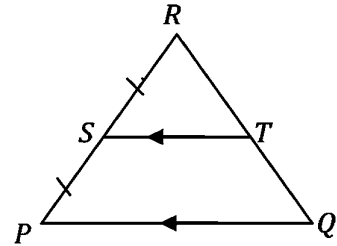
(iii). $\frac{6}{100} \times 3000$

(iv). $\frac{100}{3000} \times 6$

(13) .According to the information in the figure.

(i). Name a line segment equal to RT ?

(ii) If $ST=6\text{cm}$ Find the length of PQ ?

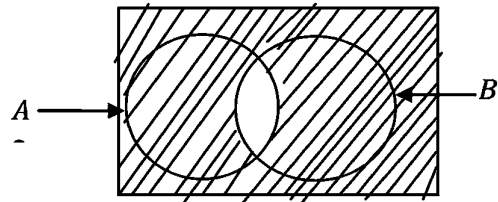


(14) . The circumference of the base of a right circular cylinder is 18 cm and right height is 10 cm. Find the area of the curved face of the cylinder ?

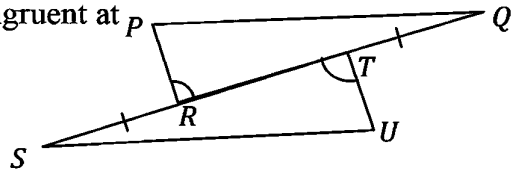
(15). Factorize, $3m^2 - 12$

(16) . It is estimated that 10 persons need 6 days to complete a certain work . How many men are Needed to complete the work within 4 days.

(17) . Express the shaded area in set notation.

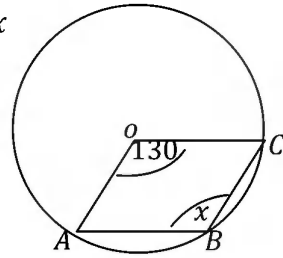


(18) . In the figure $TQ=RS$. What are the remaining two elements of Triangles PQR and SUT, to show that they are congruent at the case of S.A. A.



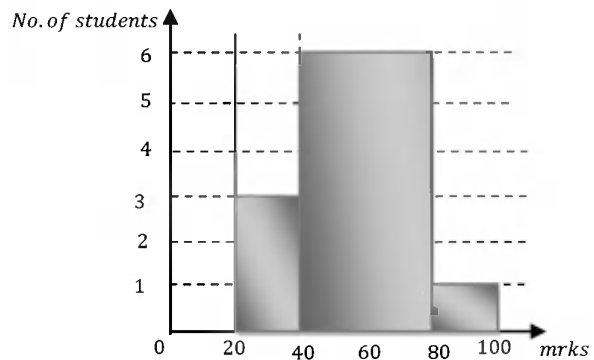
(19) . A duty of 12 %is charged when an item is imported . Find the value of an item worth Rs 25 000 after paying the duty tax.

(20). A, B and C are three points on the circle. Find the value of x According to the information in the figure.



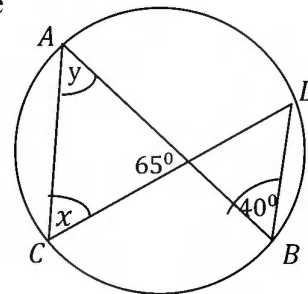
(21). Solve the inequality $3x + 2 \geq 8$ and write the minimum value that can be taken for x

(22). The histogram represents marks, taken by a group of students for a certain test. Find the total number students.



(23). AB and CD are two straight lines, According to the information in the figure,

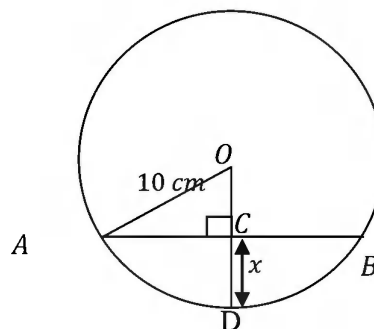
- (i). Find the value of x
- (ii). Find the value of y



(24). Write 15th term of the progression 4, 8, 16, 32, as a power.

(25). In the circle with center O, $\angle OCA = 90^\circ$,

AB = 12 cm, Find the length of CD (x)



Part B

Answer all questions here itself,

(01). Mr Mohomad deposits $\frac{1}{4}$ of his monthly income in a bank. $\frac{1}{3}$ of the remaining is separated for His son's education and the remainder is kept with him for day today needs.

(i). what is the remainder of income as a fraction after depositing in the bank. (2 marks)

(ii). What is the amount of money allocated for his son's education as a fraction of total salary. (2 marks)

(iii). What is the fraction of total income use for day today needs. (2 marks)

If he allocated Rs. 20 000 for his son's education,

(i). Find the amount of money allocated for day today needs. (2 marks)

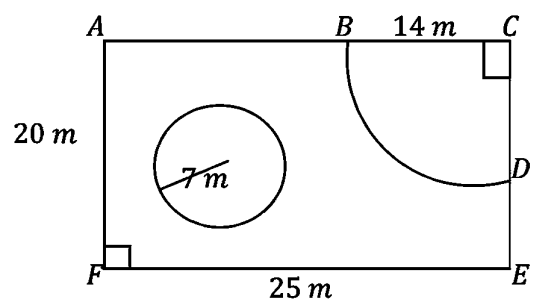
(v). Calculate the total income of Mr Mohomad . (2 marks)

(02). The figure shows how a circular shape pond is located in the middle of garden and a flower bed is located at one corner of the garden. bed. (2 marks)

(i). Find the length of the arc BD of the flower

(ii). Find the area of the pond. (2 marks)

(iii). Find the total cost of growing grass of the ground except the pond and flower bed , when The cost of 1m^2 is Rs. 200 . (3 marks)

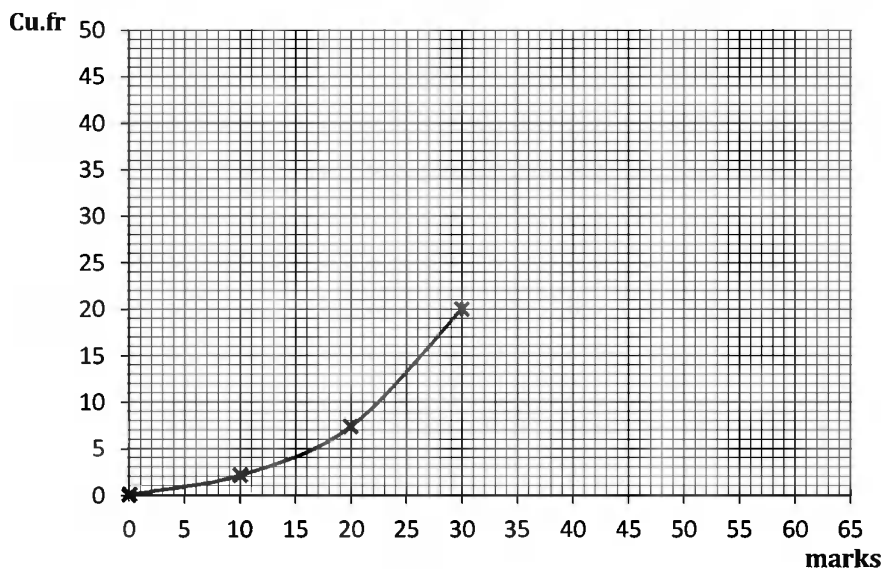


(iv). The area of the garden is increased with a rectangular shape part such that AB is a boundary , and the area is equal to the area of the region which the grass is grown . Draw the new part added in the diagram with measurements. (3 marks)

(03). The following unfilled cumulative frequency table is prepared with marks taken by a group of students for a certain test.

Marks	No. of students	Cumulative
0-10	2	2
10-20	.....	.....
20-30	.....	.....
30-40	11	30
40-50	7	37
50-60	3	40

The in completed cumulative frequency curve is drawn by using above data .



(i). Fill in the blanks of the table . (2 marks)

(ii). Complete the cumulative frequency curve. (2 marks)

(iii). Find the 2nd quartile by using the cumulative curve. (3 marks)

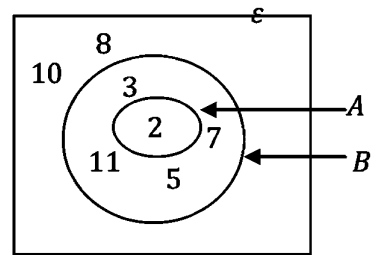
(iv). What is the minimum mark should be taken if 25% of students with highest marks are selected as passed students (3 marks)

(04). Answer the given questions using the data in the ven diagram.

(i). Find $n(A)$ (1 marks)

(ii). Find $n(B')$ (1 marks)

(iii). Write the set $A' \cap B$ (1 marks)



(iv). A student says that there is an error of the set which is written in the set builder form (2 marks)

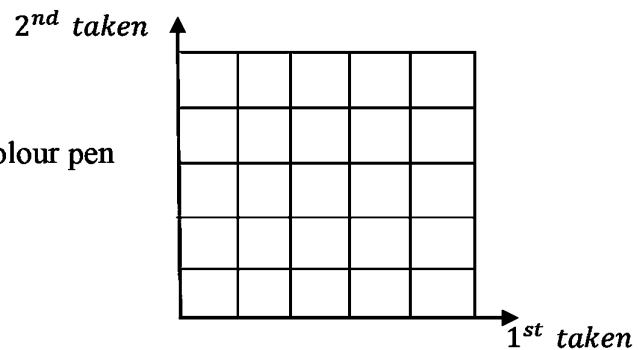
$$A' \cap B = \{x: x \text{ is a prime number } 2 < x < 11\}$$

Re correct and write the set.

(b). There are 3 blue colour pens and 2 red colour pens in bag . One pen is taken out randomly And colour is noted then put it into the bag , again a pen is taken out colour is noted.

(i). Show the sample space of above event in the grid. (3 marks)

(ii) Incircle the events of obtaining same Colour pens in both times. (1 marks)



(iii). Find the probability of obtaining same colour pen in both times. (1 marks)

(05).

(a). An urban council charges Rs. 9 000 as rate per quarter for a building which is assessed for Rs. 72 000 . Find the annual rate percentage. (3 marks)

(b).Sunil invests money to buy shares of Rs. 50 each of a company which pays Rs. 4 as dividend per share.

(i). If Sunil received Rs 12 000 as dividend , Find the amount, invested by him. (3 marks)

(ii). If he sells the shares at Rs. 55 each after obtaining the dividend income , Find the capital gain received by him. (2 marks)

(iii). Find the total annual income received by him , by investing money in the share market.
(2 marks)



Second Term Test - 2018

Grade

11

Mathematics II

පාසලේ නම :-

ඇතුළත්වීමේ අංකය :-

Time: 3hrs

Paper II

- Answer ten questions selecting five questions from part A and five questions from part B.
- Each question carries 10 marks.
- The volume of a cylinder of radius r and height h is $\pi r^2 h$ and area of the curved face is $2\pi r h$

Part A

(01). A person obtains a loan of Rs .240 000 from a rural bank for repairing the house and he pays the loan with the interest in equally monthly installments within five years. The bank charges 12 % annual interest rate and it is calculated under the method of reducing balance method. Find the value of one installment.

(02). In a quadratic function some values of y respect to x are given in the table.

x	-4	-3	-2	-1	0	1	2
y	-2	3	6	7	6	.....	-2

- Find the value of y , when $x = 1$ by considering the symmetry of the graph.
 - Draw the graph by taking 10 small divisions along both x and y axis as 1unit using a graph paper.
 - If the function is given $y = k - (x + 1)^2$, Find the value of k by using the coordinate Of the minimum point of the graph.
 - Write the minimum value and maximum values of the function in the range of x is $0 \leq x \leq 2$
- V Find a value of x when $y = 0$. hence find the value of $\sqrt{7}$ to the nearest first decimal Place.

(03). A mobile phone company distributes their new mobile phone among 15 centers. The following table represents the information of number of mobile phones sold during a month of 30 days.

Number of mobile phones sold	40-54	55-69	70-84	85-99	100-114	115-129	
Number of days(f)	2	4	5	8	7	4	

- I. What is the modal class of the distribution.
- II. Using a suitable assumed mean or any another method, find the mean number of mobile Phones sold per day.
- III. A company sells a mobile phone for Rs 6500, find the total income received by the Company in that month.
- IV. 95 % of the income is kept by the company and the rest amount of income is distributed Among 15 centers equally. Find the amount of money received by one center.

(04). The total price of 3 shirts and a trouser is Rs. 1785 and the total price of a shirt and 3 trousers is Rs. 1955.

- i. Build up a pair of simultaneous equations, by taking the price of a shirt is Rs. x and price of trouser is Rs. y
- ii. Solve them and find the price of a shirt and a separately.

The total price of “ n ” number of shirts and a trouser is less than Rs. 1785

- iii. Write an inequality by including the variable only " n ".
- iv. Solve the inequality of (iii) and write the maximum value that can be taken for n

(05). The height of a right circular cylindrical vessel cylinder is 6 units more than it's radius r . If the area of curved surface is 220 square units.

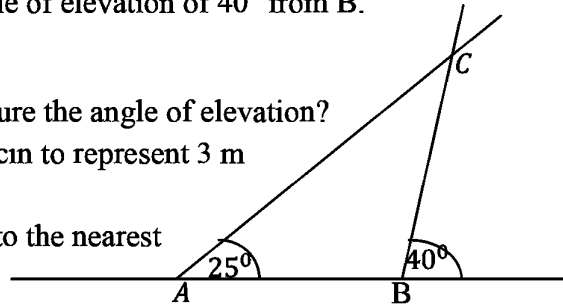
(i). Express the height of the cylinder in terms of r .

(ii). According to the above information, build up a quadratic equation and find the radius of the vessel to the nearest whole number.

$$(\sqrt{11} = 3.32, \pi = \frac{22}{7})$$

- (06). The following diagram is drawn to find the height of a school building. The top of a building which is situated at the end of playground can be observed from A by the angle of elevation of 25° . When moves 15 m away from A, towards the building, the point B is met and the top of the building can be observed by the angle of elevation of 40° from B.

- What is the instrument used to measure the angle of elevation?
- Draw the scale diagram by taking 1 cm to represent 3 m
- Express above scale as a ratio
- Find the height of the stair building to the nearest meter by using the scale diagram.



Part B

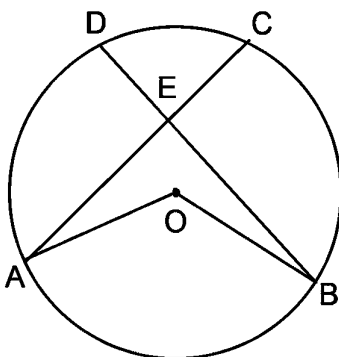
- (07). In an arithmetic progression the 2nd term is 15 and 9th term is 71. Show that the sum of all terms from 3rd term to 20th term is 1638.

- (08). Construct the following by using a cm/mm straight edge scale and a pair of compasses.

Show the construction lines clearly.

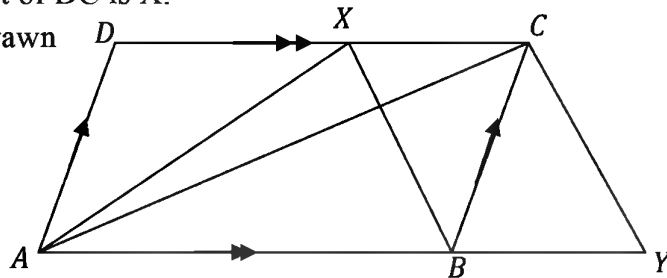
- Draw the straight line segment AB of 3.5 cm.
- Draw the perpendicular bisector of AB and name the point where it meets AB as O. Construct a circle by getting O as the center and OA as the radius.
- Mark the point C on the circle such that AC=3.5 cm and complete the triangle ABC
- Write a relation among the sides of the above triangle and show that $BC = \sqrt{30}$ by using the relation.
- Hence, obtain an approximate value for $\sqrt{30}$

- (09). The chords AC and BD intersect at E in the circle of center O. Copy down the figure and by joining the points as you need show that $\angle AOB + \angle COD = 2\angle AEB$



(10). ABCD is a parallelogram. The mid point of DC is X.

AX , BX and AC are joined . The line drawn Parallel to XB from C meets the line AB produced , at Y.



(i). Copy down this diagram to your answer

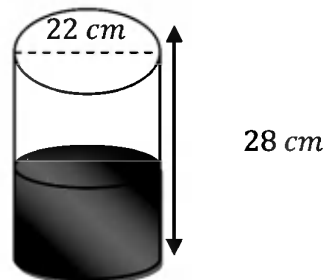
Sheet and indicate two data which is not given in the diagram.

(ii). Prove that, $\Delta XBC \equiv \Delta BCY$

(iii). Show that , BYCX is a parallelogram .

(iv). Show that , area of $\Delta BYC =$ area of ΔADX

(11). (a). The inner diameter of a right circular cylindrical shaped vessel is 22 cm and height is 28 cm . Exact half of the vessel is filled with water. When a cube which the length of a side is 'a' cm ,is zinc in the water slowly, the difference of the water level was 3.5 cm. Find the length of a side of the cube.

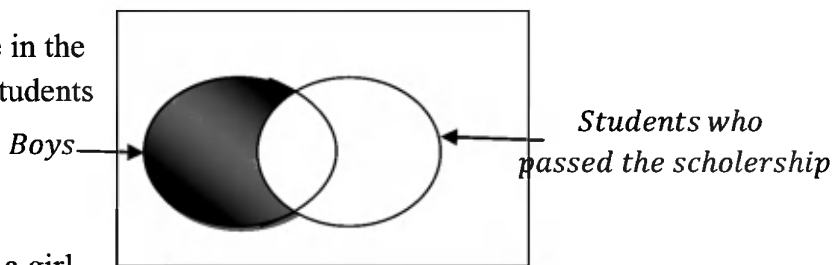


(b). Find the value of $\sqrt{672} \times 2.54$ using logarithmic tables.

(12).(a). There are 42 students in a grade 6 class of a certain school. 18 were girls of them and 10 of girls have passed the scholarship examination from it and also there are 6 boys who have passed the scholarship examination.

(i). Indicate this information in the given venn diagram.

(ii). Explain the students who are in the shaded region . How many students are there ?



(iii). Out of 42 students , Find The probability of selecting a girl Who failed the scholarship examination.

(b). If A and B are two independent events , $P(A) = \frac{1}{5}$ and $P(A \cap B) = \frac{3}{50}$

(i). Find P(B)

(ii). Find P(AUB)



பலாண் அபிவிருத்தி துறைமுகம் - வட மத்திய மாகாணம்
மாகாணக் கல்வித் திணைக்களம் - வட மத்திய மாகாணம்
DEPARTMENT OF EDUCATION - NORTH CENTRAL PROVINCE



Grade
11

SECOND TERM TEST - 2018

SUBJECT - Mathematics -I

School :

Name of the Student/ Index No :

Time: 2 hr.

Part - A

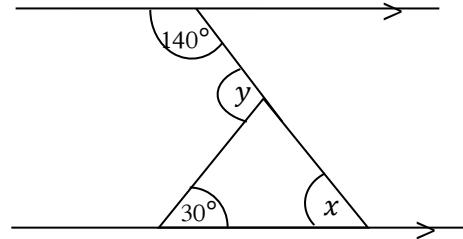
❖ Answer all the questions on the paper itself.

1) When buying an item, 15% of VAT is added. Find the amount of VAT when buying an item for Rs. 20 000.

2) Express $5^4 = 625$ in logarithmic form

3) According to the information given in the figure,

- Find the value of x
- Find the value of y



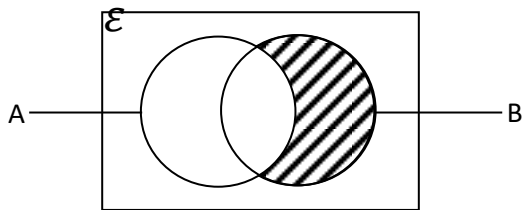
4) It takes 6 days to complete a certain task by 5 men. Find the number of days needed to complete the half of the task by 3 men.

5) Underline the co-ordinates which satisfy both inequalities $x < 2$ and $y < x$.

1. (1,0) 2. (-2,2) 3. (2,0) 4. (-1,-2)

6) Simplify $\frac{4y}{5xy} \times \frac{10x^2y}{3}$.

7)



Describe the shaded region in words.

- $\mathcal{E} = \{ \text{Students of Grade 10} \}$
 $A = \{ \text{Students who study Music} \}$
 $B = \{ \text{Boys} \}$

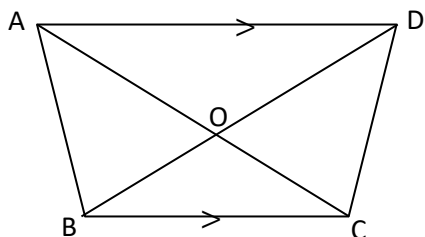
8) Find the least common multiple of $4x^2y$ and $8xy'$

9) 10 identical cards which are numbered are given below.



Find the probability of getting number 4.

10)



According to the information in the figure"

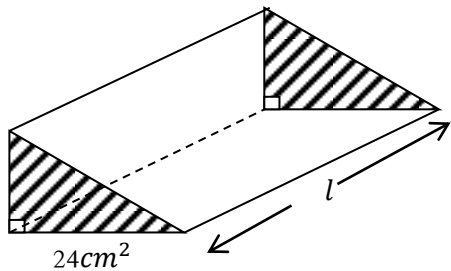
- Name a triangle equal to the area of the triangle BCD'
- Name a triangle equal to the area of the triangle ABO'

11) If the interquartile range is 8 and the first quartile is 3 of a group of data, find the third quartile of them.

12) Underline the value which is approximately equal to the expression $\sqrt{3} \times \sqrt{4}$

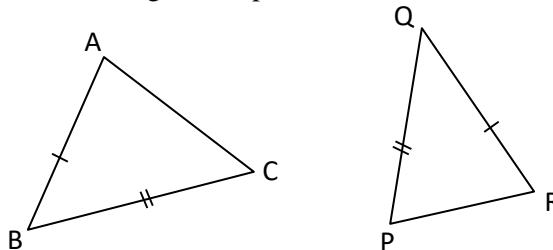
1. 3.4 1. 12 3. 2.3 4. 3.0

13) The area of the cross section of the prism is 24cm^2 and its volume is 240cm^3 , find the length of the prism.

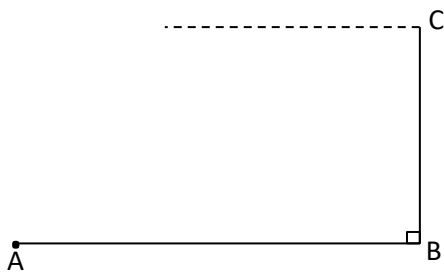


14) Two factors are shown in the diagram which are needed to show that the triangles ABC and PQR are congruent. Select the remaining equal pair of components of two triangles and put a tick in the relevant box.

- i. $\hat{A}BC = \hat{P}RQ$
- ii. $\hat{C}BA = \hat{R}QP$
- iii. $\hat{A}CB = \hat{R}PQ$
- iv. $AC = PQ$

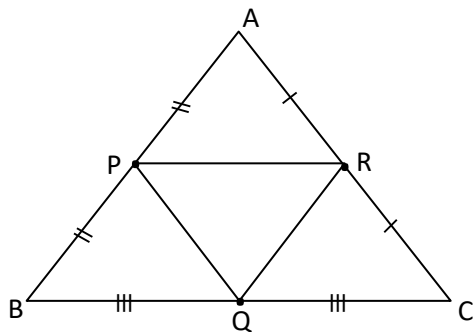


15) A and B are two locations on the horizontal ground. The point A is observed from window C at the angle of the flat which is on point B depression 42° ,
 $AB = 20$. Include the above data on the given incomplete diagram.

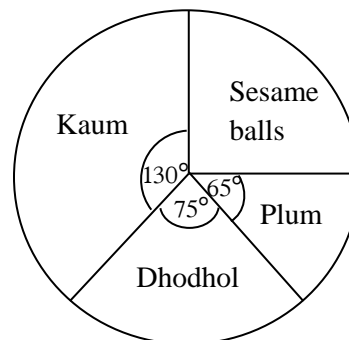


16) Solve $2 - \frac{x}{3} = -1$

17) The perimeter of the triangle PQR is 18cm. Find the perimeter of the triangle ABC'

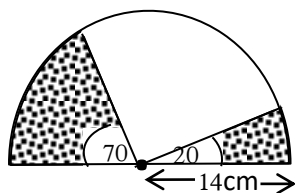


18) The pie chart shows how sweets were sold in a sweet shop in a certain day. Find the angle at the center of the sector of sesame balls.

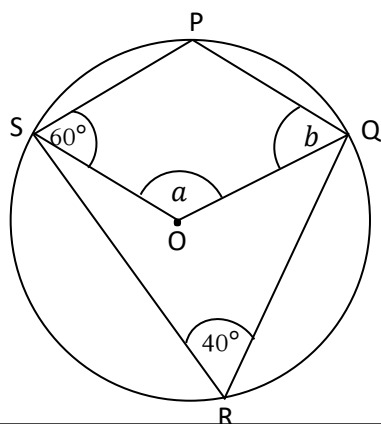


19) Write the equation of straight line which passes through the point (0 , -3) and parallel to the line $y = 3x + 5$.

20) The radius of the semi circular figure of centre O is 14cm. Find the area of the shaded region.



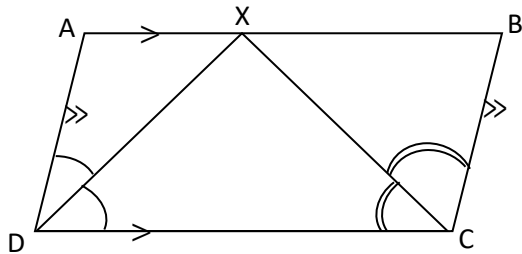
21) In the circle of centre O, P, Q, R and S are four points on the circle.



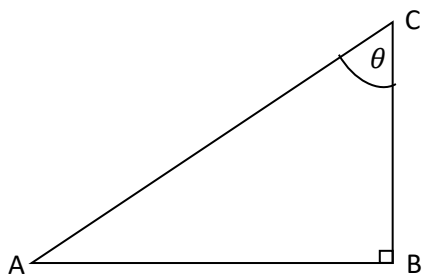
According to the information given in the figure,

- i. Find the value of a .
- ii. Find the value of b .

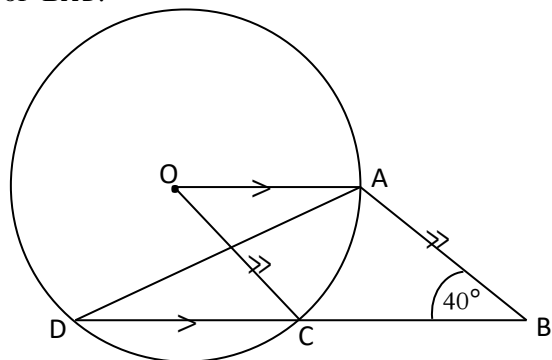
- 22) ABCD is a parallelogram. The bisectors of the angles \widehat{ADC} and \widehat{BCD} meet at X on the line AB. Find the Magnitude \widehat{DXC} .



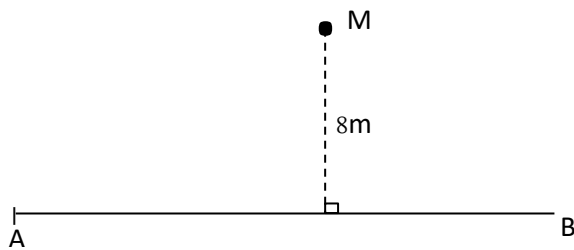
- 23) In the diagram, If $\cos \theta = \frac{5}{13}$ Write the ratio for $\tan \theta$.



- 24) The center of the circle given in the figure is O. OABC is a parallelogram. DCB is a straight line. If $\widehat{ABD} = 40^\circ$ Find the magnitude of \widehat{BAD} .



- 25) The following sketch shows AB horizontal road and a power post M, 8m away from the road. Using the knowledge of loci, represent the way of finding the points 10m away from the point M on the road A B.



Part - B

❖ **Answer all questions.**

1.) The rural development society decides to separate $\frac{2}{5}$ of an amount for repairing the building, $\frac{1}{4}$ of an amount for welfare of members and $\frac{1}{7}$ of the remainder for charity in a certain year.

i. Find the total amount separated for repairing building and welfare as a fraction from the whole amount. (02 mark)

ii. What is the amount separated for charity as a fraction of the whole amount (02 mark)

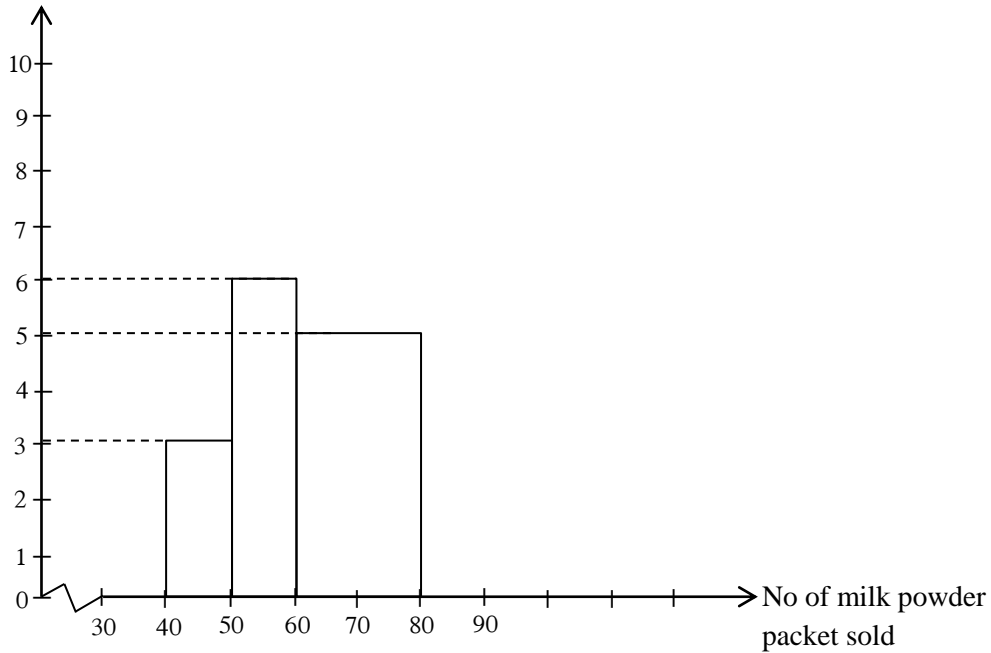
iii. If the remaining amount is Rs 24 000, find the total amount received by the society. (03 mark)

iv. If $\frac{1}{4}$ of the amount separated for welfare is to be added to the amount separated for charity due to a suggestion, find the total amount separated for charity. (03 mark)

3.) The incomplete table and histogram are prepared using data of selling milk powder packets in a certain shop of last month April.

Number of milk powder packets sold	40-50	50-60	60-80	80-110	110-120
No of days	3	.....	.....	9	2

No of days



- i. What is the number of milk powder packets sold during this month? (01 mark)

- ii. Fill in the blanks of the table. (02 mark)
- iii. Complete the histogram (02 mark)
- iv. Draw the frequency polygon using the above histogram. (03 mark)

- v. Express the number of days which are sold less than 60 milk powder packets as a percentage. (02 mark)

4.) when a certain type of motorcycle is imported, the government charges a duty of 20% . After paying the duty the value of a motorcycle is Rs 240 000.

- i. Find the price of the motorcycle before paying the duty tax. (02 mark)

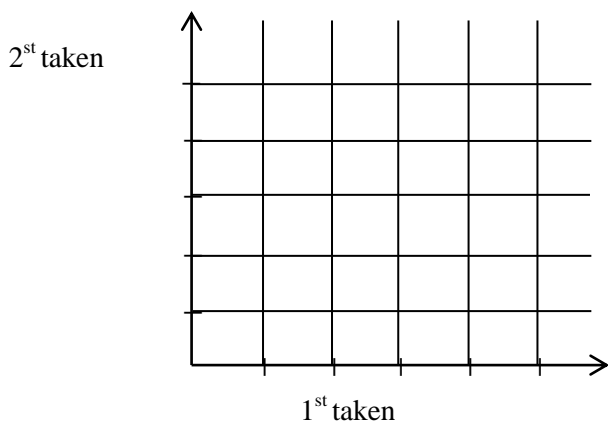
- ii. The transport cost and other expenditure for a motorcycle is Rs 4000. Then the seller marks the price of a motorcycle keeping a profit of 5%. Find the marked price of a motorcycle. (03 mark)

- iii. When selling a motorcycle on cash price, a discount of Rs 2562 is reduced. Find the percentage of the discount. (02 mark)

- iv. If the seller sells 20 motorcycles in a certain month, find the profit he received (03 mark&

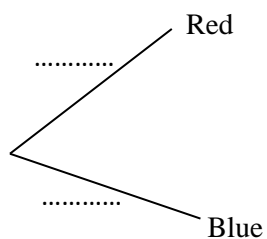
(05). a). There are 2 red bulbs, 3 blue bulbs in a box. All are identical bulbs. A bulb is taken out randomly without putting it in to the box another bulb is taken out.

- i. Show the sample space of selecting two bulbs in the grid. (02 mark)



- ii. Encircle the elements of taking same color bulbs in both time. (01 mark)

b). The incomplete tree diagram of taking the first bulb is as follow.



- i. Complete the tree diagram. (02 mark)
- ii. The probability of lighting a red bulb is $\frac{7}{8}$ and the probability of lighting a blue bulb is $\frac{1}{5}$. Extend the tree diagram according to above statements. (02 mark)
- iii. Find the probability of lighting a selected bulb. (03 mark)



Second Term Test - 2018

Grade

11

Mathematics II

පාසලේ නම :-
ඇතුළත්වීමේ අංකය :-

Time: 3hrs

Paper II

- Answer ten questions selecting five questions from part A and five questions from part B.
- Each question carries 10 marks.
- The volume of a cylinder of radius r and height h is $\pi r^2 h$ and area of the curved face is $2\pi r h$

Part A

(01). A person obtains a loan of Rs .240 000 from a rural bank for repairing the house and he pays the loan with the interest in equally monthly installments within five years. The bank charges 12 % annual interest rate and it is calculated under the method of reducing balance method. Find the value of one installment.

(02). In a quadratic function some values of y respect to x are given in the table.

x	-4	-3	-2	-1	0	1	2
y	-2	3	6	7	6	.....	-2

- Find the value of y , when $x = 1$ by considering the symmetry of the graph.
 - Draw the graph by taking 10 small divisions along both x and y axis as 1 unit using a graph paper.
 - If the function is given $y = k - (x + 1)^2$, Find the value of k by using the coordinate Of the minimum point of the graph.
 - Write the minimum value and maximum values of the function in the range of x is $0 \leq x \leq 2$
- V Find a value of x when $y = 0$. hence find the value of $\sqrt{7}$ to the nearest first decimal Place.

(03). A mobile phone company distributes their new mobile phone among 15 centers. The following table represents the information of number of mobile phones sold during a month of 30 days.

Number of mobile phones sold	40-54	55-69	70-84	85-99	100-114	115-129	
Number of days(f)	2	4	5	8	7	4	

- I. What is the modal class of the distribution.
- II. Using a suitable assumed mean or any another method, find the mean number of mobile Phones sold per day.
- III. A company sells a mobile phone for Rs 6500, find the total income received by the Company in that month.
- IV. 95 % of the income is kept by the company and the rest amount of income is distributed Among 15 centers equally. Find the amount of money received by one center.

(04). The total price of 3 shirts and a trouser is Rs. 1785 and the total price of a shirt and 3 trousers is Rs. 1955.

- i. Build up a pair of simultaneous equations, by taking the price of a shirt is Rs. x and price of trouser is Rs. y
- ii. Solve them and find the price of a shirt and a separately.

The total price of “ n ” number of shirts and a trouser is less than Rs. 1785

- iii. Write an inequality by including the variable only " n ".
- iv. Solve the inequality of (iii) and write the maximum value that can be taken for n

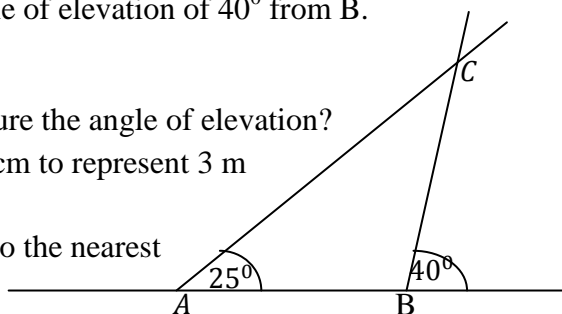
(05). The height of a right circular cylindrical vessel cylinder is 6 units more than it's radius r . If the area of curved surface is 220 square units.

- (i). Express the height of the cylinder in terms of r .
- (ii). According to the above information, build up a quadratic equation and find the radius of the vessel to the nearest whole number.

$$(\sqrt{11} = 3.32, \pi = \frac{22}{7})$$

- (06). The following diagram is drawn to find the height of a school building. The top of a building which is situated at the end of playground can be observed from A by the angle of elevation of 25° . When moves 15 m away from A, towards the building, the point B is met and the top of the building can be observed by the angle of elevation of 40° from B.

- What is the instrument used to measure the angle of elevation?
- Draw the scale diagram by taking 1 cm to represent 3 m
- Express above scale as a ratio
- Find the height of the stair building to the nearest meter by using the scale diagram.



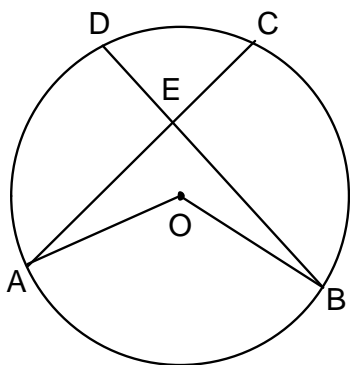
Part B

- (07). In an arithmetic progression the 2nd term is 15 and 9th term is 71. Show that the sum of all terms from 3rd term to 20th term is 1638.

- (08). Construct the following by using a cm/mm straight edge scale and a pair of compasses. Show the construction lines clearly.

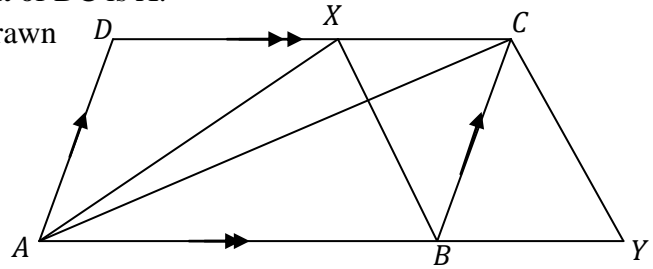
- Draw the straight line segment AB of 3.5 cm.
- Draw the perpendicular bisector of AB and name the point where it meets AB as O. Construct a circle by getting O as the center and OA as the radius.
- Mark the point C on the circle such that AC=3.5 cm and complete the triangle ABC
- Write a relation among the sides of the above triangle and show that $BC = \sqrt{30}$ by using the relation.
- Hence , obtain an approximate value for $\sqrt{30}$

- (09). The chords AC and BD intersect at E in the circle of center O. Copy down the figure and by Joining the points as you need show that $\hat{A}OB + \hat{C}OD = 2\hat{A}EB$



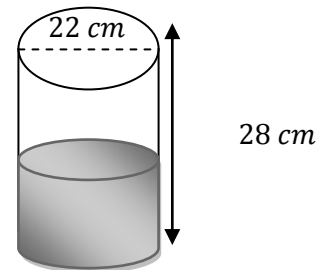
(10). ABCD is a parallelogram. The mid point of DC is X.

AX, BX and AC are joined. The line drawn parallel to XB from C meets the line AB produced, at Y.



- (i). Copy down this diagram to your answer sheet and indicate two data which is not given in the diagram.
- (ii). Prove that, $\Delta XBC \cong \Delta BCY$
- (iii). Show that, BYCX is a parallelogram.
- (iv). Show that, area of $\Delta BYC =$ area of ΔADX

(11). (a). The inner diameter of a right circular cylindrical shaped vessel is 22 cm and height is 28 cm. Exact half of the vessel is filled with water. When a cube which the length of a side is 'a' cm, is zinc in the water slowly, the difference of the water level was 3.5 cm. Find the length of a side of the cube.

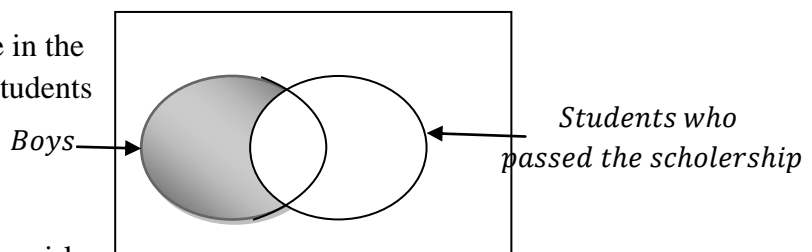


(b). Find the value of $\sqrt{672} \times 2.54$ using logarithmic tables.

(12). (a). There are 42 students in a grade 6 class of a certain school. 18 were girls of them and 10 of girls have passed the scholarship examination from it and also there are 6 boys who have passed the scholarship examination.

(i). Indicate this information in the given venn diagram.

(ii). Explain the students who are in the shaded region. How many students are there?



(iii). Out of 42 students, Find The probability of selecting a girl Who failed the scholarship examination.

(b). If A and B are two independent events, $P(A) = \frac{1}{5}$ and $P(A \cap B) = \frac{3}{50}$

- (i). Find P(B)
- (ii). Find P(AUB)