



Grade
10

### Third Term Test -2019

#### Mathematics - I

School .....

Name of the Student Index No: .....

Time: 02 hrs.

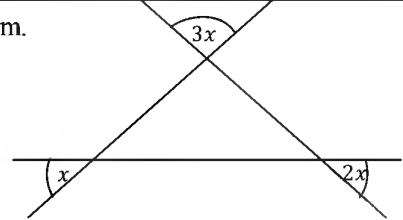
### Part - A

- Answer all the questions.
- Area of a circle of radius  $r$  is  $\pi r^2$  circumference of a circle of radius  $r$  is  $2\pi r$ . Take  $\pi = \frac{22}{7}$ .

01. Frequency of a class interval 25 -35 is 12 of a grouped frequency distribution .Find the mid value of that class interval.

02. Find the L.C.M of  $6d^2$  and  $12cd$  .

03. Find the value of  $x$  according to the given information in the diagram.



04. Fill in the box.

$$(3 - x)^2 = \boxed{\phantom{00}} - \boxed{\phantom{00}} + x^2$$

05. Express  $\lg 1000 = 3$  in index form.

06. In the straight line of gradient 3 and passes through the point (0,2) ,

i. Write down the intercept.

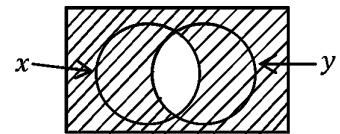
ii. Write down the equation.

07. If  $(7.5)^2 = 56.25$  and  $(7.6)^2 = 57.76$ , Find the suitable value for  $\sqrt{57}$ .

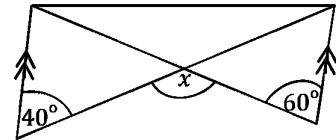
08. 6 men can cut a dig within 8 days . If 3 men were recruited , What part of whole dig they could complete.

09. Factorize  $p^2 + 5p + 4$ .

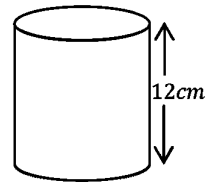
10. Write down the shaded region in set notation.



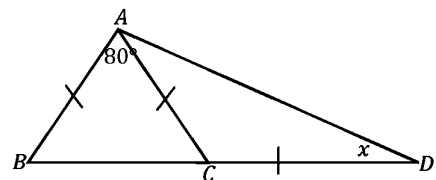
11. Find the value of  $x$  according to the information given in the diagram.



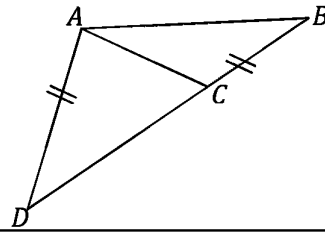
12. The circumference of the base of the cylindrical vessel given in the figure is 880 m . Find the area of its curved surface.



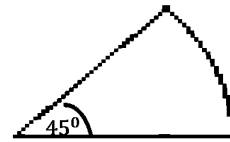
13. Find the value of  $x$ .



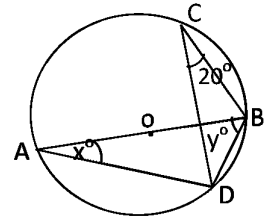
14. Write down a pair of angles must be equal to congruent  $\Delta ABC$  and  $\Delta ADC$  under the case S.A.S other than the given information.



15. The arc length of the given sector is  $11\text{ cm}$ . Find the arc length of the remaining part of the circle which was used to cut the above sector after cutting the sector.



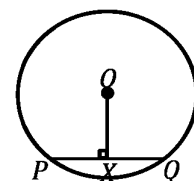
16.  $AB$  is the diameter of the circle of center  $O$  According to the given information Find the value of  $x$  and  $y$ .



17. Solve the inequality  $2x - 5 \leq 9$  and Find the maximum value that can be taken for  $x$ .

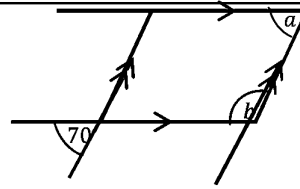
18. The water is filled to the tank of capacity  $1500\ell$  by two pump at the same time at 20 litres per minute and 30 litres per minute. Find the time taken to fill the tank.

19. The chords  $PQ$  and  $OX$  are perpendicular to each other. If  $OX = 3\text{ cm}$  and  $PQ = 8\text{ cm}$ , Find the radius of the circle.



20. Simplify,  $\frac{2}{3x} + \frac{1}{x}$

21. Find the Value of  $a$  and  $b$ .



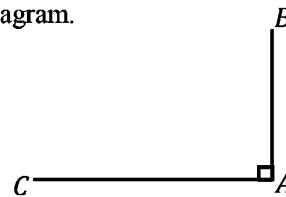
22. The part of a water bill relevant the rural water project is given below.

The amount for consumed water units = Rs.1500

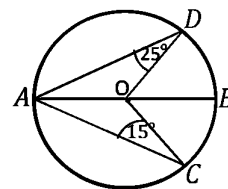
VAT = Rs. 270

Find the VAT percentage charged for the above bill.

23. There is a Vertical post on a horizontal ground Level  $AB$ . There is a flower pot on the point  $C$  which is 20 m away from the foot of the post. A person Who is on the top of the post, observes the flower pot at an angle of depression of  $40^\circ$ . Represent the above information on the following diagram.



24.  $AOB$  is a diameter of the given circle Find the magnitude of  $\widehat{COD}$

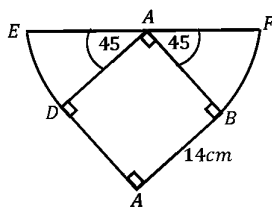


25. When  $A \cap B = \emptyset$  If  $P(A) = \frac{2}{5}$  and  $P(B) = \frac{1}{3}$ , Find  $P(A \cup B)$ .

## Part - B

1. While  $\frac{1}{5}$  of a stock of shirts which were bought by a seller for Rs.500.00 each were removed because of the damaged and  $\frac{5}{6}$  of the rest were sold by keeping in the show room. After that the remainders were sold by using mobile sales truck.
- What fraction of the whole stock remained after the shirts were removed because of the damaged.
  - What fraction of the whole stock did the seller sell by keeping the show room.
  - If the number of shirts were sold by using mobile sells truck is 36 , Find the total number of shirts in the whole stock.
  - Find the total number of shirts were sold.
  - If he sold a shirt for Rs.750.00 , Find the profit or lose he gained form this business.

2. The figure depicts a sketch of a logo which was created by connecting two sectors to two sides of a square shaped lamina  $ABCD$ . It is proposed to paint by using blue color for square part and red color for two sectors.

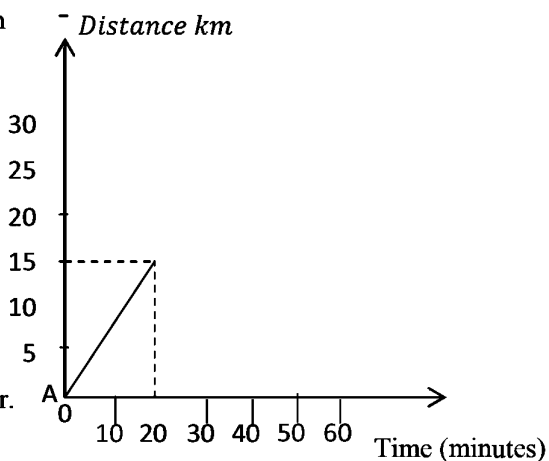


- Find the radius of the sector.
- Find the arc length of the sector.
- Find the area of the part which is proposed to paint in red color.
- If a silver strip is going to paste around the logo, Find its minimum length needed.
- Write down the ratio between the space of parts which is proposed to paint in red and blue in the simplest form.

3.

- a) A bus which started its journey from city A, moving with Uniform speed from the commencement of its journey, Travels a distance of  $15\text{ km}$  in  $20$  minutes. It then Travels another  $10\text{ km}$  in  $10$  minutes also with uniform Speed and reaches its destination.

- Represent the motion of the second part of the Journey in the given graph. (02)
- Find the total distance of the journey. (01)
- Find the average speed of bus in kilometers per hour.



b) A person who takes a loan of Rs.12000.00 at an annual simple interest rate of 8% , has to pay a total amount of Rs. 14880.00 to settle the loan.

i. Calculate the total interest he has to pay.

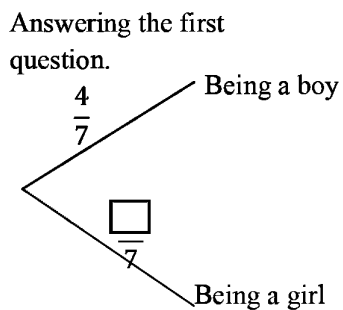
ii. Find the interest for a year he has to pay.

iii. After how many years he settle the loan.

4. In the last round of a quiz competition , while two questions will be given for one group ,Any competitor can answer for them. In the group there are three girls and four boys.

i. The event of “answing the first question ” is represent in the following tree diagram.

Fill in the blanks of it.

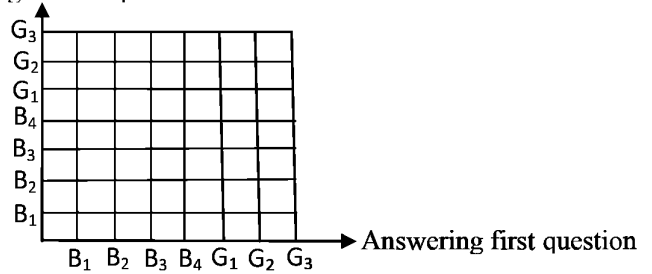


ii. Extend the tree diagram relevant to answering the second question by including the relevant probabilities.

iii. Find the probability of answering the questions by a girl in both two occasions.

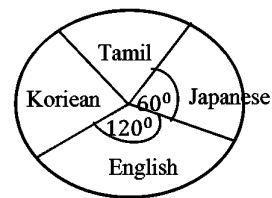
- iv. Represent the sample space of the answering two questions on the following grid.

Answering second question



- v. Encircle the outcomes relevant to the event "Answering the first question by a boy and Answering the second question by a girl" on the above grid and write down its probability.

5. The following pie chart shows the information about the language courses which are following by trainees of youth training center. (A trainer follows only one course)



- i. If 90 trainees follow Japanese, Find the total number of trainers.
- ii. If 120 trainers follower Tamil Language, Find the angle at the center of the sector, that represent in the pie chart.
- iii. Express the number of trainers those who follows English Language from the total number of trainees.
- iv. If 20 trainees those who follow Tamil language joined to follow English Language, Find the ratio between the numbers of trainees those who follow English and Tamil language.
- v. 30% of trainees those who followed koriean Language, completed the course successfully and selected to do a job in Koriya.





Grade
10

### Third Term Test -2019

#### Mathematics -II

School: .....

Name of the Student Index No: .....

Time: 02 hrs.

#### Part-II

- Answer ten questions by selecting five questions from part A and five questions from part B.
- The Volume of a cylinder of base radius  $r$  is  $\pi r^2 h$ .

#### Part A

01.

- Monthly Salary of Mr.Dayasiri is Rs.75000.he seperates 2% of his salary in each month to pay rates. The amount which was saved during the year, is used to pay rates.
  - Find the amount he saved for a month.
  - Find the annual rates of the house.
  - If the annual assessed value of the house is Rs.180 000 , Find the annual rates percentage.
- When a stock of electrical equipments is imported , 60% of its value has to be paid as customs duty . Rs.16 800 had to be paid for rates of an electrical equipment. When Selling this stock , 15% profit will be expected.
  - Find the amount of equipment before paying customs duty.
  - What is the Value of the equipment with the duty.
  - Find the Selling price of the equipment.

02.

- $\frac{3}{2x} = \frac{1}{x+1}$  Solve.
- $x^2 - 5x - 14 = 0$  Solve.
- Find the Value using logarithum table.  

$$\frac{278 \times 6.95}{78.56}$$

03. A table containing the  $y$  values corresponding to several  $x$  values of the function  $y = 2x^2 - 9$  is given below.

$x$	-3	-2	-1	0	1	2	3
$y$	9	-1	-7	.....	-7	-1	+9

- Find the value of  $y$  when  $x = 0$
  - Using the scale of 10 small divisions as one unit along  $x$  axis and 10 small division as two units along the  $y$  axis , draw the graph of the above function on a graph paper.
- Using the graph ,
  - Find the root of the equation  $2x^2 - 9 = 0$
  - Write down the interval of values of  $x$  for which the function is increasing negatively.
- Write the equation of the graph which is obtained when the above graph is moved upward by two units along  $y$  axis.

04. A group of 57 grade 10 students divided into five groups for group activity such that group A and B have same number of students and group C, D and E have same number of students. When two students of group D went to the group B, the number of students in group B and D are equal. Find the number of students in group A and C Separately.

05. The following table shows the data on the number of flowers that were sold a person who is the owner of flower shop during 30 days.

Number of flowers sold in a day	100-120	120-140	140-160	160-180	180-200	200-220	220-240
Number of days	2	4	6	7	3	5	3

- Find the modal class.
- Find the mean quantity of flowers that were sold in a day using the mid-value of modal class as the assumed mean or otherwise to the nearest wholenumber.
- While the bought a flower for Rs. 10 and sold it for Rs. 15, he has to pay Rs.5000 rent for the shop. Show that the profit gained by him by Selling flower exceeds Rs. 20 000.

06. The Vertical post A and B are on the ground level by Keeping 200m distance. A observer who Stands on the point C such that  $AC = \frac{1}{4} AB$  from the point A and in between AB, observes the top of the post A with an angle of elevation of  $30^\circ$ . Find the difference between height of two posts using a scale diagram considering the above all the possitions are on same vertical plane.  
(Take the scale as 1 cm represents 20 m.)

## Part B

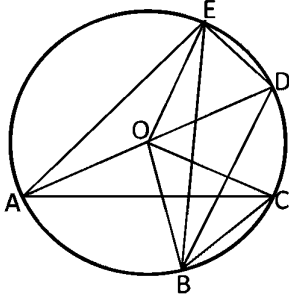
07. The flower pots of a garden are arranged by keeping 8 pots in the first row, 11 pots in the second row, 14 pots in the third row, etc.... Such that 20 rows were arranged. Rs 250 was spent to make a flower pot.

- Show that the owner of the flower shop has to spent more than Rs. 180 000 to make all the flower pots with reasons.
- If another row must be kept flower pots, Find the number of flower pots will need for it.

08. Do the following Construction by Showing the Construction lines clearly.

- Construct the triangle  $ABC$  Such that.  $AB = 8cm$ ,  $\hat{BAC} = 45^\circ$ ,  $AC = 6cm$
- Construct a parallel line to  $AB$  through  $C$ .
- Construct the locus of the point moving at an equal distance from point  $B$  and  $C$ .
- Name the intersected point of construction lines of part II and part III as  $D$ .
- Complete the quadrilateral  $ABDC$  and write down the name of it.

09.  $A, B, C, D$  and  $E$  lie on the circle of center  $O$ .

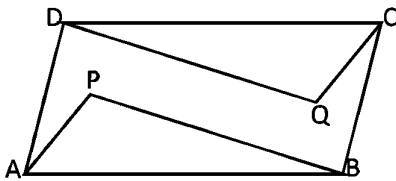


- i. Write down the magnitude of  $\widehat{AED}$  and write down the theorem used.
- ii. Name equal angle for  $\widehat{OBE}$ . Give reasons.
- iii. If  $\widehat{AOB} = 110^\circ$ , Find the magnitude of  $\widehat{OBD}$ .
- iv. If  $\widehat{AEO} = 35^\circ$ , Find the magnitude of  $\widehat{DBE}$ .
- v. Find the magnitude of  $\widehat{BE}$ .

10.

- a. A Cylindrical Vessel of radius  $14\text{ cm}$  and height  $40\text{ cm}$  was filled half exactly.
  - i. Find the Volume of water in it.
- b. Few solid identical glass prisms of area of the cross section  $280\text{ cm}^2$  and height  $11\text{ cm}$ , were sinkedslowly.
  - i. Find the Volume of a Solid glass prism.
  - ii. Find the height of the water level raised when a prism was sinked.
  - iii. Find the maximum number of solid glass prisms that can be sinked in the cylinder without over flowing the water.

11. In the parallelogram  $ABCD$ , the points  $P$  and  $Q$  lie such that  $AP \parallel QC$ ,  $BP \parallel QC$  and  $\widehat{BAP} = \widehat{DCQ}$ . Prove the the straight lines  $AC$ ,  $BC$  and  $PQ$  are intersected at one point.



12. The following information shows the types of plants which were bought by 50 group of persons who participated for a trip when a flower shop was observed.

- a. While 20 persons bought orchid plants, 8 of them bought fruit plants. 10 persons did not buy any plants from that plants.
  - i. Draw a Venn diagram to depict the above information.
  - ii. How many persons bought only fruit plants.
  - iii. Shade the region relevant to the person who bought only one type of plant.
- b. Later, while all the person who bought orchid plants, bought fruit plants, 4 persons who did not buy any type of fruit, or flower plants. Draw another Venn diagram to represent the above changes and write all the elements in all regions.