

SOUTHERN PROVINCIAL DEPARTMENT OF EDUCATION

MID YEAR TEST - 2019

GRADE - 10

MATHEMATICS - I

Name/ Index No :-

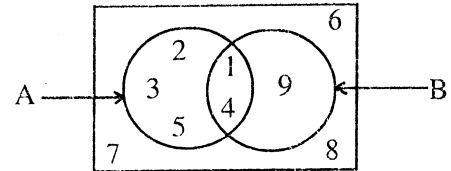
Time : 2 Hours

- Answer all the questions in this paper itself.
(2 marks are given for each correct answer for the questions from 1 - 25)

Part A

(1) A provincial council is charged Rs. 270 for a quarter from a house as the rates. Find the rates for a year.

(2) Write down the set A' with the elements.



(3) A vehicle which travel in a uniform speed travel 12Km in 15 minutes. Find the distance it travel within 40 minutes.

(4) Write down $\log_3 125 = 3$ in index form.

(5) Solve $(x - 2)(x + 3) = 0$

(6) Solve the inequality $x + 3 < 5$ and write down the largest integral solution.

(7) Simplify. $\frac{5}{2x} - \frac{1}{4x}$

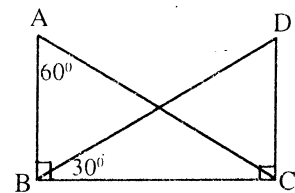
(8) Find the LCM of the algebraic expressions $5a^2b$ and $10ab^2c$.

(9) To harvest paddy in a paddy field 3 machines takes 3 hours. To harvest paddy in a paddy field which is 3 times large as the earlier how many hours will 3 machines take to harvest paddy.

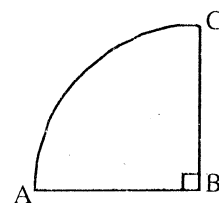
(10) Find the probability a student born on a Friday.

(11) Find the first approximation of $\sqrt{53}$
 $7.1^2 = 50.41$, $7.2^2 = 51.84$, $7.3^2 = 53.29$, $7.4^2 = 54.76$

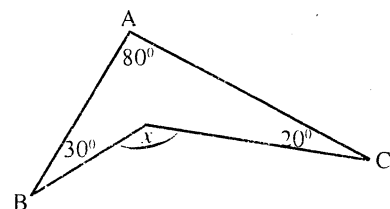
(12) Using the given information and write the case of congruency of the triangles ABC and BDC.



(13) If the arc length of this sector is 11 cm.
Find the perimeter of the sector.

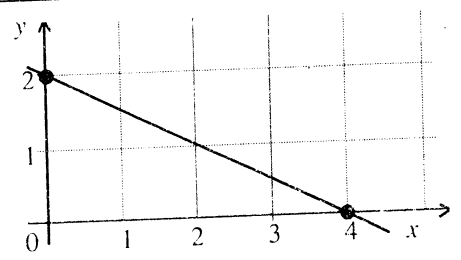


(14) Using the given data find the value of x .



(15) Find the actual distance in Km which is represented by 6 cm in a map drawn to the scale 1 : 50 000.

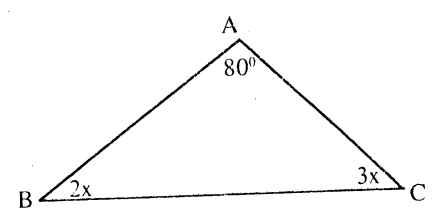
(16) If the gradient of this straight line is $-\frac{1}{2}$. Write the equation of the straight line.



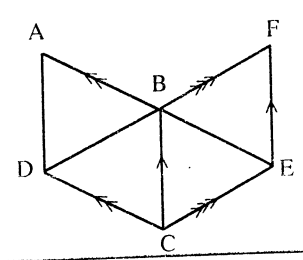
(17) Put a \checkmark for the correct statements of the below table.

An angle opposite to an equal side of an isosceles triangle can be a right angle.	
Appex angle of an isosceles triangle can be a right angle.	
An interior angle of an equilateral triangle is 60° .	

(18) Find the value of $\hat{A}BC$.

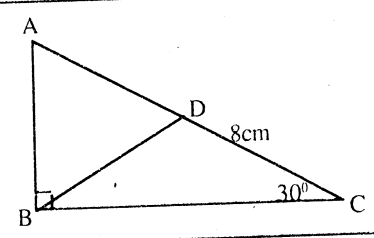


(19) If the area of the given figure is 100cm^2 . Find the area of the quadrilateral DBEC.



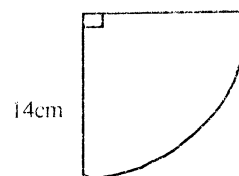
(20) Solve $\frac{5}{3x} + \frac{1}{x} = \frac{2}{3}$.

(21) In the given figure ABD is an equilateral triangle. $DC = 8\text{Cm}$ and $\hat{DCB} = 30^\circ$. Find the length of AB.



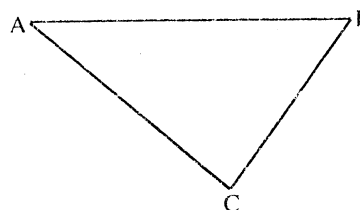
(22) Fill in the blanks using suitable words.
 A quadrilateral with equal pairs of opposite sides is a and a quadrilateral which have right angles as all interior angels is a

(23) Find the area of the sector.



(24) What is the class size of the class intervals 15 - 19, 20 - 24, 25 - 29, ?

(25) Mark the point D which is moving equidistant from the straight lines AB and AC and on the line BC.



Part B

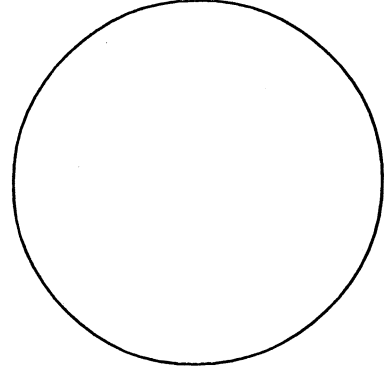
- (1) From the fish collected by a boat $\frac{3}{10}$ is allocated to prepare dried fish and $\frac{6}{7}$ of the remaining fish sold out.
- (i) Find the amount of fish as a fraction which is remain after allocating for dried fish. (02 m.)
- (ii) Find the amount of fish sold as a fraction. (02 m.)
- (iii) If the remaining 20 kg of fish allocated for food. Find the total amount of fish collected by the boat. (03 m.)
- (iv) If the selling price of 1Kg dried fish is Rs. 400 and 1Kg of fish is Rs. 200. Find the total income received by selling them. (03 m.)

(2) An information about the TV program which is telecast only the educational programmes within 18 hours during a day is given below.

Educational programme	O/L	A/L	Primary	Other grades and other programmes
Time (hours)	4	5		
Angle			40°	

(i) Fill in the blanks of the table. (05 m.)

(ii) Using the completed table above draw the pie chart to represent the data. (03 m.)



(iii) As other programmes it telecast advertisements. If it represents using a 30° angle separately find the time telecast advertisements. (02 m.)

(3) Amal borrowed Rs. 300,000 from a bank as a loan at the annual simple interest rate 12%. (02 m.)

(i) Find the interest for a year for the loan. (02 m.)

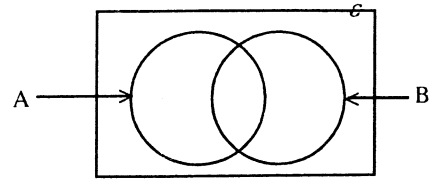
(ii) For how many years he has to pay Rs. 480 000 as the amount to get release get from the loan. (04 m.)

(iii) Amal paid the loan as the customs duty for a small vehicle. Customs duty percentage is 40%. Find the price of the vehicle before paying the duty. (02 m.)

(iv) Find the price of the vehicle after paying the duty. (02 m.)

- 4) (a) $\varepsilon = \{\text{Counting numbers from 1 to 15}\}$
 $A = \{\text{Prime numbers from 1 to 15}\}$
 $B = \{\text{Odd numbers from 1 to 15}\}$
 (i) Write down each set with elements. (03 m.)

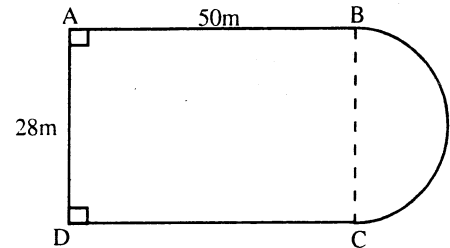
- (ii) Represent the above sets in this venn diagram and write down the set $A \cap B$ with elements.



(03 m.)

- (b) Numbers from 1 to 15 write in pieces of papers and put into a box. Randomly a piece of paper is taken out,
 (i) Find the probability of getting a piece of paper with number 8. (02 m.)
 (ii) Find the probability of getting a piece of paper with a square number. (02 m.)

- 5) ABCD is a rectangular plot of land.
 BC is a diameter and flowers are cultivated in the semi circular part.



- (i) Find the arc length of the flower cultivated area. (02 m.)
 (ii) Find the area of the flower cultivated area. (02 m.)
 (iii) Find the total surface area of the land with flower cultivated area. (02 m.)
 (iv) The semicircular part is change in to rectangular part such that one side is BC and the area of it is $1\frac{3}{11}$ of the area of the flower cultivated area. Draw a sketch of it on the above diagram, with measurements. (04 m.)

SOUTHERN PROVINCIAL DEPARTMENT OF EDUCATION

MID YEAR TEST - 2019

GRADE - 10

MATHEMATICS - II

Name/ Index No :-

Time : 3 Hours

• Answer 5 questions from part A and 5 questions from part B.

Part - A

(1) (a) Assessed annual value of Sahan's property is Rs. 70,000. Municipal council charges 8% as the rates percentage. Next year the assessed annual value increased. Due to this the rates for quarter is increased by Rs. 280. Find the new assessed annual value of Sahan's property. (5 m.)

(b) A person who borrowed Rs. 50,000 at annual simple interest rate of 8% paid back Rs 66,000 after a certain time period to settle the loan. Find the time duration that he took to settle the loan. (5 m.)

(2) (a) Solve. $\log_3 x = 2$ (02 m.)

(b) Without using logarithm table find the value. (03 m.)

$$\log_{10} \left(\frac{25}{4} \right) + \log_{10} \left(\frac{20}{3} \right) - \log_{10} \left(\frac{5}{12} \right)$$

(c) Using the logarithm table find the value of $\frac{12.83 \times 7.45}{8.32}$ (05 m.)

(3) (a) (i) Represent $\frac{3}{x-2} = \frac{x}{2x-5}$ in the form $ax^2 + bx + c = 0$. (here $a \neq 0$.) (02 m.)

(ii) By solving the equation find the value of x . (05 m.)

(b) Solve $\frac{3}{(x+1)} - \frac{2}{(x-1)} = 0$. (03 m.)

(4) (a) Factorize. $2x^2 + 3x - 5$ (03 m.)

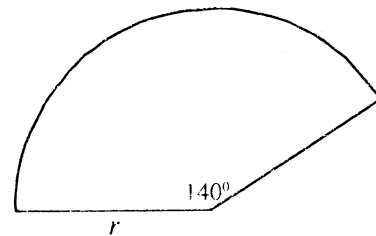
(b) The cost of 5 pencils and 2 pens is Rs.100. Price of a pen is Rs. 8 more than the price of a pencil. Build up a pair of simultaneous equations by taking the price of a pencil as Rs. x and pen as Rs. y and by solving them find the price of a pen and pencil. (07 m.)

- (5) (a) Find the LMC of $x - 2$, $3x^2 - 12$ (03 m.)
- (b) Simplify. $\frac{2}{3x^2 - 12} - \frac{1}{2 - x}$ (03 m.)
- (c) If $a + b = 10$ and $ab = 12$ using the expansion of $(a + b)^2$ find the value of $a^2 + b^2$. (04 m.)

- (6) (a) This figure represents a sector of radius r cm and angle at the centre 140° .

(i) Write down the area of the sector in terms of r . (02 m.)

(ii) If the area of the sector is 176cm^2 find the radius of the sector. (04 m.)



- (b) There are 600 people who are affected by floods and are in a camp. In the camp food is sufficient for 12 days for them. After 2 days 100 people went for their houses. For how many days the remaining food is sufficient for the other people. (04 m.)

Part B

- (7) (a) In a theatre the chairs are arranged in this manner. In the first row there are 7 chairs and the other rows consist 5 chairs more than the previous row.
- (i) Write down the number of chairs in first 3 rows. (01 m.)
- (ii) Write down the common difference. (01 m.)
- (iii) Find the number of chairs in n^{th} row. (general term) (02 m.)
- (iv) In which row there are 127 chairs? (02 m.)
- (b) Find the value of $\sqrt{29.5}$ to the second decimal place using division method. (04 m.)

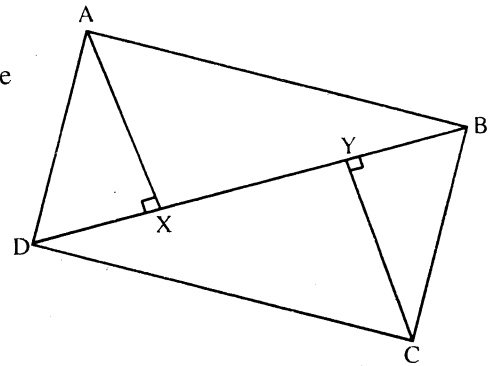
- (8) Do the below constructions by using only the cm / mm ruler and the pair of compasses.

- (i) Construct the triangle ABC such that $AB = 6\text{cm}$, $BC = 5\text{cm}$, and $\hat{A}BC = 120^\circ$. (03 m.)
- (ii) Construct the locus of points which is moving equi distant from A and C then name the intersection of AC and that loci as O. (02 m.)
- (iii) Construct the circle by taking O as the centre and passes through A and C. (02 m.)
- (iv) Mark the point which the extended AB line and the circle intersect each other as D and join CD. (01 m.)
- (v) Measure the angle \hat{BCD} . (02 m.)

- (9) (a) Annual income of Saman is Rs. 1250,000. He paid the income tax as follows.
 First Rs. 500 000 is tax free.
 Next Rs.500 000 4%
 Remaining amount 8%.
 Find the total income tax paid by Saman.
- (b) The customs duty for an electric good which is bought by Saman is Rs. 12600. price of that item before paying the duty is Rs. 42,000.
 (i) Find the price of that item with the duty. (01 m.)
 (ii) Find the customs duty percentage. (02 m.)
- (c) By selling the above electric good Saman expect to gain a profit of Rs. 16400. For that he has to pay 15% as the VAT (Value Added Tax) Find the selling price of the electric good. (03 m.)

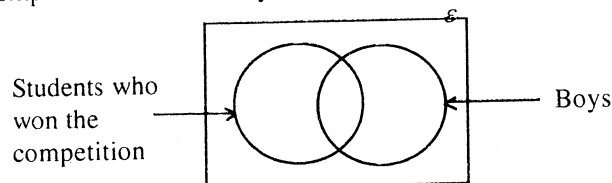
- (10) ABC is a triangle. Bisector of $\hat{A}CB$ meets AB at E. The perpendicular from A to BC meet BC at D.
 $\hat{B}AC$ is bisected by AD. AD and CE are intersect at O.
 (i) Prove that ABC is an isosceles triangle. (06 m.)
 (ii) Prove that $\hat{A}OC = 3\hat{A}CE + \frac{1}{2}\hat{B}AC$. (04 m.)

- (11) ABCD is a quadrilateral. X and Y are the bases of the perpendiculars drawn to the diagonal DB from A and C.
 $DX = BY, \hat{B}AX = \hat{D}CY$



- (i) Prove that $DY = BX$ (01 m.)
 (ii) Prove ABCD is a parallelogram (06 m.)
 (iii) Prove that X and Y are on AC if $BD = 2 BY$. (03 m.)

- (12) 54 students participated for a "Bhakthi Gee" competition. 16 girls won that competition. Total number of students who won that competition is 25. 12 boys didn't win the competition.



- (i) Include the above data in this Venn diagram. (04 m.)
 (ii) How many boys won this competition? (02 m.)
 (iii) Find the number of girls who didn't win the competition and shade that region in the above Venn diagram. (02 m.)
 (iv) If boys didn't win this competition copy this Venn diagram and name the two sets. (02 m.)

