Southern Provincial Department of Education

Year End Test - 2018

Grade 10

Mathematics - I

Name / Index No. ..... Time - 2 hours

Answer all questions on this question paper it self.

Part A

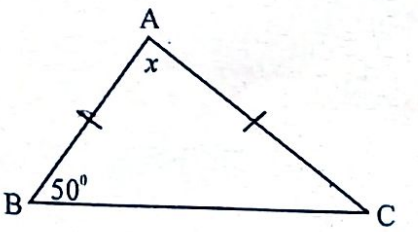
(01) Find the time in hours that a vehicle which travels at a uniform speed of $70kmh^{-1}$ to travel 140km.

(02) The time taken for $40l$ of petrol to be pumped in to a vehicle through a pump at a certain petrol shed was 2 minutes. Find the rate at which petrol flows out of the pump.

(03) If $log_3 9 = 2$, write it in index form.

(04) Simplify. $\frac{2}{x} - \frac{3}{4x}$

(05) Find the value of x using the information given in the diagram.



(06) The value of a certain electrical item is Rs 40 000. If the customs duty that has to be paid is 20% of the value of the item, find the amount that has to be paid as duty?

(07) Find the LCM of the algebraic expressions $6xy^2$ and $3x^2y$

(08) In a bag there are 10 red colour and blue colour balls. When a ball is taken out random, the probability of getting a red ball is $\frac{2}{5}$. How many blue balls are there?

(09) The information gathered from the grade 10, 40 students of a certain class. regarding the sport they like most. To draw a pie chart, complete the given table.

Sport	Cricket	Elle	Foot ball
No. of students		10°	12
Angle of the sector	162°	90°	

(10) If $x = \sqrt{47}$. Find the first approximation of x.

x	6.6	6.7	6.8	6.9
x^2	43.56	44.89	46.24	47.61

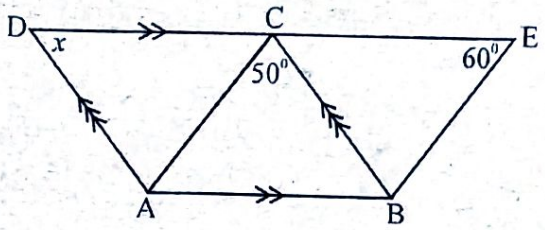
(11) Factorize. $x^2 - 49$

(12) If A and B are two sets such that $n(A) = 12$, $n(B) = 13$ and $n(A \cap B) = 5$, find the value of $n(A \cup B)$.

(13) The perimeter of a sector A is 25cm. Find the perimeter of sector B.

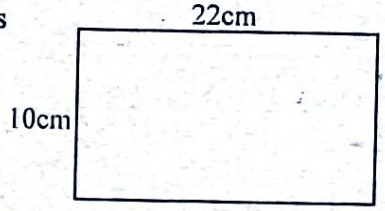
(14) Write the positive integer solution. $3x(x-1) = 0$

(15) ABCD and ABEC are two parallelograms.
Using the given information find the value of x.



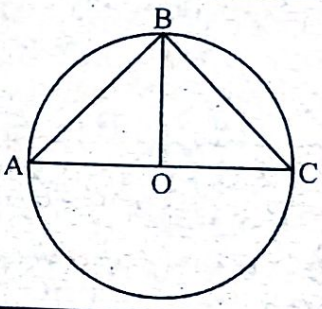
(16) Simplify. $\frac{3}{4x} + \frac{1}{x} = 1\frac{3}{4}$

(17) If a cylinder is created by using the breadth of the given cardboard as height find the curved surface area of the cylinder.

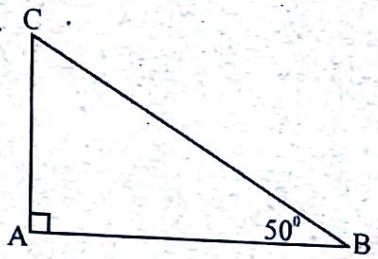


(18) O is the centre of the given circle. For each statement given below, if it is correct mark "✓" and if it is incorrect mark "×" in the box infront of it.

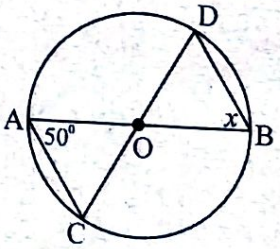
$A\hat{B}C = 90^0$	
$A\hat{B}O = 45^0$	



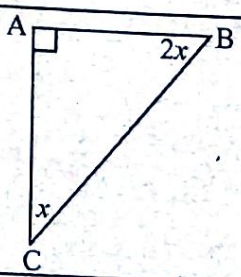
(19) C is the top of a vertical building. The angle of elevation of the top C of the building from point B on the horizontal ground is 50^0.
Find the angle of depression of the point B from C and mark it on the diagram.



(20) O is the center of the given circle AB and CD are two straight lines.
Find the value of x using the information given in the figure.



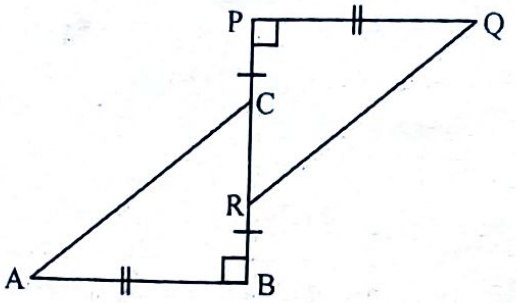
(21) Find the value of x.



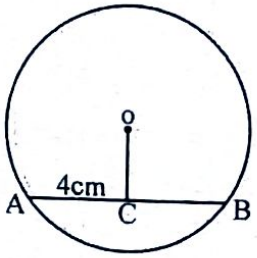
(22) Underline the equation which is not suitable for the equation of the straight line goes through the points (0,0) and (4, 3)

(i) $4y=3x$ (ii) $3y=4x$ (iii) $4y-3x=0$ (iv) $y=\frac{3}{4}x$

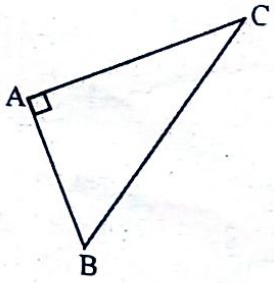
(23) In the given figure, RB = PC and AB = PQ. Write the case of congruency if the triangles ABC and PQR. are congruent.



(24) In the given circle O is the centre and AC = 4cm. Find the length of AB.



(25) ABC is a right angled triangular shaped land. A coconut plant (p) is to be planted in the land so that it is equidistance to the vertices A, B and C. Sketch using your knowledge of loci, the place where the coconut plant can be planted.



Part - B

(01) From a housing scheme $\frac{5}{8}$ is allocated among 25 residents and $\frac{2}{3}$ of the rest is alocated to the roads.

(i) Mention as a fraction the piece of land remaining after allocating for residents.

(ii) From the entre piece of land, write as a fraction that is used for roads.

(iii) After alocating roads and residents the rest is used to built a children's park and a herbal garden. Mention as a fraction that is used to children's park and the herbal garden. from the entire piece of land.

(iv) If the land alocated children's park and a herbal garden is 50 perches, what is the quantity of the land a resident was received?

(02) (a) Chamath pays Rs 425 for a quarter as rates for his property.

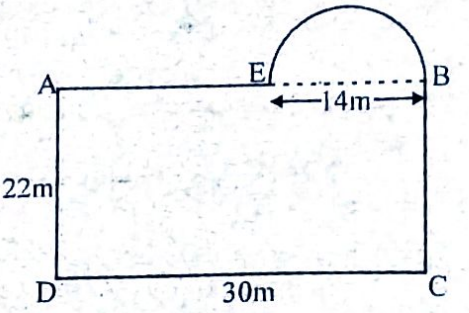
(i) What is the rates he pays for a year?

(ii) If the municipal council charge 8% as rates, what is the assessed annual value of his property?

(iii) Chamath was fined Rs 34 for the delay of the payment. Calculate the percentage that municipal council fined?

(b) For colour wash the house 6 men needed 10 days. After 2 days 2 were absent. Calculate how many extra days be the rest of the people would take?

(03) The following sketch is a swimming pool consist with a ABCD rectangular part where length and breadth is 30m and 22m respectively and semi circular part where diameter EB is 14m.



(i) Find the arc length of semi circular part.

(ii) Find the area of the semi circular part.

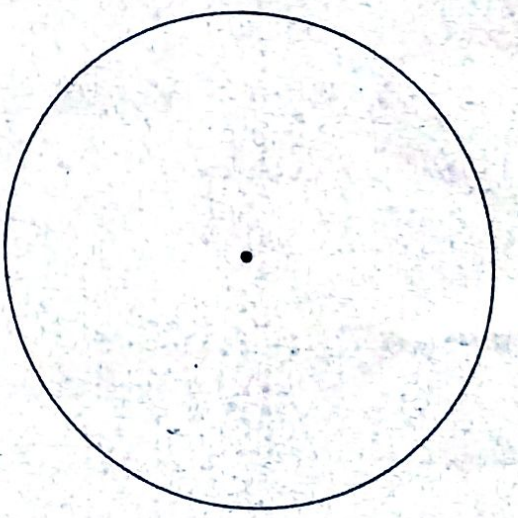
(iii) Find the total surface area of the swimming pool.

(iv) A shallow rectangular shape space need to be seperated in the swimming pool. It's area should be twice as in the semi circular part. Draw a rough sketch with measurements by taking AD as it's one boundary.

(04) A higher officer serve 8 days in foreign countries and 12 days locally within 30 days of a month and rest of the days are holidays.

(i) Write the number of holidays as a fraction of the total number of days.

(ii) Calculate the magnitudes of the angles at the centres of the sectors corresponding to the each duty separately and for the holidays.

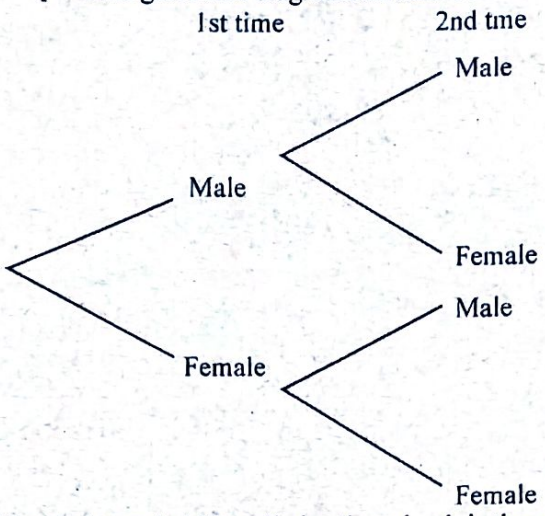


(iii) Using that mark the angles in the piechart roughly and name the sectors.

(iv) If 2 sick leaves was taken from the 12 local working days, calculate the angle of the sector relevant to the holidays during that month.

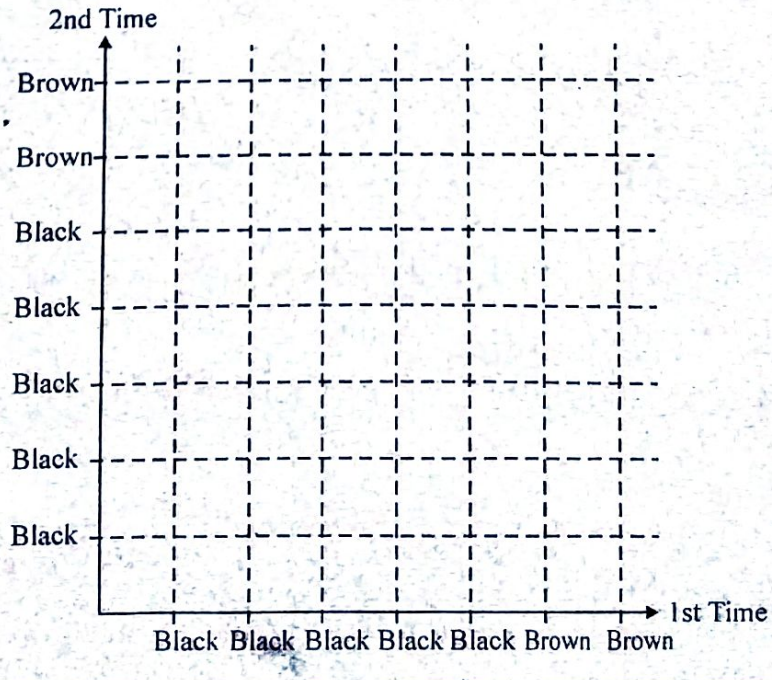
(05) (a) In a farm there are 7 animals and 3 of them are females. One of these animals were taken out of the farm randomly and taken back to the farm. For the second time also an animal was taken out randomly.

(i) Complete the given tree diagram relevant to the above information.



(ii) What is the probability of being the animals in the same sex?

(b) Two female animals are brown and the other one is black. All the male animals are black Represent the above data in the given cartesian plane and hence find the probability of being 2 animals were taken out from the farm is in same colour.



Southern Provincial Department of Education

Year End Test - 2018

Grade 10

Mathematics - II

Name / Index No. ..... **Time** - 3 hours

- **Answer 10 questions selecting 5 questions from Part A and 5 questions from Part B.**
- The curved surface area and the volume of a right circular cylinder of base radius r and height h are $2\pi rh$ and πr^2h respectively.

Part A

Answer 5 questions only.

(01) An incomplete table containing x and y values suitable to draw the graph of the function $y = 3 - 2x^2$ is given below.

x	-3	-2	-1	0	1	2	3
y	-15	-5	1	.....	.....	-5	-15

(i) Fill in the blanks of the table.

(ii) Using the scale of 10 small divisions representing one unit along the x axis. and 10 small divisions representing two units along the y - axis, draw the graph of the above function on a graph paper.

(iii) Write the coordinates of the turning point.

(iv) Find the value of x when $y = 2$.

(v) Find the interval of values of x for which the function is increasing from -5 to 3.

(02) The following table shows the speed of vehicles on one day during one hour of a road which indicates the maximum speed as 70kmh^{-1} (The interval 40 - 45 denotes the interval of speeds which are greter than or equal 40kmh^{-1} but less than 45kmh^{-1} and all the other class intervals are given in the same way)

Speed (kmh^{-1})	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80
No of vehicler	7	9	14	20	28	15	3	4

(i) Find the modal class of this distribution..

(ii) By taking the mid value of the modal class as assumed mean, find the mean speed of a vehicle during one hour.

(iii) Show that the number of vehicles exceeded the mean speed is half of the total number of vehicles.

(iv) Find the probability of randomly selected vehicle being a vehicle which exceeded the correct speed limit or use the correct speed.

(03) (a) If $ab+ac=bc$,

Show that $\frac{1}{a}=\frac{1}{b}+\frac{1}{c}$

(b) When the length of a rectangle deducts from 3m and breadth increases by 3m the result will be $225m^2$ square. Find the length and breadth of the rectangle separately by building up equations.

(04) (a) Solve the inequality $7+2x \geq 3$ and write the minimum integral value that has.

(b) (i) Factorize.

(a) x^2-4

(b) x^2+x-2

(ii) Simplify. $\frac{1}{x^2-4}+\frac{1}{x^2+x-2}$

(c) Solve. $x^2+x-2=0$

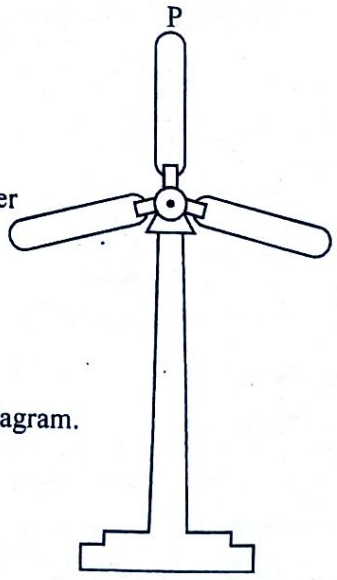
(05) In order to repair and rent of the house Deepthi received a loan of Rs 1 200 000 from a financial institution on the basis of 6% simple interest. During the 1st year a concession was given to pay only the interest, but the loan and interest should be paid in 5 years with equal installments. After one year he rents out the house for Rs 88 000 monthly and income tax should be paid monthly as 10%. Show that he gets the income of Rs. 53200 as his monthly income after paying loan installments and income tax.

(06) In a wind power station the height of a pillar of a wind mill is 40m and length of one blade is 15m. Draw a scale diagram using the scale of 1cm representing 5m and answer the following questions.

(i) To get angle of elevation of 60^0, what is the distance from the base to the pillar?

(ii) Find the angle of elevation of the top point of the blade for an observer who is standing 55m away from the base of the pillar.

(iii) If the vertical blade rotates 60^0 to the anti clock wise, find the vertical height of the point P from the earth using the scale diagram.



Part B

Answer only 5 questions.

(07) The following shows the water ejection of a uniform cross sectional water tank completely filled with water for each hour is measured in cubic meters

21 , 18 , 15 , 12.....

(i) Considering above volumes respectively in which progression is belongs to it and give reasons.

(ii) If 7hrs are going to completely emptied the tank , find the volume of water ejected from the in last hour.

(iii) Find the capacity of the water.

(iv) Calculate the mean rate of water flowed out from the tank.

(08) (i) Construct a straight line segment AB such that AB = 8cm and construct the perpendicular bisector of it. Name the intersection point of AB and perpendicular bisector as X.

(ii) Mark a point O on the perpendicular bisector such that XO = 3cm.

(iii) Measure and write the length of OA.

(iv) The locus of a point equidistance from O goes through the points A and B, draw the locus of it.

(v) When produced AO, the loci meets at C. Find the magnitude of $A\hat{B}C$ without measuring and give reasons.

(09) In 2017, 112 out of 144 students passed the GCE (O/L) Examination. 40 girls out 64 passed the exam.

(i) Represent above data in a Venn diagram.

(ii) If all girls passed the exam, draw a venn diagram and shade the region of passed boys.

(iii) Principal says that more than 90% of boys passed the exam this year. Do you agree with this statement? Give reasons.

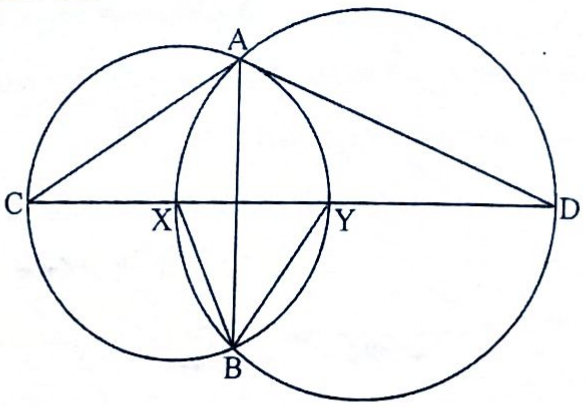
(10) (a) In a fruit juice production factory, Fruit juice was collected in a square based vessel with 35 cm side length and 44cm height Every 5 minutes after, this vessel was filled with juice . Within a minute they will be packed into a cylindrical tins with 7 cm radius and 14cm height. How many tins are filled within an hour.

(b) Using logarithms table find the value of

$$\frac{51.4 \times 9.75}{63.1}$$

(11) In the given figure $B\hat{A}C = B\hat{A}D$ and $X\hat{B}Y = 60^0$ Show that

$CX = XY = YD$



(12) ABCD is a square P and Q point are lie on AB and CD respectively such that $A\hat{P}Q = A\hat{Q}P$.

(i) Draw a sketch to represent the above data.

(ii) Show that $BP = DQ$

(iii) Show that PQC is an isosceles triangle.