PROVINCIAL DEPARTMENT OF EDUCATION
NORTHERN PROVINCE
Year End Examination– 2016
Mathematics

Grade : 11 | 32 TI | **Time :- 2 Hrs**

Index No :.....
Supervisor Signature :.....

Instructions

- Write your index number correctly.
- To use the under space Part IA, IB questions get answer method.
- Answer the all questions must be done part I A & I B.
- Not allowed to get out the answer sheet from the exam hall after the examination.

Important:

- Part IA has 25 questions each has 2 marks totally 50 marks given.
- Part I B has 5 questions each has 10 marks totally 50 marks

Marking examiner:
.....

Cross examiner :
.....

Examiner use only :

Part	Question	Marks
IA	1-25	
IB	1	
	2	
	3	
	4	
	5	
Total		

Part - I A

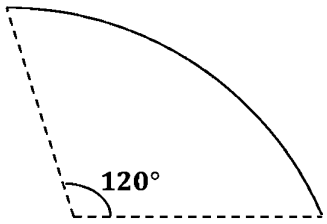
Answer all questions in this paper

01) A company pays annual dividend of Rs 4 per share. If a man bought 500 shares, find the annual dividend?

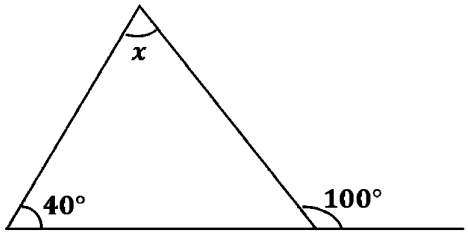
02) Simplify :

$$\frac{5}{4y} \times \frac{8y^2}{15}$$

03) The circumference of the sector of the circle in the figure is 66 cm. Find the arc length of this sector.



04) Find the value of x in this figure.

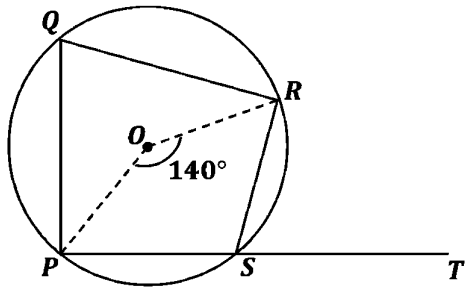


05) Which are the consecutive square numbers closest to the number 20.

06) The box contains identical balls. There are 3 red balls, 4 green balls and 2 blue balls. Find the probability of getting the ball without drawing the blue ball.

07) Find the Least Common multiple of the expressions $(x-1)(x+2)$ and (x^2-2^2)

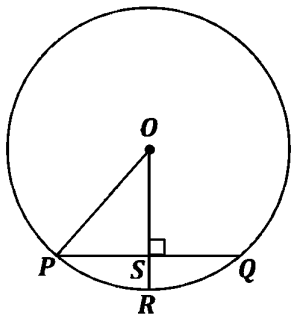
08) The centre of the circle in the given figure is O.
Find the magnitude of the angle $R\hat{S}T$



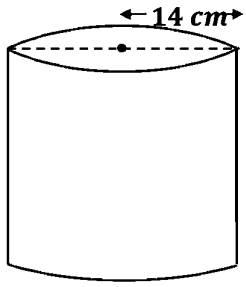
09) $If\ n(A) = 10\ ,\ n(B) = 17\ and\ n(A \cup B) = 22$ find $n(A \cap B)$.

10) Write $\log_3 81 = 4$ in index form.

11) If $OP = 10\ cm$ and $SQ = 8\ cm$ in this figure,
Find the length of RS.

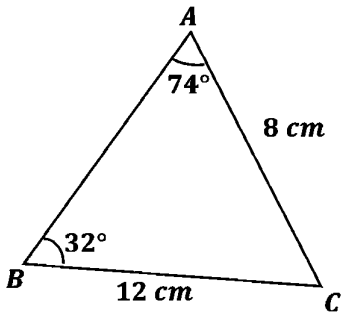


12) The radius of a cylinder is $14\ cm$ and its curved surface area is $880\ cm^2$ shown in the figure.
Find the height of it.



13) Find the 4th term of geometric progression, with first term 3 and common ratio 2.

14) Based on the information in the figure, find the length of AB.

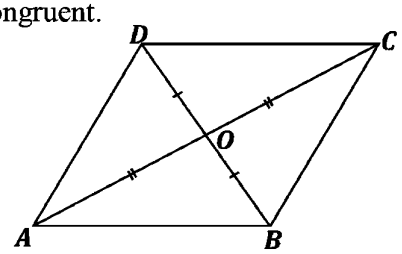


15) i) Express the equation of the straight line $6x + 3y = -1$ in the form of $y = mx + C$

ii) Find the gradient of this equation.

16) In the given figure, If the two triangles $\Delta\, AOB \text{ and } \Delta\, COD$ are congruent.

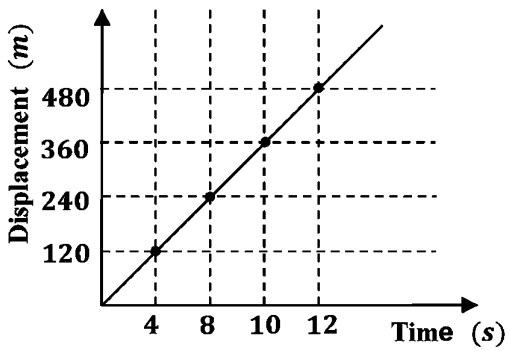
i) Write down the pair of angle.
Corresponding to it
$A\hat{O}B =$ .....



ii) If $A\hat{O}B = 90°$ Write the special name of the figure $ABCD$

17) Mark the solution of the inequality $3x - 2 \leq 7$ on the number line.

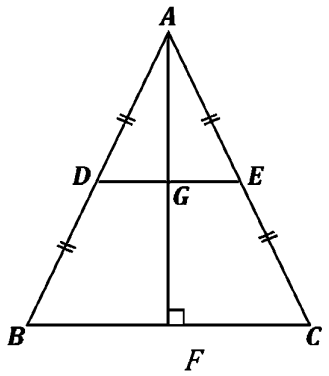
18) Displacement time graph of the motion of the car travelling at uniform speed is given below. Calculate the speed of the car.



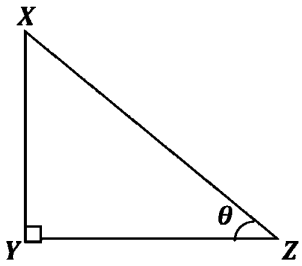
19) Solve :

$$\frac{15}{x} - 2 = 3$$

20) In the triangle ABC , $AB = AC$, $BC = 20\ cm$ and $AF = 16\ cm$ find the Area of quadrilateral $BCED$



21) If $\tan\theta = \frac{24}{7}$ in the figure, find the value of $\sin\theta$.



22) i) Which term is added to expression $x^2 + 6x +$..... to make as perfect square.

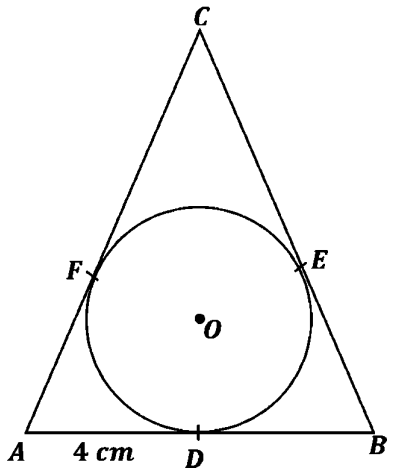
iii) Write it as perfect square.

23)

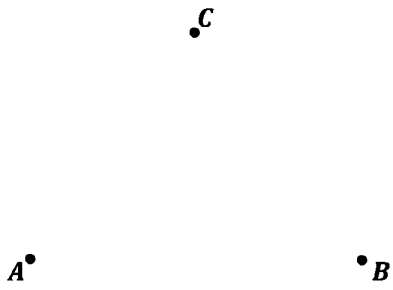
Stem	Leaf
0	2 3 4
1	3 4 4 5
2	4 5 5 5 7
3	3 4 5

Find the mode and median of the above frequency distribution.

24) Find the perimeter of the triangle ABC,
if $AD = 4\,cm$ and $BC = 10\,cm$ in this figure.



25)



In the diagram A, B are fixed points C is a moving point. Draw the locus of a point C, which the area of triangle ABC is not changed.

Part - I B

Answer all questions in this paper

01) a) Simplify :-

$\left(\frac{2}{5}+\frac{1}{3}\right) \div \frac{22}{5}$

b) From a certain fruit shop $\frac{2}{5}$ of fruits are apples $\frac{1}{3}$ of the remaining are oranges and the rest fruits are mangoes.

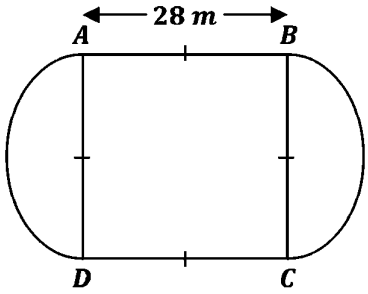
i) What fraction of whole fruits remains except apples.

ii) What fraction of oranges as in whole fruits.

iii) What is the total fraction of fruits apples and oranges.

iv) If the numbers of mangoes are 100, find the total number of fruits in this shop.

02) The figure depicts a flower garden having square $ABCD$ and two semi - circular parts at the two opposite ends.



i) Find the Area of square.

ii) Calculate the radius of a semi - circular portion.

iii) Find the area of a semi - circular portion.

iv) Find the area of a flower garden.

v) The Area of triangular pond $140m^2$ has to be made to the side CD.

Draw the pond to the given figure.

Find the perpendicular distance from E to CD.

03) a) When a motorbike is imported, 20% of its value has to be paid as customs duty. The value of a motorbike is Rs. 250000.

i) Find the amount that has to be paid as duty.

ii) What is the value of the motorbike after the customs duty has been paid.

iii) If trader pays Rs. 6000 for register the motorbike, find the value of the motorbike now.

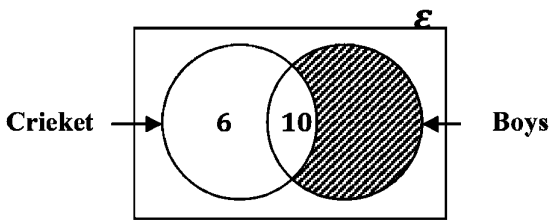
b) In the financial Institution, Kumar borrowed a loan of Rs 15000 at an annual simple Interest, settled the loan in 2 years by paying back Rs. 19500.

i) How much interest did he pay in total.

ii) Calculate the interest he had paid for a year

iii) What was the annual simple Interest rate that was charged.

04) a) The Information on 35 students in grade 11, who participate in cricket is shown in the following Venn diagram.

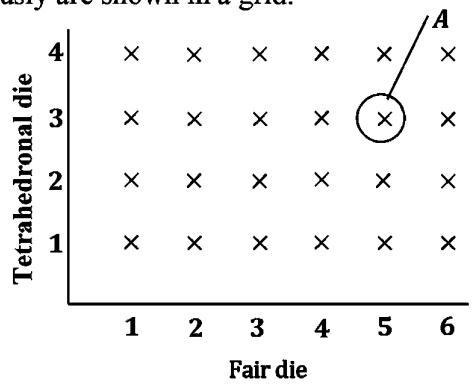


i) How many - girls play cricket.

ii) Describe the shaded region in words.

iii) If the number of boys is 17, find the number of girls who do not play cricket.

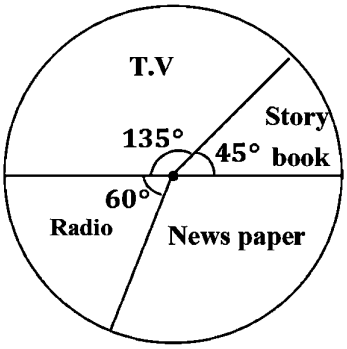
b) A fair die and tetrahedronal die are tossed simultaneously are shown in a grid.



i) Describe the event of A.

ii) Find the probability that the sum of the number on the two die taken is greater than 4.

05) a)



The following pie chart illustrates the information gathered from grade 11 students of a certain school regarding the leisure time they most prefer is given below.

i) What is the angle at the centre of the sector which denotes the students who prefer reading news paper.

ii) Which type of leisure time is preferred by the greatest number of students.

iii) If the number of students who prefer reading story books is 18, find the total number of students in the class.

b) The frequency distribution based on the English marks of students is given below.

Marks	0 − 10	10 − 20	20 − 30	30 − 50	50 − 80
no of students	5	7	10	16	12

i) Draw the histogram relevant to the given information.

ii) Draw the frequency polygon on this Histogram.

PROVINCIAL DEPARTMENT OF EDUCATION
NORTHERN PROVINCE
Year End Examination– 2016
Mathematics

Grade : 11 | 32 TII | **Time :- 3 Hrs**

Index No :.....
Supervisor Signature :.....

Instrnctions

- Write your index number correctly.
- To use your answer sheet write the answers Part II A, II B .
- Write 5 question in Part IIA And 5 Questions in Part IIB. Totally done 10 questions.

Important:

- Part IIA has 5 questions each has 10 marks totally 50 marks given.
- Part II B has 5 questions each has 10 marks totally 50 marks

Marking examiner:
.....

Cross examiner :
.....

Examiner use only :

Part	Question	Mark
IA	1	
	2	
	3	
	4	
	5	
	6	
IB	7	
	8	
	9	
	10	
	11	
	12	
Total		

Part - II A

Answer only five questions.

01) Ravi purchased. Rs. 69000 priced sell phone by making a down payment of Rs 9000 and paying the remainder by 20 equal monthly installments. That business centre charged 8% annual interest for a loan

(i) What is the price of that sell phone?

(ii) Find the interest for a month unit?

(iii) Calculate the total interest?

(iv) Find the installment per a month?

02) An incomplete table consisting of y values of the function $y = (x + 3)(1 - x)$ corresponding to several values of x is given below.

x	-4	-3	-2	-1	0	1	2
y	-5	.....	3	4	.....	0	-5

(a) (i) Find the value of y when $x = -3$ and $x = 0$

(ii) Taking ten small divisions of the graph paper to represent one unit as scale draw the graph of the function using above table.

(b) Using your graph.

(i) Find the maximum value of the function?

(ii) The equation of the axis of symmetry

(iii) Write down the range of x which the function is positive?

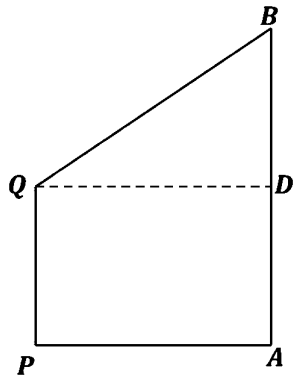
(iv) Find the roots of the equation when the value of the function is 2.

03) When four times of number add with twice of another number is 36. Sum of above two numbers is 11.

(i) Take the values of the numbers x and y, Construct a pair of simultaneous equations containing x and y?

(ii) Solve the pair of equations and find the values of x and y?

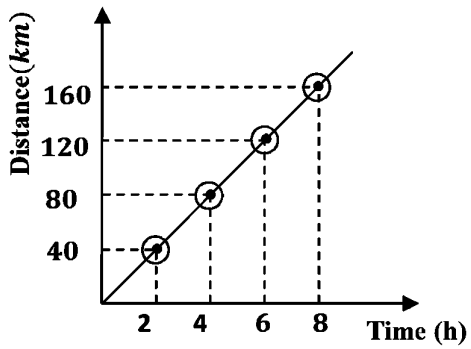
04) (a) The given sketch shows building AB and $3.5m$ height tree PQ are situated on a horizontal ground at distance $70\,m$. Angle of the depression from B to Q is $48°$.



(i) Copy this figure on your answer sheet and include above information in it?

(ii) Find the height of the building by using the trigonometric ratios?

(e) A distance - time graph of the motions of a bus travels from town A to town B is given below



(i) Find the distance travelled by bus in first four hours?

(ii) Calculate the speed of the bus?

05) A table with information on the amount of rice that was product during a period of 30 days at a rice mill is given below.

Amount of rice (kg)	200 -300	300 - 400	400 - 500	500 - 600	600 - 700	700 - 800	800 - 900	900 - 1000
Number of days	2	3	4	x	6	3	2	1

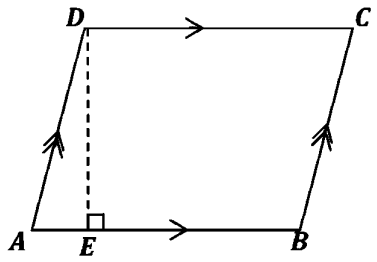
(i) How many days product the $500 - 600\ kg$ rice?

(ii) What is the model class of this distribution?

(iii) Calculate to the nearest kilogram the mean amount of rice product in a day during this period?

(iv) 1.05 t rice is remaining in the store in a certain month. Estimate the amount of rice product in a day. If expeet to fully export the remaining rice and product the rice to next month when not change the rate of export?

06) In a parallelogram $ABCD$,
length of AB is $(y + 3)$ units
and length of DE is 4 units less than AB



(i) Find the length of DE in terms of y?

(ii) Find the area of parallelogram $ABCD$ in terms of y?

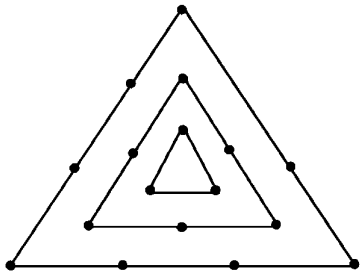
(iii) If area of parallelogram $ABCD$ is 23 square units show that $y^2 + 2y - 26 = 0$

(iv) By completing squares or by another methods solve the equation and write down the length of AB (Take $\sqrt{3} = 1.7$)

Part - II B

Answer only five questions.

07) The figure shows the way of some small light bulbs have been conncted in a triangular pattern in the first three frame of a decoration.

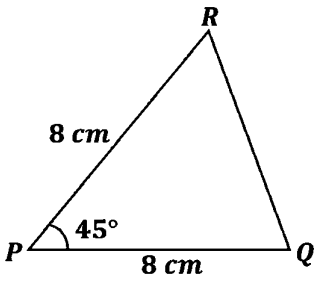


i) If 8 triangular frames are shown in above decoration show that the number of small light bulbs is greater than 100?

ii) If light bulbs are connected in 8 triangular frame in the pattern of 3 , 6 , 12 .....
Show that in this situation 657 bulbs needed more than first situation (i)

08) Using only a straight edge with a mm/cm scale and a pair of compasses.

i) Construct the triangle PQR based on the measurement on the sketch diagram.



ii) Draw the locus of a point which are equidistance from P and Q

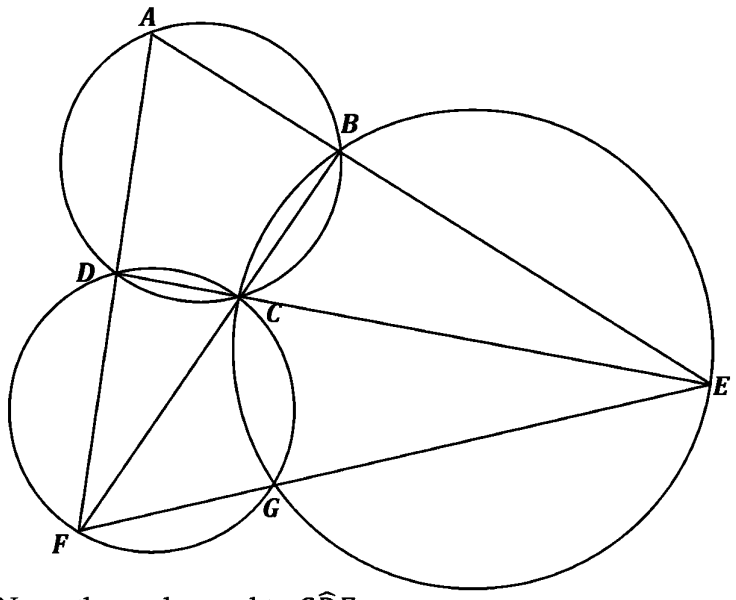
iii) Draw the cirele. Whieh eentre is on the side PR and PQ is tangent.
O is the centre of the circle.

iv) Write the radius of circle?

v) Write the length of OP?

vi) Find the approximate value of $\sqrt{2}$ by using the above (v) measurement.

09) In the figure $ABCD$ is a cyclic quadrilateral, extended AB and DC are meets at the point E and extended BC and AD are meets at the point F. E and F are out of the circle. The circle through the point B, C, D and the circle through the point D, C, F are intersect at the point G.

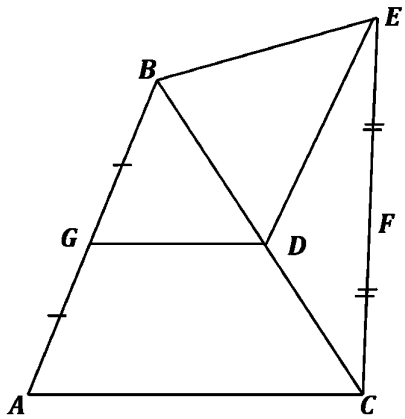


i) Name the angle equal to $C\hat{D}F$

ii) Show that $C\hat{D}F + E\hat{B}C = 180°$

iii) Show that FGE is a straightline.

10)



In the triangle ABC. G is the midpoint of AB the line drawn parallel to AC through G meets BC at D. midpoint of EC is F and AB Parallel to DE.

i) What is the relationship between BD and DC?

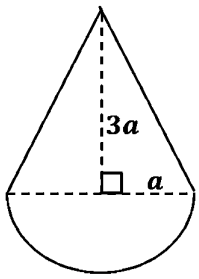
ii) Write the relationship between the length of BE and DE?

iii) Write the relationship between the area of $\Delta\, BDE$ and $\Delta\, DEC$? Give the reason.

iv) Find the $\Delta\, BCE : \Delta\, DEC$

v) If $D\hat{G}B = D\hat{B}E$ prove that $\frac{AC}{BE} = \frac{AB}{BD}$

11) a) In the figure show that a compound solid made by same base radius right circular cone shape metal and hemisphere shaped metal. right circular cone height is $3a$ and radius a.



i) Find the volume of hemisphere in terms of π and a?

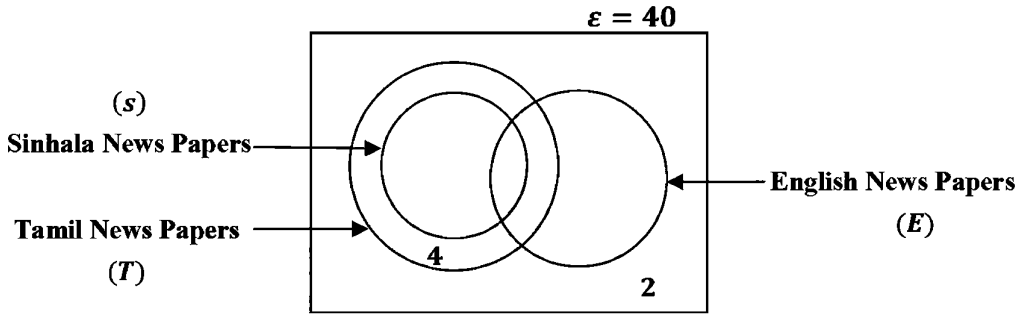
ii) Give the volume of right circular cone in terms of π and a?

iii) Show that the volume of above compound solid is $\frac{5}{3}\pi a^2$.

iv) Above compound solid metal is melted down and small spheres (radius $\frac{a}{2}$) are made from it without any wastage of the metal. Find the number of small spheres made from it?

b) Simplify by using the logarithm tables. $\frac{\sqrt{0.069}}{1.354}$

12) a) The Venn diagram represents the information about the news papers which are reading by the 40 workers in an office.



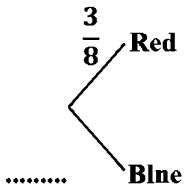
i) The number of workers reading the tamil news papers are 30. How many workers reading the English news papers only?

ii) If the number of workers reading the Sinhala papers are 20. How many workers reading both Tamil and English papers only?

iii) Write the relationship of T and S in set notation?

b) In a box there are 3 red balls and 5 blue balls of the same size and shape. One ball is drawn out randomly from this bag.

i) ,An incomplete tree diagram to represent this information is given below. Write down the corresponding probabilities on the branches



ii) After replacing the ball, the ball is randomly drawn out again and its colour is also noted. Extend the tree diagram relevant to the above events?

iii) Find the probability of both getting red balls.