Name/Index No: ....

Answer all questions on the paper itself.
2 marks for each questions of **Part A** and *10 marks* for each questions of **Part B**

Part A

1. Customs duty of 60% is charged for a computer that is imported. If the value of this computer
   is Rs.8000, find the amount that has to be paid as

2. After removing part of a sector from a square lamina, the given
   compound figure is remained. Find the perimeter of this remained
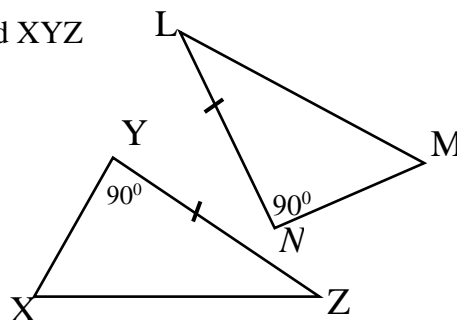   part.

   7 cm
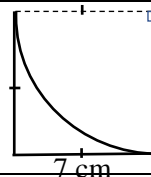
3. Simplify. $\dfrac{2}{3x} + \dfrac{1}{6x}$

4. Find the least common multiple. $4\,a^2b\,,2ab\,,3a^2$

5. Solve $\dfrac{6}{x} - 1 = 2$

6. Write the remain necessities of the given triangles LMN and XYZ
   to be congruence relevant to the below cases.

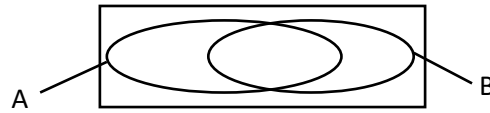   S.A.S - ....
   R.H.S - ....

   90^0 90^0

7. Fill in the blanks with using suitable words .

   …………………. of a rhombus is equal and its diagonals are …………………… bisected
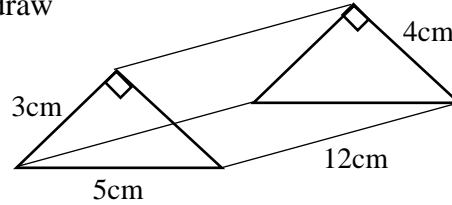   each other.

8.Shade the region of the notation $A \cap B^1$ in the given venn diagram.
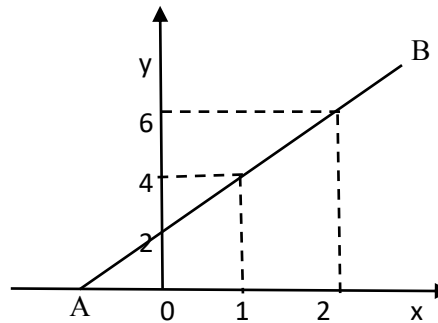

9.Select the suitable value for $\sqrt{22}$

   i .   4.6   ii.   4.7   iii.   4.8

10.Without considering the triangular faces of the figure, draw another faces with the correct dimensions.

11. $\begin{aligned} 3x - y &= 7 \\ 5x + 9y. &= 33 \end{aligned}$ without solving,find the value of $x + y$

12.Write the gradient of the line AB.

13.Diluni bought 2 books, 3 pens and 5 graph papers and Hiruni bought 4 books , 3 pens and 4 graph papers from a shop. Represent above instructions in a matrix as order of 2 x 3.

14. Find the value of x
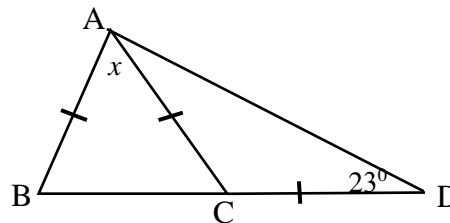
15.Find the value of x , the circle with centre O.
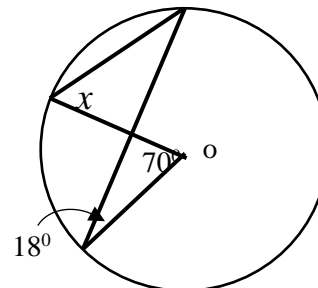
16.According to the given table write down the boundaries of the class interval 11 – 20 .

  i. Lower boundary   ....

  ii. Upper boundary   ....

Class interval	Frequency
1-10	5
11-20	8
21-30	4

17. There are 12 males and 20 females in a bus. Find the probability of a male get off the bus in a certain bus stop.

18. If $log_4\, b = 3$, find the value of b .

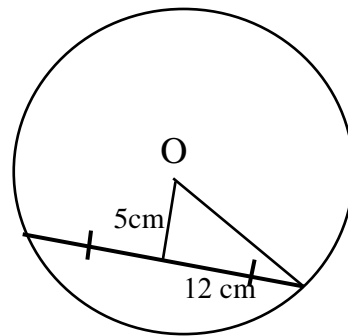19. The curved surface area of a cylinder is $126\ cm^2$ and its height is 6cm. Find the circumference

   of its base.

20. According to the given instructions in the below figure, find
   the radius of the circle with centre O

O

5cm

12 cm

21. Find the 11th term of the arithmatic progression 11,16,21................

22. A motorcyclist travelled 18km within 20 minutes. Find his speed in
   kilometers per hour.

23. Find the value of x and y.

125^0

9 cm

y cm

x
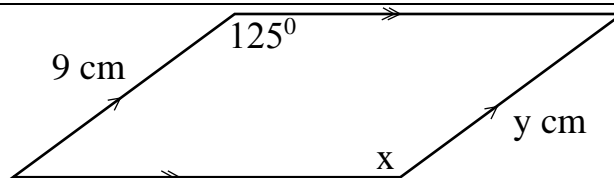
24. A portion of the locus of a points that moves at a constant distance of 4m from

   the given point P is indicated by the arc in this sketch. The

   straight line RS is at a distance of 7m from P. Indicate by

   a sketch on this figure, how the points on the arc which are

   at a distance of 4m from the straight line RS also, are found.

4m   P

R ————————————— S

25. Find the value od x and y.

62^0

8 cm

116^0

y cm

x^0
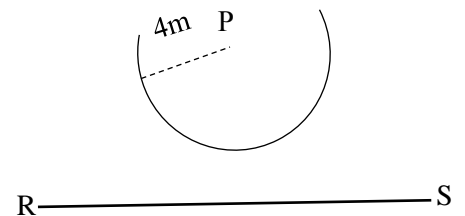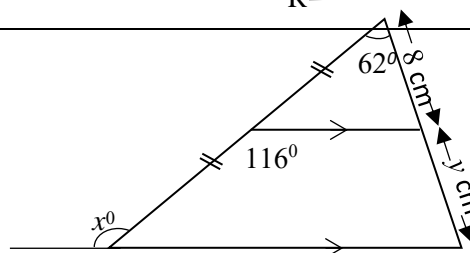
Part B

Answer all questions on this question paper itself.

01) (a) While Mrs. Renuka was engaging in a shopping; $\frac{3}{8}$ of her money has spent to buy a clothe and $\frac{1}{5}$ of the remaining amount, was spent to buy a pair of sandals.

  i. What fraction of the initial amount ,Mrs.Renuka had spent to buy a pair of sandals ?

  ii. Find how many times of the price of a clothe that she was bought as the price of a pair of sandals ?

  iii. Mrs.Renuka purchased a hand bag by spending Rs.800 which was remained after purchasing a clothe and a pair of sandals. If $\frac{2}{5}$ was remained from the total amount,then find the amount she had initially.

  (b) Food sufficient for 15 students for 12 days was stored at a certain hostel. After 4 days 3 students had to go to their houses due to illness. How many extra days for sufficient the stored food.

02) (a) A businessman invested Rs.14000 and bought some number of shares in a company at the market price of Rs.40 per share. At the end of a year he recieved Rs. 2100 dividend income.

  i. Find the number of shares he purchased

  ii. Find the annual dividends the company paid per share.

  iii. If the businessman earned capital gain of Rs.600 by selling some number of shares for

  Rs.8600, then find out the number of shares he sold.
  .

  (b) The businessman had to pay income tax as per the following diagram, for his total annual income.

Annual income (rupees)	Income tax percentage
First 500 000	Tax free
Second 500 000	4%

  If the businessman pays Rs.13000 as income tax for a year, then find his annual income.

03) The figure illustrates a part of a wall hanger , which consists the portion ABCD in the shape of trapezium of a piece of white colour cloth and a semicircular portion of a piece of coloured cloth. Semicircular portion pasted on a trapezium with AD as a diameter.

$(\pi = \frac{22}{7})$
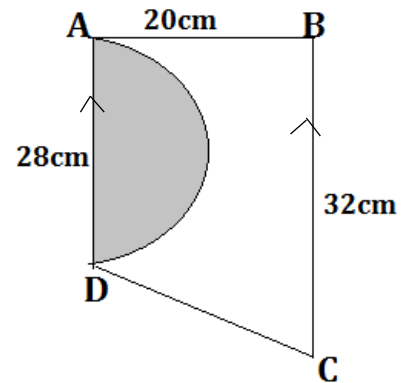
i. It has been decided to attach buttons along the curved edge of the semicircular portion, starting from A and ending at D, such that the distance between every two consecutive buttons is 4cm. How many buttons are required for this?

ii. Find the area of the remaining space of the white colour cloth, after pasting that coloured piece of cloth on it.

iii. It is required to add a ADE right angled triangular portion to this wall hanger ,as its area equal to half of the area of the semicircular portion with AD as its one side. And also $E\hat{A}D$ or $A\hat{D}E$ consider as a right angle. Draw a sketch of this right angled triangle with its measurements, in the above figure.

---

04) (a) There were 24 women and 21 men who had gathered to collect dry goods parcels from a community organization. $\frac{2}{3}$ of them were age of 50 years or elder than 50 years and the remainings were below 50 years.

i. A portion of a tree diagram drawn to indicate the probabilities of a person picked at random from all these people , being a male or a female. Complete the following tree diagram.

M

F

ii   Extend the above tree diagram , according to the events of randomly selected person being an age of 50 years or elder than 50 years and below 50 years.

iii. Find the probability of a person who recieved that dry goods parcel being an age of 50 years or elder than 50 years.

(b)   There are 4 women (W$_1$, W$_2$, W$_3$, W$_4$) and a man (P$_1$) qualified to have two relief aid parcels from this organization. Then randomly selected 2 persons among this group to give these 2 parcels

i.   Mark the sample space relevant to the above instructions in the given grid using the symbol " x".

Second parcel

P$_1$

W$_4$

W$_3$

W$_2$

W$_1$

           W$_1$ W$_2$ W$_3$ W$_4$ P$_1$ **First parcel**

ii.   Find the probability of getting these 2 parcels by a male and a female and encircle the event in the grid.

05)   The following incomplete frequency distribution and corresponding incomplete histogram showing information about the electricity units that were produced by a solar panel placed on a roof top of a certain house in a month.
(here 470 – 480 denote the intervals " equal to 470 or greater than 470 and less than 480" , and the other intervals denote similarly.)

Units of electricity (kw)	Days
450-470	
470-480	
480-490	5
490-500	4
500-530	9

Number of days

Units of electricity

i. Fill in the blanks in the table.
ii. Complete the above histogram.
iii. Draw the frequency polygon on the histogram.
iv. Express the number of electricity units more than 480 as a percentage of the total number of days.

Provincial Department of Education- North Western Province
Pre – Test 2022(2023)
Mathematics- II

Grade - 11   **Time: 3hours**

Additional Reading Time – 10 minutes   Use additional reading time to go through the question paper , select the questions and decide on the questions that you give priority to in answering.

Name/ Index No. :

Instructions :

- Answer *ten* questions selecting *five* questions from *Part A* and *five* questions from *Part B*.
- Each question carries 10 marks.
- The volome of a solid right circular cone of base radius "r" and height "h" is $\frac{1}{3} \pi r^2 h$ and the volume of a solid right circular cylinder of radius "r" and height "h" is $\pi r^2 h$.

Part A

01.   The following table represents the interest taken by two financial companies A and B for their loans.

Company A	Company B
1. Annual interest rate is 24%	1. Annual compound interest rate is 12%.
2. The interest is calculated on the reducing balance.	2. Need to pay total amount at once including both initial and interest at the end of the time period.
3. The loan amount with the interest can be paid as monthly installments.	

Samantha needs to take a loan of Rs.30000 that will be settled completely in 2 years with the total amount. Samantha's father said that the most benificial one is company A.
Prove that father's status is true when considering the total interest for 2 years.

02.   An incomplete table prepared to draw the graph of the function y= (x+1)^2- 4 is given below.

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

i.   Find the value of y , when x = (-1).

ii.   Using the scale of **10** small divisions as one unit along each of the **x-axis** and the **y-axis** , draw the graph of the above function on a graph paper.

   Using the graph that you drew,

iii.   Write the equation of its axis of symmetry.

iv.   Find the roots of the equation, x^2+2x-3=0.

v.   Express the function in the form of y = (x- a) (x+ b) and write the value of **a** and **b**.

03.   (a)   A and B are two rectangular shaped classrooms and the following notices represents the dimensions of A and B.

        A   B

| |
|---|
| • Length = x meters |
| • Breadth = y meters |
| • Length is 1m more than to the breadth. |

| |
|---|
| • Length is 1m more than to the length of A. |
| • Breadth is $\frac{1}{2}$ m more than to the breadth of A. |
| • Perimeter = 23m. |

   i.   Construct a simultaneous equation contains **x** and **y** according to the dimensions of classroom **A**.
   ii.   Construct a simultaneous equation contains **x** and **y** according to the dimensions of classroom **B**.
   iii.   By solving this pair of equations, find the length and the breadth of classroom A.
   iv.   If A = $\begin{pmatrix} 4 & 1 \\ 0 & -2 \end{pmatrix}$ and B = $\begin{pmatrix} 3 \\ 1 \end{pmatrix}$, find the matrix AB.

04).   The side length of large square is 3m less than the 2 times of the side

   length of small square.The area of shaded part is 12 m^2. By taking the

   side length of small square as x meters, show that x^2 - 4 x -1 = 0 and

   prove the area of small square is not exceeded 18 m^2.

   (*consider* $\sqrt{5}$ = 2.2)

2
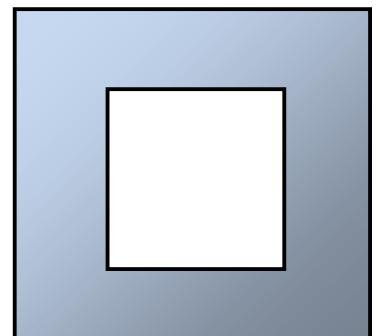
05) Pasdindu starts to drive his vehical from the place of A and after travelling 12km to the North direction, reached to B. Then another 20km travels from B with the bearing of **040°** to the place of C. And also next 25km travels to the East direction and reached to D.
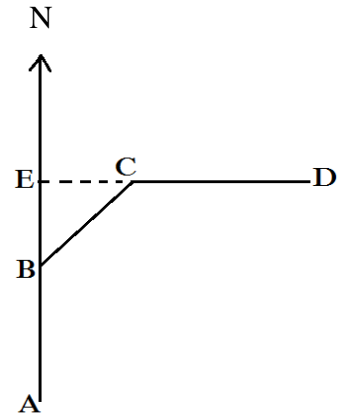
   i. Copy the given figure on to your answer script and indicate the above information on it.
  ii. Using the trigonometric tables find the distance CE to the nearest kilometer.
 iii. If the distance of BE is 15km to the nearest whole number, find out the bearing of D from A. $(E\hat{A}D)$

06) In certain factory of producing the ornamental goods, the details of the number of dolls made by each worker in a day are shown in the following frequency table.

Nunber of dolls	50-54	55-59	60-64	65-69	70-74	75-79
Number of workers	3	6	10	6	4	1

   i. Find the maximum number of dolls made by a worker in this day.
  ii. Find the mean number of dolls made by a worker in a day to the nearest whole number.
 iii. The factory owner expects to produce 50000 dolls in every month. If they working only 26 days per month, then can he reaches to his purpose ? Give reasons.

3

7. It is paid Rs.3000 to water well drilling machine for first meter and after that every meret need to be paid Rs.400 more than the cost of previous meter.
   i. Find the cost of first three meters drilling by machine A respectively.
   ii. Find the total amount to be paid for drilling 10m depth of well by machine A.

   There is another water well drilling machine B. For the first 3m, it is paid Rs.200 per each. After that each additional meter need to be paid 2times than the cost of its previous meter.

   iii. Find the cost of 4th and 5th meters respectively when drilling a well by Machine B.
   iv. Find the total cost to be paid for drilling 10m depth of well by machine B and then select which one is the most benificial machine to drill 10m deep well.

8. A right circular conical container of base radius " r" and perpendicular height 18cm is filled with water and water in this container is poured to a right circular cylindrical container of base radius 4cm. Then that cylincrical container is filled up to 10cm its height.

   Show that, $r = 4 \times \sqrt{\dfrac{5}{3}}\ cm$ and by using the logarithmic tables find "r" in centimeters to the nearest whole number.

9. Use only a straight edge with a cm/mm scale and a pair of compasses for the following construction. Show the construction lines clearly.

   i. Construct a straight line segment AB of length 9cm.
   ii. Construct a circle with diameter AB and mark point C on the circle such that AC=BC. Complete the triangle ABC.
   iii. Name the centre of above circle as O and construct a parallel line through the point O to the side ACand name the intersection point on BC side as D.
   iv. Construct a tangent to the circle at the point C and mark the point of intersection this tangent and the line OD produced as E.
   v. Give reasons why AOEC is a parallelogram.

10. In the given figure PQ is a diameter of the circle with centre O. R is a point on the circle and the tangents drawn to the circle at P and R meet at S.
    i. Prove that SPOR is a cyclic quadrilateral.
    ii. Show that, $P\hat{S}R = 2Q\hat{P}R$.
    iii. Show that, $P\hat{R}Q = S\hat{P}Q$ and from it show that, $S\hat{P}R = Q\hat{R}O$.
    iv. Prove that, PR.PO=PS.RQ   .
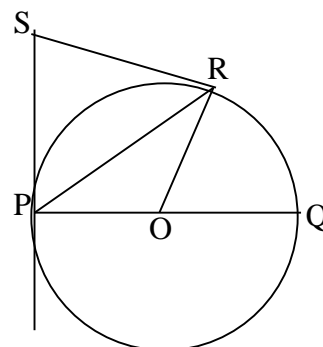
11. In the given parallelogram ABCD, O is a midpoint on the diagonal AC. The straight line drawn through the point O is intersected AD and BC sides at the points of X and Y in respectively. And also another straight line drawn throuh the point O is intersected DC and AB sides at the points of P and Q in respectively. Show that PXQY is a parallelogram and prove the areas of the triangles QXY and PQY as equally.

12. There are 70 students in grade 11 in a mixed school of which 37 are boys. Among those boys 10 are studying both Art and Agriculture and 18 are studying Agriculture and 12 boys studying neither Art nor Agriculture. The number of girls studying Agriculture and Art is 6. There are total of 27 students studying Art and total of 29 students studying Agriculture.

    i.   Copy the venn diagram onto your answer script and name the set of students suitably..
   ii.   By the given instructions ,complete the venn diagram.
  iii.   How many girls are studying Agriculture?
  iv.   How many students are studying neither Art nor Agriculture?
   v.   Find the probability of randomly selected student being a girl who studying Art among the Grade 11 students in this school.