St. Ursula Girls' High School Nagpur FINAL EXAM – 2020

Class : IX (**A**, **D**, **E**, **F**, **G**)

Time: 2.00 Hr.

Subject: Math-II

Q. I A) Select the correct alternative and fill in the blanks

(4)

- 1. If all pairs of adjacent sides of a quadilateral are congwent then it is called _____
 - a) rectangle

b) parallelogram

c) trapezium

- d) rhombus
- 2. The circle which passes throught all the vertices of a triangle is called ______
 - a) circumcircle
- b) incircle
- c) congwent circle
- d) concentric circle.
- 3. What is the equation of the x-axis?
 - a) x = 0

b) y = 0

c) x+y = 0

- d) x = y
- 4. Which of the following is the value of $\sin 90^{\circ}$?
 - a) $\frac{\sqrt{3}}{2}$

b) 0

c) $\frac{1}{2}$

d) 1

B) Solve any four of the following questions?

(4)

- 1) In which quadrant whose x-coordinate is positive and they y coordinate is negative lie.
- 2) Fill in the blanks:
 - i) $\sin 20^\circ = \cos$
 - ii) $\tan 30^{\circ} = \tan \boxed{} = 1$
- 3) In a rhombus PQRS if PQ = 7.5 then find the lengths of the remaining sides of the rhombus.
- 4) Find the length of the longest chord of the circle with radius 2.9 cm.
- 5) Side of a cube is 4.5 cm. Find the surface area of all vertical faces of the cube.

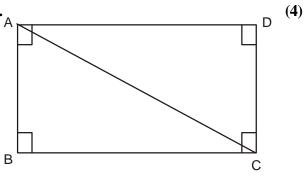
Q. II A) Perform any two of the following activities.

1) The adjacent sides of a rectangles are

7 cm and 24 cm

Find the length

of its diagonal



Solution:- Let \(\sum ABCD \) be a given rectangle

$$AB = 7$$
 cm, $BC = 24$ cm

In ΔABC,

 $\angle ABC = 90^{\circ}$ - (Angle of a rectangle)

By Pythagoras theorem

$$AC^2 = AB^2 + BC^2$$

$$\therefore AC^2 = \boxed{ + 24^2}$$

$$\therefore AC^2 = \boxed{ } + 576$$

$$\therefore AC = \boxed{ }$$

2) If
$$\sin \theta = \frac{4}{5}$$
 then find $\cos \theta$

Sol.:
$$\sin \theta = \frac{4}{5}$$

$$\sin^2\theta + \cos^2\theta = 1$$

$$\therefore \qquad + \cos^2 \theta = 1$$

$$\therefore \qquad \qquad + \cos^2 \theta = 1$$

$$\therefore \cos^2 \theta = 1 - \frac{16}{25}$$

$$\therefore \cos^2 \theta = \frac{25-16}{25}$$

$$\therefore \cos^2 \theta = \boxed{}$$
$$\therefore \cos^2 \theta = \boxed{}$$

$$\therefore \cos^2 \theta =$$

3) Complete the following table :-

Types of triangle	Scalene	Acute	Right	Obtuse
	Triangle	angled	angled	angled
		triangle	triangle	triangle
Position of incentre	Inside the		Inside the	Inside the
	triangle		triangle	triangle
Position of				
Circumcentre		Inside the		
		triangle		

B) Solve any four of the following questions:-

- Find the value of $\sin^2 45^o + \sin^2 30^o + \sin^2 60$. 1)
- The perpendicular height of a cone is 12cm and its slant height is 13cm. Find the radius of the base
- Which of the equations given below have grapsh parallel to the x-axis and which one have graphs 3) parallel to the y-axis?

i)
$$x = 3$$

ii)
$$y-2 = 0$$

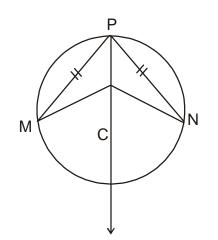
iii)
$$x+6 = 0$$

iv)
$$y = -5$$

- 4) Radius of a circle is 34cm and the distance of the chord from the centre is 30 cm. Find the length
- Perimeter of a parallelogram is 150 cm. One of its sides is greater than the other by 25 cm Find lengths of all sides.

Q. III A) Perform any one of the following activities.

Seg PM and Seg PN are congruent chords of a circle with centre C.
 Show that the ray PC is the bisector of ∠NPM



(3)

Proof:- Draw Seg CM and Seg CN.

In ΔCPM & ΔCPN,

Seg PM \cong seg $\boxed{ ---- given}$

Seg PC ≅ seg PC -

Seg CM \cong seg CN -

 $\therefore \Delta CPM \cong \Delta CPN -$

 $\therefore \angle CPM \cong \Box - (c.a.c.t.)$

 \therefore is the bisector of \angle NPM.

2) In the right angled Δ LMN, if

$$N = \theta$$
, $\angle M = 90^{\circ}$, and $\cos \theta = \frac{24}{25}$

Find $\sin \theta$ and $\tan \theta$

Soloution -
$$\cos \theta = \frac{24}{25} = \frac{MN}{LN}$$
 ---- (1)

Let MN be 24k, then

$$LN = 25 K - (2)$$

In the right angled Δ LMN, by Pythagoras theorem,

$$LN^2 = LM^2 + MN^2$$

$$\therefore \qquad = LM^2 + (24K)^2$$

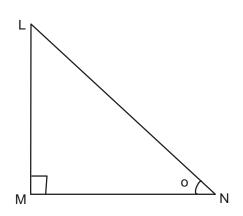
$$\therefore \qquad = LM^2 + 576K^2$$

$$625K^2 - 576K^2 = LM^2$$

$$\therefore LM^2 =$$

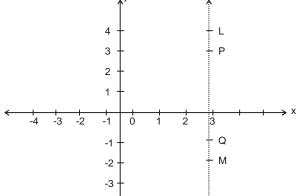
$$\therefore \sin \theta = \frac{LM}{LN} = \boxed{}$$

&
$$\tan \theta = \frac{LM}{LN} =$$

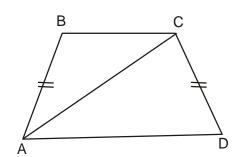


B) Solve any two of the following:-

- 1) Prove that "the segment joining the centre of a circle and the midpoint of its chord is perpendicular to the chord".
- 2) In the graph alongside, line M is Parallel to the y axis



- i) What is the distance of line LM from the y-axis?
- ii) Write the coordinates of the points P, Q and L
- iii) What is the difference between the x coordinates of the points L and M?
- 3) In ☐ ABCD,
 side BC ∠side AD
 side BC|| side AD
 and if
 side BA ≅ side CD
 then prove
 that ∠ABC ≅ ∠DCB



Q. IV Solve any two of the following:-

- 1) Construct incircle and circumcircle of an equilateral Δ DSP with side 7.5 cm. Measure the radii of both the circles and find the ratio of radius of circumcircle of the radius of incircle.
- 2) Draw the graphs of the equations given below.

$$i) 3x - y = 0$$

ii)
$$2x + y = 1$$

3) In a field, dry fodder for the cattle is heaped in a comical shape. The height of the cone is 2.1m and diameter of base is 7.2m. Find the volume of the fodder. If it is to be covered by polythene in the rainy season, then how much minimum polythene sheet is needed?

$$(\Pi = \frac{22}{7} \text{ and } \sqrt{17.37} = 4.17)$$

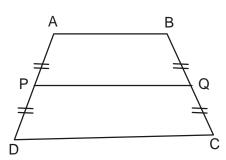
Q. V Solve any one the following:

(3)

(8)

(6)

- 1) There are 25 persons in a tent, which is conical in shape. Every person needs an area of 4m² of the ground inside the tent. If the height of the tent is 18m, find the amount of air inside the tent.
- 2) In ABCD, seg AB ||seg DC, P and Q are the midpoints of sides AD and BC respectively and PQ = 10 cm.



- i) Find the length of seg AB and seg Cd.
- ii) Under what condition will AB, PQ and DC be all equal? Hence identify the type of quadrilateral so formed.

