



**G - W CLASSES, GONDIA**  
 NEAR GIRI HOSPITAL, VIVEKANAND COLONY GONDIA  
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### G-W PARIKSHA (SET-B)

CLASS -X

SUB.- MATHEMATICS

TIME ALLOWED: 3 HRS

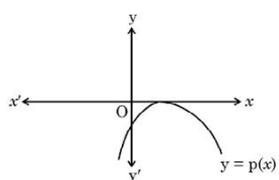
MAX. MARKS : 80

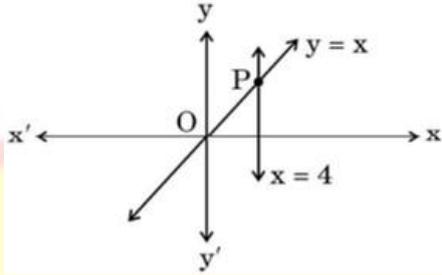
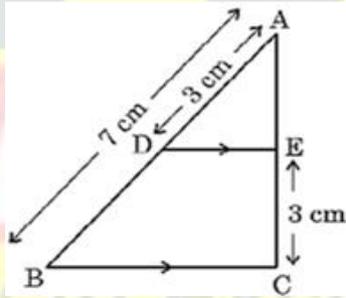
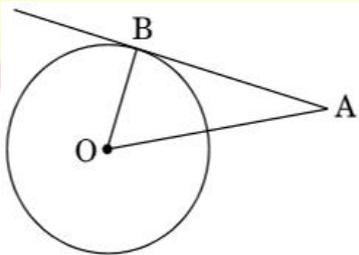
#### General Instructions:

Read the following instructions carefully and follow them:

- This question paper contains 38 questions.
- This Question Paper is divided into 5 Sections A, B, C, D and E.
- In Section A, Questions no. 1 - 18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion - Reason based questions of 1 mark each.
- In Section B, Questions no. 21 - 25 are very short answer (VSA) type questions, carrying 02 marks each.
- In Section C, Questions no. 26 - 31 are short answer (SA) type questions, carrying 03 marks each.
- In Section D, Questions no. 32 - 35 are long answer (LA) type questions, carrying 05 marks each.
- In Section E, Questions no. 36 - 38 are case study - based questions carrying 4 marks each with sub - parts of the values of 1,1 and 2 marks each respectively.
- All Questions are compulsory. However, an internal choice in 2 Questions of Section B, 2 Questions of Section C and 2 Questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
- Draw neat and clean figures wherever required.
- Take  $\pi = 22/7$  wherever required if not stated.
- Use of calculators is not allowed.

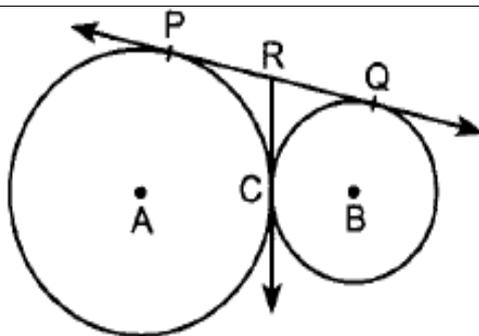
#### SECTION A

1	If $x = ab^3$ and $y = a^3b$ , where $a$ and $b$ are prime numbers, then is equal to: a) $1 - a^3b^3$ b) $ab(1 - ab)$ c) $ab(1 - ab)(1 + ab)$ d) $ab - a^4b^4$	[1]
2	The graph of $y = p(x)$ is given, for a polynomial $p(x)$ . The number of zeroes of $p(x)$ from the graph is 	[1]

	a) 0                      b) 1                      c) 3                      d) 2	
3	<p>The lines represented by the linear equations <math>y = x</math> and <math>x = 4</math> intersect at P. The coordinates of the point P are:</p> 	[1]
	a) (4, 4)                      b) (- 4, 4)                      c) (4, 0)                      d) (0, 4)	
4	<p>The roots of the quadratic equation <math>ax^2 + bx + c = 0</math> are real and distinct, if:</p>	[1]
	a) $b^2 - 4ac = 0$ b) $b^2 - 4ac > 0$ c) $b^2 - 4ac \geq 0$ d) $b^2 - 4ac < 0$	
5	<p>The next term of the A.P.: <math>\sqrt{7}</math>, <math>\sqrt{28}</math>, <math>\sqrt{63}</math> is:</p>	[1]
	a) $\sqrt{112}$ b) $\sqrt{97}$ c) $\sqrt{70}$ d) $\sqrt{84}$	
6	<p>The perimeter of the triangle formed by the vertices (0,0), (2,0) and (0,2) is:</p>	[1]
	a) $(4 + 2\sqrt{2})$ units                      b) 6 units                      c) $6\sqrt{2}$ units                      d) 4 units	
7	<p>A circle with centre P(4,5) passes through the point A(0,9). The length of the diagonal of the largest square inside this circle is:</p>	[1]
	a) $8\sqrt{2}$ units                      b) $\sqrt{53}$ units                      c) $4\sqrt{2}$ units                      d) $2\sqrt{53}$ units	
8	<p>In the given figure, <math>DE \parallel BC</math>. If <math>AD = 3</math> cm, <math>AB = 7</math> cm and <math>EC = 3</math> cm, then the length of AE is</p> 	[1]
	a) 2 cm                      b) 3.5 cm                      c) 2.25 cm                      d) 4 cm	
9	<p>In Figure, AB is a tangent to the circle with centre at O from an external point A. If <math>OA = 6</math> cm and <math>OB = 3\sqrt{3}</math> cm, then the length of the tangent is</p> 	[1]
	a) $\sqrt{33}$ cm                      b) $3\sqrt{3}$ cm                      c) 9 cm                      d) 3 cm	

10	In the adjoining figure, AB is the chord of larger circle which touches the smaller circle at P . If length of $AB = \text{diameter of inner circle} = 2r$ , then the diameter of larger circle is:	[1]
	a) $2\sqrt{2}r$ b) $2r$ c) $\sqrt{2}r$ d) $4r$	
11	If $\sin A = \frac{3}{5}$ , then value of $\cot A$ is:	[1]
	a) $\frac{4}{3}$ b) $\frac{4}{5}$ c) $\frac{3}{4}$ d) $\frac{5}{4}$	
12	If $5 \tan \theta - 12 = 0$ , then the value of $\sin \theta$ is:	[1]
	a) $\frac{12}{13}$ b) $\frac{5}{13}$ c) $\frac{12}{5}$ d) $\frac{5}{12}$	
13	The angle subtended by a tower of height 200 metres at a point 200 metres from the base is	[1]
	a) $30^\circ$ b) $0^\circ$ c) $45^\circ$ d) $60^\circ$	
14	If an arc of a circle of diameter 10 cm subtends an angle of $144^\circ$ at the centre of the circle, then the length of the arc is:	[1]
	a) $2\pi \text{ cm}$ b) $5\pi \text{ cm}$ c) $6\pi \text{ cm}$ d) $4\pi \text{ cm}$	
15	If $\theta$ is the angle (in degrees) of a sector of a circle of radius r, then area of the sector is	[1]
	a) $\frac{2\pi r\theta}{180}$ b) $\frac{\pi r^2\theta}{180}$ c) $\frac{\pi r^2\theta}{360}$ d) $\frac{2\pi r\theta}{360}$	
16	Two different coins are tossed together. The probability of getting exactly one tail is:	[1]
	a) $\frac{1}{4}$ b) $\frac{3}{4}$ c) $\frac{1}{2}$ d) 1	
17	If E is an event such that $P(E) = 0.1$ , then $P(\overline{E})$ is equal to	[1]
	a) 0.9                                      b) - 1                                      c) 0.99                                      d) $\frac{1}{2}$	
18	Mode and Mean of a data are $15x$ and $18x$ , respectively. Then the median of the data is:	[1]
	a) $11x$ b) $x$ c) $17x$ d) $34x$	
19	<b>Assertion (A):</b> Two identical solid cubes of side 5 cm are joined end to end. The total surface area of the resulting cuboid is $350 \text{ cm}^2$ . <b>Reason (R):</b> Total surface area of a cuboid is $2(lb + bh + hl)$	[1]
	a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	





### SECTION C

26 Three sets of English, Hindi and Mathematics books have to be stacked in such a way that all the books are stored topic wise and the height of each stack is the same. The number of English books is 96, the number of Hindi books is 240 and the number of Mathematics books is 336. Assuming that the books are of the same thickness, determine the number of stacks of English, Hindi and Mathematics books. [3]

27 Find the zeroes of the given quadratic polynomials and verify the relationship between the zeroes and the coefficients.  $6x^2 - 3 - 7x$  [3]

28 Prove:  $\sin^6 A + 3 \sin^2 A \cos^2 A = 1 - \cos^6 A$  [3]

29 Find the sum of the odd numbers between 0 and 50. [3]

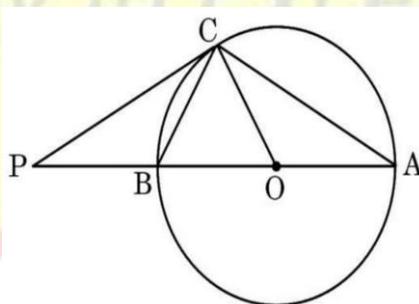
**OR**

If the  $m^{\text{th}}$  term of an AP be  $\frac{1}{n}$  and its  $n^{\text{th}}$  term be  $\frac{1}{m}$ , then show that its  $(mn)^{\text{th}}$  term is 1.

30 If the median of the following data is 33 then, find the value of m: [3]

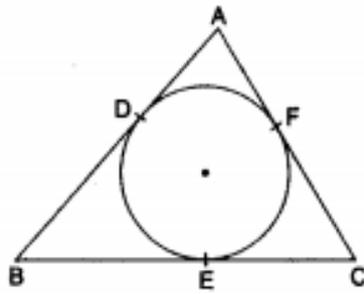
Class	0 - 15	15 - 30	30 - 45	45 - 60	60 - 75	75 - 90
Frequency	17	35	40	18	m	2

31 In the given figure, PC is a tangent to the circle at C. AOB is the diameter which when extended meets the tangent at P. Find  $\angle CBA$  and  $\angle BCO$ , if  $\angle PCA = 110^\circ$ . [3]



**OR**

In the given figure, a circle inscribed in a triangle ABC, touches the sides AB, BC and AC at points D, E and F respectively. If  $AB = 12$  cm,  $BC = 8$  cm and  $AC = 10$  cm, find the lengths of AD, BE and CF.



**SECTION D**

32 As observed from the top of a 75 m high lighthouse from the sea - level, the angles of depression of two ships are  $30^\circ$  and  $60^\circ$  . If one ship is exactly behind the other on the same side of the lighthouse, find the distance between the two ships. (Use  $\sqrt{3} = 1.73$ ) [5]

33 The following table shows the ages of the patients admitted in a hospital during a year: [5]

<b>Age (in years)</b>	5 - 15	15 - 25	25 - 35	35 - 45	45 - 55	55 - 65
<b>Number of patients</b>	6	11	21	23	14	5

Find the mode and mean of the data given above.

34 Three consecutive positive integers are such that the sum of the square of smallest and product of other two is 67. Find the numbers, using quadratic equation. [5]

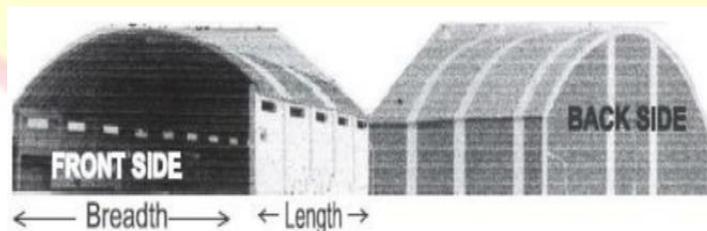
**OR**

The sum of two numbers is 45. If 5 is subtracted from each of them, the product of these numbers becomes 124. Find the numbers.

35 A vessel is in the form of a hollow hemisphere mounted by a hollow cylinder. The diameter of the hemisphere is 14 cm and the total height of the vessel is 13 cm. Find the inner surface area and the volume of the vessel. [5]

**OR**

In order to provide shelter to flood victims, a shed was constructed using tin sheets which is in the form of cuboid surmounted by a half cylinder as shown below:



The length, breadth and height of cuboidal portion are 10 m, 7 m and 3 m respectively. The diameter of the cylindrical portion is 7 m. Find the cost of tin sheets required to make the shed at the rate of ₹ 70 per square metre, given that the shed is open from the front side and closed from the back side.

**SECTION E**

36 A school is organizing a grand cultural event to show the talent of its students. To accommodate the guests, the school plans to rent chairs and tables from a local supplier. It finds that rent for each chair is ₹ 50 and for each table is ₹ 200. The school spends ₹ 30,000 for renting the chairs and tables. Also, the total number of items (chairs and tables) rented are 300. [4]



If the school rents '  $x$  ' chairs and '  $y$  ' tables, answer the following questions:

1. Write down the pair of linear equations representing the given information. (1)

2.

a. Find the number of chairs and number of tables rented by the school. (2)

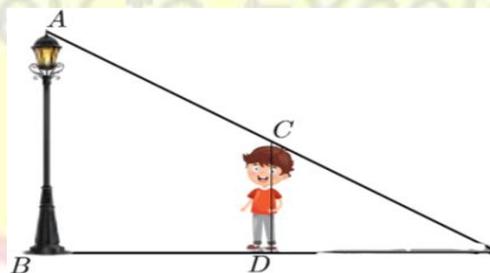
**OR**

b. If the school wants to spend a maximum of ₹ 27,000 on 300 items (tables and chairs), then find the number of chairs and tables it can rent. (2)

3. What is maximum number of tables that can be rented in ₹ 30,000 if no chairs are rented? (1)

37 **Read the following text carefully and answer the questions that follow:** [4]

Priyanshu is very intelligent in maths. He always try to relate the concept of maths in daily life. One day he is walking away from the base of a lamp post at a speed of 1 m/s. Lamp is 4.5 m above the ground.



1. If after 2 second, length of shadow is 1 meter, what is the height of Priyanshu? (1)

2. What is the minimum time after which his shadow will become larger than his original height? (1)

3. What is the distance of Priyanshu from pole at this point? (2)

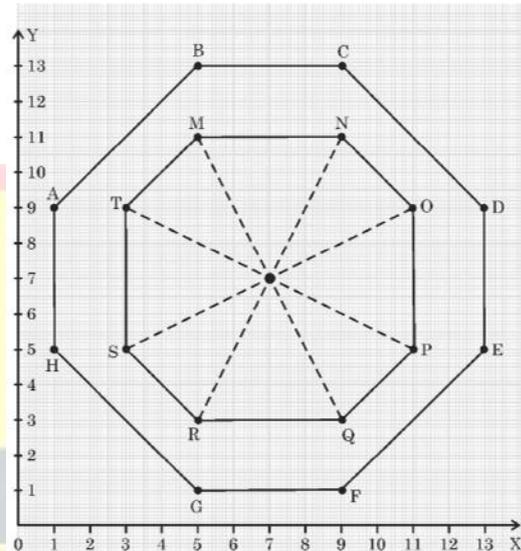
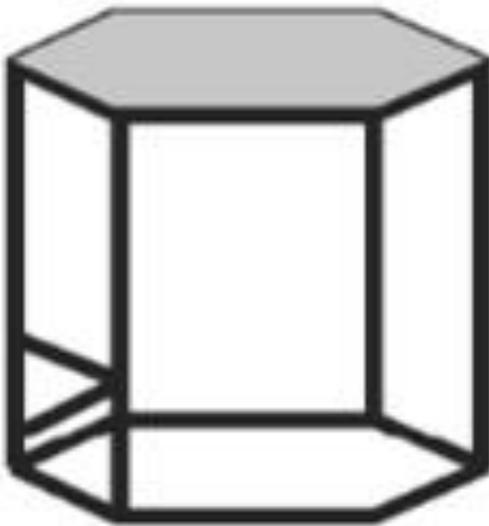
**OR**

What will be the length of his shadow after 4 seconds? (2)

38 Read the following text carefully and answer the questions that follow:

[4]

The top of a table is hexagonal in shape.



On the basis of the information given above, answer the following questions:

1. Write the coordinates of A and B.
2. Write the coordinates of the mid - point of line segment joining C and D.
3.
  - a. Find the distance between M and Q.

**OR**

- b. Find the coordinates of the point which divides the line segment joining M and N in the ratio 1:3 internally.

**CLASSES**

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