

**PRACTICE TEST (2019-20)**  
**SUBJECT: MATHEMATICS (STANDARD)**  
**CLASS: X**

**DURATION: 3:00 HRS**

**MAX. MARKS: 80**

**Q1. Multiple Choice Questions –**

A. Number  $n^2 - 1$  is divisibly 8.  $n$  is a

- a. Even number
- b. Odd number
- c. Natural number
- d. Integer

B. Quadratic polynomial of zeroes -3 and 4 is

- a.  $x^2 - x + 12$
- b.  $x^2 + x + 12$
- c.  $x^2/2 - x/2 - 6$
- d.  $2x^2 + 2x - 24$

C. Quadratic equation  $2x^2 - \sqrt{5}x + 1 = 0$  has

- a. Two different real roots
- b. Two same real roots
- c. No real roots
- d. Two and more real roots

D. If the roots of quadratic equation  $3x^2 - 12x + m = 0$  are equal. The value of  $m$  will be

- a.  $\pm 4$
- b.  $\pm 5$
- c.  $\pm 6$
- d.  $\pm 12$

E. The 10<sup>th</sup> term of the AP : 2, 7, 12 .....

- a. 44
- b. 45
- c. 46
- d. 47

F. In the following AP. Find the missing term

2, , 26

- a. 10
- b. 12
- c. 14
- d. 18

G. The distance of point P (-6, 8) from origin

- a. 8
- b.  $2\sqrt{7}$
- c. 10
- d. 6

H. If  $\tan A = \frac{4}{3}$  than value of  $\sec A$  will be

- a.  $\frac{3}{4}$
- b.  $\frac{5}{4}$
- c.  $\frac{3}{5}$
- d.  $\frac{5}{3}$

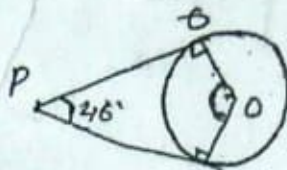
I. The shadow of 6 m high pole is  $2\sqrt{3}$  metre than the angle of elevation will be

- a.  $60^\circ$
- b.  $45^\circ$
- c.  $30^\circ$
- d.  $90^\circ$

J. In the figure, find the value of  $\angle QOR$

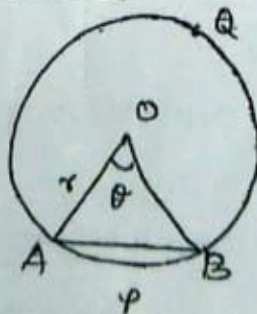
- a.  $44^\circ$   
b.  $46^\circ$

- c.  $134^\circ$   
d.  $314^\circ$



Q2. Very Short Answer –

- A. State whether the following rational number will have a terminating decimal expansion or a non-terminating repeating decimal expansion  $\frac{6}{12}$
- B. Find the zeroes of the polynomial  $x^2 - 3$
- C. Form the pair of linear equations in the following problems –  
5 pencils and 7 pens together cost Rs 50, whereas 7 pencils and 5 pens together cost Rs 46. Find the cost of one pencil and that of one pen.
- D. Check whether the following are quadratic equations or not  
 $(x-2)(x+1) = (x-1)(x+2)$
- E. Complete the given AP = a,   a+3d
- F. Fill in the blanks –  
The ratio of the  of two similar triangles is equal to the square of the ratio of their corresponding sides.
- G. Write the section formula and explain their terms.
- H. If  $\sin A = \frac{3}{4}$  find  $\tan A$
- I. Fill in the blanks –  
If tangent to a circle is a special case of the secant, when the two end points of its corresponding chord
- J. Length of an arc of the sector =



Q3. Short Answer Questions -

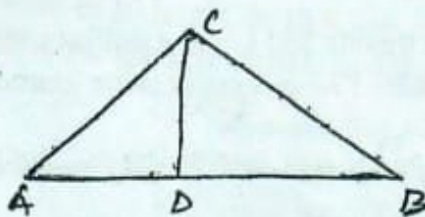
Section 'B'

[6×2=12]

- A. Half the perimeter of a rectangular garden, whose length is 4 m more than its width, is 36 m. Find the dimensions of the garden.
- B. Find the sum of first 51 terms of an AP whose 2<sup>nd</sup> and 3<sup>rd</sup> terms are 14 and 18 respectively.

- C. In fig.  $\angle ACB = 90^\circ$  and  $CD \perp AB$

Prove that  $\frac{BC^2}{AC^2} = \frac{BD}{AD}$



- D. Do the points (3,2), (-2,-3) and (2,3) form a triangle? If so, name the type of triangle form.

if  $\cot \theta = 7/8$ . Evaluate  $\frac{(1+\sin \theta)(1-\sin \theta)}{(1+\cos \theta)(1-\cos \theta)}$  OR

- E. The larger of two supplementary angles exceeds the smaller by 18. Find the angles.

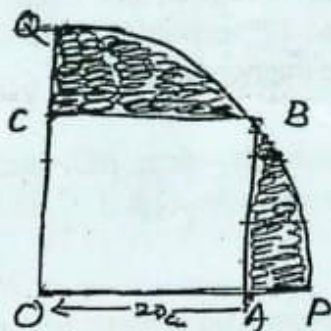
- F. Draw a triangle ABC with side  $BC = 7\text{cm}$ ,  $\angle B = 45^\circ$ ,  $\angle A = 105^\circ$ , then construct a triangle whose side are  $\frac{4}{3}$  times of corresponding sides of  $\triangle ABC$ .

Section 'C'

Q4. Long Answer Questions -

[8×3=24]

- A. Find the area of designed part if a square OABC is inscribed in a quadrant OPBQ and  $OA = 20\text{ cm}$  ( $\pi = 3.14$ )



OR

Find the sum of

(I) the first 1000 positive integers.

(II) two digit numbers divisible by 2.

- B. Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line segment joining the points of contact at the centre.

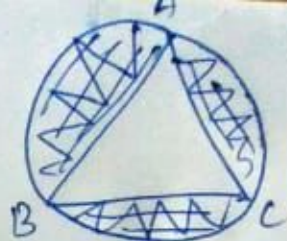
- C. Prove that  $(1 + \cot A - \operatorname{cosec} A)(1 + \tan A + \sec A) = 2$  OR Evaluate  $2 \tan^2 45^\circ + \cos^2 30^\circ - \sin^2 60^\circ$

- D. Find the area of the triangle formed by joining the mid points of the sides of the triangle ABC, whose vertices are A (0,-1), B (2, 1) and C (0, 3).

OR

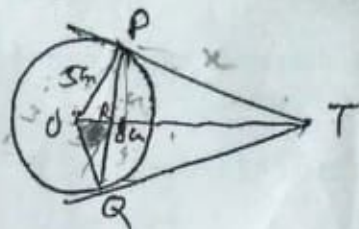
If the points A(6,1) B(8,2) C(9,9) and D(p,3) are the vertices of the 1/2 gram, taken in order find the value of p. NHL/X/MATH/3

In a circular table cover of radius 32 cm, a design is formed leaving an equilateral triangle ABC in the middle as shown in figure. Find the area of design.



OR

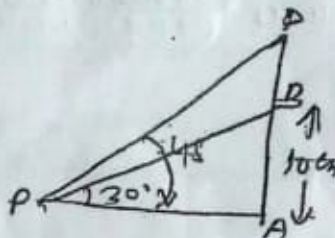
E. In the given figure find the length TP.



F. A train travels 360 km at a uniform speed. If the speed had been 5 km/h more, it would have taken 1 hour less for same journey. Find the speed of the train.

G. Solve  $2x + y = 11$  and  $2x - 4y = -24$  and hence find the value of m for which  $y = mx + 3$

H. In the given figure find the length of DB if  $AB = 10$  cm.

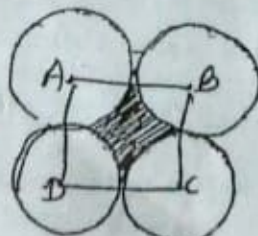


Section 'D'

Q5.

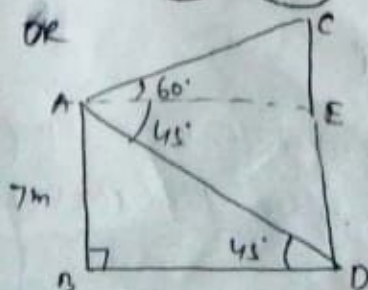
[6×4=24]

- A. The angles of depression of top and bottom of an 8 m tall building from the top of a multi-storied building are  $30^\circ$  and  $45^\circ$  respectively. Find the height of a multi-storied building and the distance between the two buildings.
- B. Let ABC be a right triangle in which  $AB = 6$  cm,  $BC = 8$  cm and  $\angle B = 90^\circ$ . BD is the perpendicular from B on AC. The circle through B, C, D is drawn. Construct the tangents from A to this circle.
- C. In fig. ABCD is a square of side 14 cm with centers, four circles are drawn such that each circle touch externally two of the remaining three circles. Find the area of shaded region.

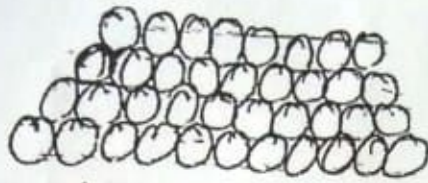


OR

find CD

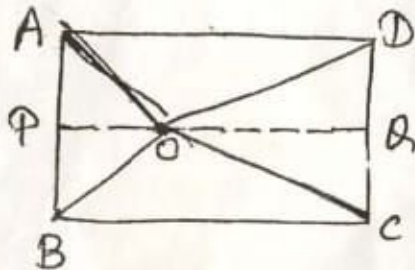


- D. 200 logs are stacked in the following manner. 20 log in the bottom row, 19 log in the next row, 18 in the row next to it and soon. In how many rows are the 200 logs placed and how many logs are in the top row?



- E. A boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours, it can go 40 km upstream and 55 km downstream. Determine the speed of stream and that of the boat in still water.

- F. O is the any point inside a rectangle ABCD. Prove that  $OB^2 + OD^2 = OA^2 + OC^2$



OR A motor boat whose speed is 18 km/hr in still water takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream.

OR

- F Find the area of rhombus if its vertices are  $(3, 0)$ ,  $(4, 5)$ ,  $(-1, 4)$  and  $(-2, -1)$  taken in order.

Practice Exam class - X Maths  
Marking Scheme.



Q No 1. Multiple Choice Questions-

A -	b. (Odd number)	1
B -	c ( $x^2/2 - 4/2 - 6$ )	1
C -	c (No real roots)	1
D -	d ( $\pm 12$ )	1
E -	d (47)	1
F -	c (14)	1
G -	c (10)	1
H -	d ( $5/3$ )	1
I -	a ( $60^\circ$ )	1
J -	c ( $134^\circ$ )	1

Q No 2. Very Short Answer -

A -	terminating decimal expansion	1
B -	$\pm \sqrt{3}$	1
C -	$5x + 7x = 50, 7x + 5y = 40$	1
D -	No	1
E -	$a + d, a + 2d$	1
F -	Areas	1
G -	$\left( \frac{m_1 x_2 + m_2 x_1}{m_1 + m_2}, \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2} \right)$	1
H -	$3/\sqrt{7}$	1
I -	coincide	1
J -	$0/360 \times 2\pi r$	1

## SECTION - B

Q3 - Short Answer Question -

- A -  $x + (x+4) = 36$  1  
 Length 20m, Breadth - 16m 1
- B -  $a_1 = 10$ ,  $d = 4$  1  
 $S_{51} = 5610$  1
- C  $\triangle ACD \sim \triangle ABC$  and  $\triangle BCD \sim \triangle BAC$  1  
 $\frac{BC^2}{AC^2} = \frac{BD}{AD}$  1
- D YES 1  
 Right triangle 1
- OR  $\sin \theta = \frac{4}{5}$ ,  $\cos \theta = \frac{3}{5}$  1  
 $\frac{49}{64}$  1
- E  $\theta + (\theta + 18^\circ) = 180^\circ$  1  
 $\theta = 81^\circ$  1

- F. Construction of  $\triangle ABC$  with side  $BC = 7\text{cm}$ ,  $\angle B = 45^\circ$ ,  $\angle C = 105^\circ$  1  
 Construction of other  $\triangle$  of side  $\frac{4}{3}$  times of corresponding side of  $\triangle ABC$  1

## SECTION - C

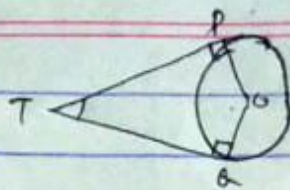
Q4. Long Answer Questions -

- A. Area of square  $OABC = 400\text{cm}^2$  1  
 Area of quadrant  $OBA$  1  
 Area of designed part = 1

OR

- B. Sum of the first 1000 positive integers is 500500 1.5  
 $n = 45$ ,  $S_{45} = 2430$  1.5

(B)



1.5

To prove  $\angle PTA + \angle POQ = 180^\circ$  1.5

(C) OR  $\tan 45^\circ = 1/\sqrt{3}$  ,  $\cos 30^\circ = \sqrt{3}/2$  ,  $\sin 60^\circ = \sqrt{3}/2$  1

$2\tan^2 45^\circ + \cos^2 30^\circ - \sin^2 60^\circ = 2$  2

(C)  $\left(\frac{\sin A + \cos A - 1}{\sin A}\right) \left(\frac{\cos A + \sin A + 1}{\cos A}\right)$  1.5

$(1 + \cot A - \operatorname{cosec} A)(1 + \tan A + \sec A) = 2$  1.5

(D) Co-ordinates of the mid points of sides AB, BC, CA of  $\Delta ABC$  1.5

Area of  $\Delta ABC =$

OR Diagonals of a parallelogram bisect each other 1

$P = 7$  2

E Area of  $\Delta = \sqrt{3}/4 (32\sqrt{3})^2 = 768\sqrt{3}$  1.5

Area of design =  $\left(\frac{22520 - 768\sqrt{3}}{7}\right) \text{cm}^2$  1.5

OR To show  $\angle RPO = \angle PTR$  1

$TP = 20/3$  2

F.  $\frac{360}{x} = \frac{360}{x+5} + 1$  1.5

Speed of train is 40 km/h 1.5

G.  $x = 2, y = 7$  1.5

$m = 2$  1.5

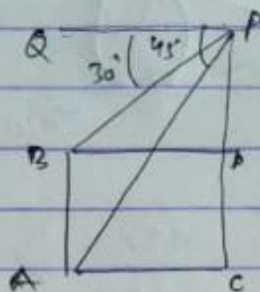
H.  $AP = 10\sqrt{3} \text{ cm}$  1

$BD = 10(\sqrt{3} - 1) \text{ cm}$  2



Sec. D

(A)  $AC = PC$  2



The distance between two buildings is  $4(3 + \sqrt{3})m$  2

B. complete construction according to questions 4

C. Area of quadrant =  $77\frac{1}{2} \text{ cm}^2$  1.5  
 Area of square =  $196 \text{ cm}^2$  1.5  
 Area of shaded region =  $42 \text{ cm}^2$  1

OR In  $BD = 7 \text{ cm}$  1  
 $CE = 7\sqrt{3}$  1  
 Height (CD) =  $7(\sqrt{3} + 1)$  2

D.  $400 = 41n - n^2$  2

B 200 logs are placed in 16 rows and 5 logs are in top row 2

E  $\frac{40}{x-y} + \frac{55}{x+y} = 13$  1.5

let  $\frac{1}{x-y} = u$  &  $\frac{1}{x+y} = v$ ,  $u = \frac{1}{5}$ ,  $v = \frac{1}{11}$  1.5

$x = 8$ ,  $y = 3$  1

P.R.  $\frac{24}{18-x} - \frac{24}{18+x} = 1$  1.5

$x^2 + 18x - 324 = 0$  1

$x = 6$  or  $-54$  1.5

F.  $OB^2 = BP^2 + OP^2$ ,  $OA^2 = AP^2 + OP^2$  3

$OB^2 + OD^2 = OC^2 + OA^2$  1

2

OR Diagonal  $AC = 4\sqrt{2}$ , Diagonal  $BD = 6\sqrt{2}$  2

Area of Rhombus =  $24 \text{ sq. units}$  2