



**FACULTY HIGHER SECONDARY SCHOOL  
SAMPLE Q. P. FOR HY EXAM 2019 FHSS.**

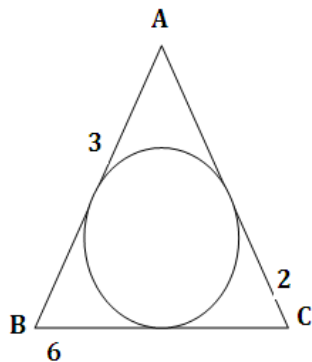
**CLASS X**

**SUBJECT: MATHEMATICS**

**MAX – MARKS 80**

1. Choose and write the correct option in each of the following equations:
- (i) The smallest number by which  $\sqrt{125}$  should be multiplied so as to get a rational number is
- $\sqrt{125}$
  - $5\sqrt{5}$
  - $\sqrt{5}$
  - 5
- (ii) If  $\alpha$  and  $\beta$  are the zeroes of the quadratic polynomial  $x^2 + x - 2$  then the value of  $\frac{1}{\alpha} + \frac{1}{\beta}$  will be
- $\frac{1}{2}$
  - $-\frac{1}{\sqrt{2}}$
  - 1
  - 2
- (iii) If  $x = a$ ,  $y = b$  are the solution of equation  $x + y = 4$  and  $x - y = 2$  then the values of a and b are respectively
- 3,5
  - 5,6
  - 3,1
  - 1,-3
- (iv) Nature of roots of the equation  $x^2 + 2x + 4 = 0$  is
- Real and equal
  - Real and un-equal
  - Not real
  - None of these
- (v) If nth term of an AP is  $an + b$  then its different is
- b
  - a
  - n
  - a
- (vi) From an internal point of a circle how many tangent can be drawn an it?
- 3
  - 2
  - 1
  - 0
- (vii) When sun's altitude is  $60^\circ$  then a pole of height 9m will cast a shadow of length (in m)
- $3\sqrt{2}m$
  - $4\sqrt{2}m$
  - $3\sqrt{3}m$
  - 9m

- (viii) If radius of two concentric circle are 6 cm and 10 cm, then the length of the chord of one circle which is tangent to the other circle is
- (a) 5 cm  
 (b) 8 cm  
 (c) 12 cm  
 (d) 16 cm
- (ix) In the given figure the perimeter of  $\Delta ABC$  is



- (a) 36 cm  
 (b) 28 cm  
 (c) 22 cm  
 (d) 48 cm
- (x) Find A if  $\tan 2A = \cot (A - 24)$ .
- a) 40  
 b) 48  
 c) 38  
 d) 36

2. State whether the following statement are true or false.

- (i)  $\sqrt{8}$  is an irrational number  
 (ii) Sum of first 19 term of the AP 18, 16, 14 ..... Is zero  
 (iii)  $\Delta ABC \sim \Delta DEF$ , such that  $BC = 4.5$  cm and  $EF = 3.5$  cm and or  $\Delta ABC = 81 \text{ cm}^2$  then area  $\Delta DEF = 49 \text{ cm}^2$   
 (iv) The tangent at any point of a circle is perpendicular to the radius through the point of contact  
 (v) The value of  $\sin 60 = \frac{\sqrt{3}}{2}$ .

3. Fill in the blanks

- (i) Acute angle satisfying  $\sqrt{3} \sin \theta = \csc \theta$  is \_\_\_\_\_  
 (ii) Value of  $\csc^2 \theta - \frac{1}{\sec^2 \theta} =$  \_\_\_\_\_  
 (iii) If  $A + B = 90^\circ$  and  $\tan A = \frac{3}{4}$  then  $\cot B =$  \_\_\_\_\_  
 (iv) 5<sup>th</sup> term from the end of the AP 3, 5, 7, 9, ..... 201 is \_\_\_\_\_  
 (v) Degree of the polynomial  $ax^2 + bx + cx^2 + d$  is a = 0 is \_\_\_\_\_

**Section B. each carries 2 marks.**

4. Write the condition to be satisfied by q so that a rational number  $\frac{p}{q}$  has a terminating decimal expansion, Give one example for this.

5. Do the equation  $5x + 7y = 8$  and  $10x + 4y = 4$  represent a pair of parallel lines? Justify your answer.
6. Use Euclid's division algorithm to find the HCF of 336 and 54.
7. Find the AP whose 3<sup>rd</sup> term is 5 and 7<sup>th</sup> term is 9.
8. The value of k for which the lines  $(k + 1)x + 3ky + 15 = 0$  and  $5x + ky + 5 = 0$  are coincident.
9. How many numbers of two digits are divided by 7.

**Section C. each carries 3 marks**

10. Prove that  $\sqrt{2}$  is an irrational number.
11. Which term of the AP 5, 15, 25, ..... Will be 130 more than its 31<sup>st</sup> term?
12. If  $\tan\theta = \frac{3}{5}$  Find  $\frac{\sin\theta + \csc\theta}{\sin\theta - \csc\theta}$ .
13. Solve the following equation  
 $2x + y = 7$  and  $x - 3y = 11$
14. Find the greatest number of 6 digit exactly divisible by 24, 15 and 36.
15. Prove that  $(\sin\theta + \csc\theta)^2 + (\cos\theta + \sec\theta)^2 = 7 + \tan^2\theta + \cot^2\theta$
16. A father's age is three times the sum of the ages of his two children. After 5 years his age will be two times the sum of their ages. Find the present age of the father.
17. A fraction becomes  $\frac{1}{3}$  when 2 is subtracted from the numerator and it becomes  $\frac{1}{2}$  when 1 is subtracted from the denominator. Find the fraction.

**Section D. each question carries 4 marks**

18. 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 the stream and that of the boat in still water.
19. State and prove Trales Theorem.
20. ABC is a right triangle right angled at C let BC = a, CA = b AB=c and let P be the length of perpendicular from C on AB prove that  
 (i)  $ab = pc$   
 (ii)  $\frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{p^2}$
21. State and Prove Pythagoras Theorem.
22. State and Prove Converse of Basic Proportionality Theorem.
23. Draw the graph of the following equation  $2x + y = 6$  and  $2x - y + 2 = 0$ . Shade the region boundary by these line and x - axis. Find the area of the shaded region.