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
    (a) $\sqrt{125}$
    (b) $5\sqrt{5}$
    (c) $\sqrt{5}$
    (d) 5

    (ii) If $\propto$ and β are the zeroes of the quadratic polynomial $x^2 + x - 2$ then the value of $\frac{1}{\propto} + \frac{1}{\beta}$ will be

    (a) $1/2$
    (b) $-1/\sqrt{2}$
    (c) 1
    (d) 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
    (a) 3,5
    (b) 5,6
    (c) 3,1
    (d) -1,-3

    (iv) Nature of roots of the equation $x^2 + 2x + 4 = 0$ is
    (a) Red and equal
    (b) Red and un-equal
    (c) Not real
    (d) None of these

    (v) If nth term of an AP is an + b then its different is
    (a) b
    (b) a
    (c) n
    (d) –a

    (vi) From an internal point of a circle how many tangent can be drawn an it?
    (a) 3
    (b) 2
    (c) 1
    (d) 0

    (vii) When sun's altitude is 60° then a pole of height 9m will cost a shadow of length (in m)
    (a) $3\sqrt{2}m$
    (b) $4\sqrt{2m}$
    (c) $3\sqrt{3m}$
    (d) 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 Δ ABC is
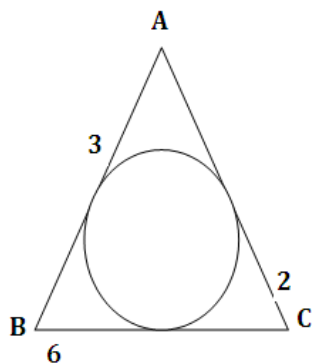
(a) 36 cm
(b) 28 cm
(c) 22 cm
(d) 48 cm

(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) √8 is an irrational number
(ii) Sum of first 19 term of the AP 18, 16, 14 .... Is zero
(iii) ΔABC ~ Δ DEF, such that BC = 4.5 cm and EF = 3.5 cm and or ΔABC = 81 cm^2 then area Δ DEF = 49 cm^2
(iv) *The* tangent at any point of a circle isbperpendicular 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 √3 Sinθ = Ces θ is _____
(ii) Value of $Ces^2\theta - \frac{1}{Sec^2\theta}$ = _____
(iii) If A + B = 90° and tan A = $\frac{3}{4}$ then cot B = _____
(iv) 5th term from the end of the AP 3, 5, 7, 9, ... 201 is _____
(v) Degree of the polynomial $an^2 + bn + cn^2 + d$ is a = 0 is _____

Section B. each carries 2 marks.

4. Write the condition to be satisfied by q so that a rational number $^p/_q$ has a terminating decimal expansion, Give one example for this.

5. Do the equation 5x + 7y = 8 and 10 x + 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 3rd term is 5 and 7th term is 9.
8. The value of k for which the lines (k + 1) x + 3ky + 15 = 0 and 5 x + 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 theAP 5, 15, 25, ………. Will be 130 more then its 31st term?
12. If $\tan\theta = {}^{3}/_{5}$ Find $\frac{Sin\theta + Cez\theta}{Sin\theta - Cez\theta}$.
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 $(Sin\theta + Cesec\theta)^2 + (Cos\theta + Sec\theta)^2 = 7 + tan^2\theta + Cot^2\theta$
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 $^{1}/_{3}$ when 2 is subtracted from the numerate and it becomes $^{1}/_{2}$ 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.