SAMPLE QUESTION PAPER 2015
Class - 10th
Subject - Mathematics

SECTION – A

1. The number $\left(\sqrt{2}+\sqrt{3}\right)^{10}\left(\sqrt{2}-\sqrt{3}\right)^{10}$ is rational or irrational.

2. a & b are two +ve integers such that the least prime factor of a is 3 & the least prime factor of b is 5. Then, the least prime factor of (a+b) is

3. A polynomial of degree n has_____zeros.

4. If $p(x)=ax^2+bx+c$ & a+c=b, then one of the zeros is

5. If the pair of equations x+y= $\sqrt{2}$ & $x\sin\theta + y\cos\theta = 1$ has infinitely many solutions, then find Ө

6. The median of a given frequency distribution is found graphically with the help of (a) Histogram (b) Frequency curve (c) Ogive (d) Frequency polygon

7. Express 'x' in terms of a, b, & c.
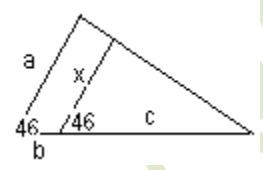
8. If in two triangles ABC & PQR $\dfrac{AB}{QR}=\dfrac{BC}{PR}=\dfrac{CA}{PQ}$ then Δ___ is similar to Δ____.

9. If $\tan^2\theta+\cot^2\theta = 2$ Ө is an acute angle, then $\tan^3\theta+\cot^3\theta = ?$

10. The mean & median of 100 items are 50 & 52 respectively. The value of the largest item is 100. It was later found that it is 110 not 100. The true mean & median are

SECTION - B

11. Find the greatest 6-digit number which is completely divisible by 30, 40 & 50 [999600]

12. If α, β are the zeros of quadratic polynomial $f(x)=x^2-1$, Find a quadratic polynomial whose zeros are $\dfrac{2\alpha}{\beta}$ & $\dfrac{2\beta}{\alpha}$.

13. For a distance of 30 km, Mr A takes 2 hours more than Mr. B. If A doubles his speed, he would take 1 hour less than B. Find the speeds.

14. Without using trigonometric tables, evaluate $7\sin^2\theta + 3\cos^2\theta = 4$ then show that

$$\tan\theta = \frac{1}{\sqrt{3}}$$

15. In $\triangle$ ABC, P & Q are the points on sides AB & AC & AP : PB = 1 : 2. find $\dfrac{ar\Delta APQ}{ar\Delta ABC}$.

16. In a triangle, if square of one side is equal to the sum of the squares of the other two sides, then the angle opposite to the first side is a right angle.

17. A's present age to the B's present age is 7 : 9. 12 years ago, their ages were in the ratio 3:5. When would the ratio of the ages be 6 : 7.

18. m, n are the zeros of $ax^2 - 5x + c$, Find the value of a & c if m+n=mn=10.

19. Find 'x' if : $\dfrac{\cos ec\left(90^0 - \theta\right)}{\sin\left(90^0 - \theta\right)} - \dfrac{x}{\tan\left(90^0 - \theta\right)} = 1$.

20. Shoe that : $\left(1 + \dfrac{1}{\tan^2\theta}\right)\left(1 + \dfrac{1}{\cot^2\theta}\right) = \dfrac{1}{\sin^2\theta - \sin^4\theta}$

21. In an equilateral triangle ABC, D is a point on side BC such that BD= 1/3 BC. Prove that $9AD^2 = 7AB^2$.

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

23. Two candles of equal height but different thickness are lighted. The first burns off in 6 hours & the second in 8 hours. How long after lighting both will the first candle be half the height of the second?

24. If x+a is a factor of the polynomial $x^2 + px + q$ & $x^2 + mx + n$ prove that $a = \dfrac{n - q}{m - p}$

25. If x = mcosα . sinβ; y=mcosα . cosβ & z=msinα Show that x²+y²+z²=m²

26. 3The average marks of A, B & C is 33, while the average marks of B, C & D is 37. If A obtains 30 marks, find the marks obtained by D.

27. M being the mean of X_1, X_2, X_3, X_4, X_5, X_6, find the value of (X₁–M)+(X₂–M)+(X₃–M)+(X₄–M)+(X₅–M)+(X₆–M).

SECTION D

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28. Solve for x & y : bx+ay=a+b ; $ax\left(\dfrac{1}{a-b}-\dfrac{1}{a+b}\right)+by\left(\dfrac{1}{b-a}-\dfrac{1}{b+a}\right)=\dfrac{2a}{a+b}$

29. Prove that the sum of the squares of the diagonals of parallelogram is equal to the sum of the squares of its sides.

30. Find the HCF if 135 & 225. Also express the HCF in the form 135a+225b for some integers a &b.

31. If $\sqrt{3}\cot^2\theta-4\cot\theta+\sqrt{3}=0$, then find the value of $\cot^2\theta+\tan^2\theta$

32. The median of the following data is 52.5. find the values of x & y if the total of frequencies is 100.

Class Intervals	frequency
0-10	2
10-20	5
20-30	X
30-40	12
40-50	17
50-60	20
60-70	Y
70-80	9
80-90	7
90-100	4

33. If $\sec\theta+\tan\theta=p$ prove that $\dfrac{p^2-1}{p^2+1}=\sin\theta$.

To ask any doubt prefer to send message on vishvas_1@ymail.com

Or send message on 99-1515-1771 through what's app…..

VISHVAS TUTORIALS LUDHIANA