Class X

Maths Test 1:

(Polynomials, Pair of Linear Eqns & Trignometry)

Duration: 1.45 hrs   **TotalMks: 61**

(TRIGNOMETRY)

1. If A, B are acute angles and sinA= cosB, then find the value of A+B.   1

2. If $\tan\theta = \frac{2}{\sqrt{3}}$ & $\theta + \phi = 90^\circ$. What is the value of $\cot\phi$?   1

3. Solve for φ, if tan5φ = 1.   1

4. If $x\cos\theta - y\sin\theta = a$, $x\sin\theta + y\cos\theta = b$, prove that $x^2 + y^2 = a^2 + b^2$.   2

5. If sinθ = ½ , show that $3\cos\theta - 4\cos^3\theta = 0$.   2

6. Find the value of tanφ in terms of sinφ.   2

7. Find the value of θ for which $\dfrac{sin\theta}{1+cos\theta} + \dfrac{1+cos\theta}{sin\theta} = 4$.   3

8. Prove geometrically the value of Sin 60°.   3

9. If tanA + sinA = m and tanA − sinA = n, show that $m^2 - n^2 = 4\sqrt{mn}$.   5

(Pair of Linear Equations)

10. The larger of two supplementary angles exceeds the smaller by 180, find the angles.   2

11. Students are made to stand in rows. If one student is extra in a row there would be 2 rows less. If one student is less in a row there would be 3 rows more. Find the number of students in the class.   5

12. When 6 boys were admitted & 6 girls left the percentage of boys increased from 60% to 75%. Find the original no. of boys and girls in the class.   5

13. Solve for x,y   9

    a. $\dfrac{x+y-8}{2} = \dfrac{x+2y-14}{3} = \dfrac{3x+y-12}{11}$

b. $\dfrac{x}{a} + \dfrac{y}{b} = a + b$ $\dfrac{x}{a^2} + \dfrac{y}{b^2} = 2$ a≠0, b≠0

c. 41x + 53y = 135, 53x +41y =147

(Polynomials)

14. Find the value for K for which $x^4 + 10x^3 + 25x^2 + 15x + K$ exactly divisible by x + 7.   3

15. If α,β are the zeros of the polynomial $2x^2 - 4x + 5$ find the value of   3

   a. $α^2 + β^2$

   b. $(α - β)^2$

16. What must be added to the polynomial $p(x) = x^4 + 2x^3 - 2x^2 + x -1$ so that the resulting polynomial is exactly divisible by x^2+2x-3.   4

   OR

   If α, β are the zeros of a Quadratic polynomial such that α + β = 24, α - β = 8. Find a Quadratic polynomial having α and β as its zeros.

17. If two zeros of the polynomial $f(x) = x^4 - 6x^3 - 26x^2 + 138x - 35$ are $2 ± \sqrt{3}$. Find the other zeros.   5

18. On dividing the polynomial $4x^4 - 5x^3 - 39x^2 - 46x - 2$ by the polynomial g(x) the quotient is $x^2 - 3x - 5$ and the remainder is -5x + 8. Find the polynomial g(x).   5