CLASS X
SAMPLE PAPER
MATHS

Time: 3hrs. **M.M.80**

Section A (6x1=6)

Q.1 Check whether 5 x 7 x 11 +7 is a composite number.

Q.2 Find the sum and product of zeroes of polynomial $9x^2 - 5$.

Q.3 Find the value of k for which the pair of linear equations $4x - 6y - 1 = 0$ and $2x + ky - 7 = 0$ represent parallel lines.

OR

Show that the system of equations 3x-5y = 7; 6x-10y = 3 is inconsistent.

Q.4 Find the perimeter of rhombus whose diagonal lengths are 24 cm and 32 cm.

Q.5 If one root of the equation $px^2 - 14x + 8 = 0$ is six times the other, then find p.

OR

Find the value of K for which x = a is the solution of the equation x^2- x (a +b) + K = 0

Q.6 Find 4th and 9th term of an A.P whose nth term is given by $a_n = 7n - 9$.

Section B (6x2=12)

Q.7 If $R\left(\frac{a}{3}, 4\right)$ is the midpoint of line segment joining the point P(-6,5) and Q (-2,3) then find a.

Q.8 Show that any positive odd integer is of the form 8q+1 or 8q+3 or 8q+5 or 8q+7 where q is some integer.

OR

Prove that $n^3 - n$ is divisible by 3 for any positive integer n.

Q.9 If α and β are the zeroes of polynomial $x^3 - 7x + 10$,then form a quadratic polynomial whose zeroes are half of the zeroes of given polynomial.

Q.10 The age of father is twice the sum of the ages of his two children. After 20 years, his age will be equal to the sum of the ages of his children. Find the age of the father.

OR

The sum of the numerator and denominator of a fraction is 12. If the denominator is increased by 3, the fraction becomes $\frac{1}{2}$. Find the fraction.

Q.11 AD is an altitude of an equilateral triangle ABC. On AD as base another equilateral triangle ADE is constructed. Prove that $ar(\Delta ADE) : ar(\Delta ABC) = 3 : 4$

Q.12 Solve for x: $\frac{1}{x} - \frac{1}{x-2} = 3, x \neq 0,2$

Section C (10x3=30)

Q.13 Determine AP whose fifth term is 19 and difference of the eight term from the thirteen term is 20.

Q.14 Prove that four points whose coordinates are (0,5), (-2, -2), (5,0) and (7,7) form a rhombus.

Q.15 Solve: $\frac{x}{a} + \frac{y}{b} = 2$ and $ax - by = a^2 - b^2$

OR

Solve the following system of equation using cross multiplication method:
8x + 5y = 9
3x +2y = 4

Q.16 If two zeroes of the polynomial $x^4 - 6x^3 - 26x^2 + 138x - 35$ are $2 \pm \sqrt{3}$,find other zeroes.

Q.17 Prove that $\sqrt{3} + \sqrt{5}$ is irrational.

OR

Find the largest number which divides 853 and 385 leaving remainder 7 in each case.

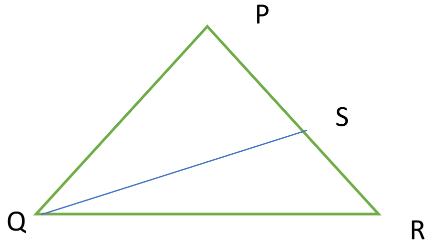
Q.18 Two men start from two points P and Q, 8 km apart and walk towards each other. They meet in 80 minutes. If they walk in the same direction, they meet in 2 hours. Find their speeds.

Q.19 Prove that the quadrilateral formed by joining the midpoints of consecutive sides of quadrilateral is a parallelogram.

OR

If the areas of two similar triangles are equal, prove that they are congruent.

Q.20 In ΔPQR , PQ = PR and S is a point on PR such that $QR^2 = PR \times SR$. Prove that QS = QR.



Q.21 Two numbers differ by 4 and their product is 192. Find the numbers.

Q.22 The sum of three numbers in AP is 12 and sum of their cubes is 288. Find the numbers.

OR

The sum of three numbers in an AP is # and their product is 35. Find the numbers.

Section D (8x4=32)

Q.23 If the roots of quadratic equation $(b-c)x^2+(c-a)x+(a-b)=0$ are equal then prove that 2b = a + c

Q.24 Find the equation of the perpendicular bisector of the line segment joining points (7,1) and (3,5)

Q.25 How many two digit numbers are divisible by 3?

OR

An AP consists of 50 terms of which third term is 12 and the last term is 106. Find the 29^{th} term.

Q.26 Prove that in a right angled triangle sum of square of hypotenuse is equal to sum of squares of other two sides.

Q.27 Solve the following system of linear equations graphically: 3x + y – 11 = 0 and x – y + 1 = 0.

Shade the region bounded by these lines and y- axis, Also, find the area of region bounded by the lines and y- axis.

Q.28 The length, breadth and height of a room are 8 m 25 cm, 6 m 75 cm and 4 m 50 cm respectively. Determine the longest rod which can measure the three dimensions of the room exactly.

OR

In an equilateral triangle, prove that three times the square of one side is equal to four times the square of one of its altitudes.

Q.29 In ΔABC, the bisectors of $\angle B$ meets AC at D. A line PQ parallel to AC meets AB, BC and BD at P, Q and R respectively.

Show that (i) PR x BQ = QR x BP

(ii) AB x BQ = BC x BP

(iii) AB x QR = BC x PR

Q.30 Factorize the following: (i) $4x^2-4ax+(a^2-b^2)=0$ (ii) $\frac{x+3}{x+2}=\frac{3x-7}{2x-3}$

OR

Solve the equation $x^2-(\sqrt{2}+1)x+\sqrt{2}=0$ by method of completing the square.