

**SK MATH QUESTION PAPER'S &
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7092681321, 9597410308**

PRE - QUARTERLY MODEL QUESTION PAPER - 2

Class: 10
Subject: Mathematics

Maximum Marks: 100
Time Allowed: 3 Hours

Part I - Choose the Best Answer

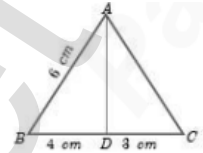
14 X 1 = 14

1. If $f : A \rightarrow B$ is a bijective function and if $n(B) = 7$, then $n(A)$ is equal to
(1) 7 (2) 49 (3) 1 (4) 14
2. If $\{(a, 8), (6, b)\}$ represents an identity function, then the value of a and b are respectively
(1) (8, 6) (2) (8, 8) (3) (6, 8) (4) (6, 6)
3. If 6 times 6th term of an A.P. is equal to 7 times the 7th term, then the 13th term of the A.P. is (1) 0 (2) 6 (3) 7 (4) 13
4. Given $F_1 = 1, F_2 = 3$ and $F_n = F_{n-1} + F_{n-2}$ then F_5 is (1) 3 (2) 5 (3) 8 (4) 11
5. A system of three linear equations in three variables is inconsistent if their planes
(1) intersect only at a point (2) intersect in a line
(3) coincides with each other (4) do not intersect
6. Graph of a linear polynomial is a
(1) straight line (2) circle (3) parabola (4) hyperbola
7. If the roots of the equation $q^2 x^2 + p^2 x + r^2 = 0$ are the squares of the roots of the equation $qx^2 + px + r = 0$, then q, p, r are in _____
(1) A.P (2) G.P (3) Both A.P and G.P (4) none of these
8. In a $\triangle ABC$, AD is the bisector of $\angle BAC$. If $AB = 8$ cm, $BD = 6$ cm and $DC = 3$ cm. The length of the side AC is
(1) 6 cm (2) 4 cm (3) 3 cm (4) 8 cm
9. In $\triangle LMN$, $L = 60^\circ, M = 50^\circ$. If $\triangle LMN \sim \triangle PQR$ then the value of $\angle R$ is
(1) 400 (2) 700 (3) 300 (4) 1100
10. If (5,7), (3,p) and (6,6) are collinear, then the value of p is
(1) 3 (2) 6 (3) 9 (4) 12
11. The area of triangle formed by the points $(-5,0), (0,-5)$ and $(5,0)$ is
(1) 0 sq.units (2) 25 sq.units (3) 5 sq.units (4) none of these
12. The straight line given by the equation $x = 11$ is
(1) parallel to X axis (2) parallel to Y axis
(3) passing through the origin (4) passing through the point (0,11)
13. $a \cot \theta + b \operatorname{cosec} \theta = p$ and $b \cot \theta + a \operatorname{cosec} \theta = q$ then $p^2 - q^2$ is equal to
(1) $a^2 - b^2$ (2) $b^2 - a^2$ (3) $a^2 + b^2$ (4) $b - a$
14. If $\tan \theta + \cot \theta = 5$, then the value of $\tan^2 \theta + \cot^2 \theta$ is
(1) 23 (2) 25 (3) 27 (4) 15

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Part II - 2 Marks - Qn No 28 is Compulsory**10 X 2 = 20**

15. Let $A = \{1, 2, 3, 4, \dots, 45\}$ and R be the relation defined as "is square of" on A . Write R as a subset of $A \times A$. Also, find the domain and range of R
16. Let $A = \{-1, 1\}$ and $B = \{0, 2\}$. If the function $f : A \rightarrow B$ defined by $f(x) = ax + b$ is an onto function? Find a and b .
17. Solve $5x \equiv 4 \pmod{6}$
18. Find the sum $3 + 6 + 9 + \dots + 96$
19. Find the LCM $21x^2y, 35xy^2$
20. Find the sum and product of the roots for the quadratic equations $kx^2 - k^2x - 2k^3 = 0$
21. In the figure, AD is the bisector of $\angle A$. If $BD = 4$ cm, $DC = 3$ cm and $AB = 6$ cm, find AC
22. In $\triangle ABC$, D and E are points on the sides AB and AC respectively such that $DE \parallel BC$. If $AD = 8x - 7$, $DB = 5x - 3$, $AE = 4x - 3$ and $EC = 3x - 1$, find the value of x .
23. Show that the points $P(-1.5, 3)$, $Q(6, -2)$, $R(-3, 4)$ are collinear.
24. Find the equation of a straight line passing through $(5, -3)$ and $(7, -4)$
25. Find the equation of a straight line which is parallel to the line $3x - 7y = 12$ and passing through the point $(6, 4)$.
26. Prove the identity $\frac{\sec \theta}{\sin \theta} - \frac{\sin \theta}{\cos \theta} = \cot \theta$
27. Prove the identity $\cot \theta + \tan \theta = \sec \theta \operatorname{cosec} \theta$
28. Pari needs 4 hours to complete a work. His friend Yuvan needs 6 hours to complete the same work. How long will it take to complete if they work together?

**Part III - 5 Marks - Qn No 42 is Compulsory****10 X 5 = 50**

29. Let $A = \{x \in \mathbb{W} \mid x < 2\}$, $B = \{x \in \mathbb{N} \mid 1 < x \leq 4\}$ and $C = \{3, 5\}$. Verify that $A \times (B \cap C) = (A \times B) \cap (A \times C)$
30. If the function $f : \mathbb{R} \rightarrow \mathbb{R}$ defined by $f(x) = \begin{cases} 2x + 7, & x < -2 \\ x^2 - 2, & -2 \leq x < 3 \\ 3x - 2, & x \geq 3 \end{cases}$ then find the values of (i) $f(4)$ (ii) $f(-2)$ (iii) $f(4) + 2f(1)$ (iv) $\frac{f(1) - 3f(4)}{f(-3)}$
31. Find the sum of all natural numbers between 100 and 300 which are divisible by 8
32. Rekha has 15 square colour papers of sizes 10 cm, 11 cm, 12 cm, ..., 24 cm. How much area can be decorated with these colour papers?
33. If $9x^4 + 12x^3 + 28x^2 + ax + b$ is a perfect square, find the values of a and b
34. Solve $px^2 = (p + q)^2x + (p + q)^2 = 0$ by formula method
35. State and Prove Theorem: Angle Bisector Theorem
36. In $\triangle ABC$ if $DE \parallel BC$, $AD = x$, $DB = x - 2$, and $EC = x - 1$ then find the lengths of the sides AB and AC .
37. If the points $A(2, 2)$, $B(-2, -3)$, $C(1, -3)$ and $D(x, y)$ form a parallelogram then find the value of x and y .
38. Find the value of k , if the area of a quadrilateral is 28 sq. units, whose vertices are $(-4, -2)$, $(-3, k)$, $(3, -2)$ and $(2, 3)$
39. $A(-3, 0)$, $B(10, -2)$ and $C(12, 3)$ are the vertices of $\triangle ABC$. Find the equation of the altitude through A and B
40. Prove that $(\sin \theta + \sec \theta)^2 + (\cos \theta + \operatorname{cosec} \theta)^2 = 1 + (\sec \theta + \operatorname{cosec} \theta)^2$

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41. If $\operatorname{cosec} q + \cot q = P$, then prove that $\cos \theta = \frac{p^2-1}{p^2+1}$
42. If the roots of the equation $(c^2 - ab) x^2 - 2(a^2 - bc) x + b^2 - ac = 0$ are real and equal prove that either $a = 0$ (or) $a^3 + b^3 + c^3 = 3abc$

Part IV - 8 Marks - All Questions are Compulsory

2 X 8 = 16

43. a) Construct a triangle similar to a given triangle PQR with its sides equal to $7/4$ of the corresponding sides of the triangle PQR (scale factor $7/4 > 1$) (or)
b) Draw a triangle ABC of base BC = 5.6 cm, $\angle A = 40^\circ$ and the bisector of $\angle A$ meets BC at D such that CD = 4 cm
44. a) A bus is travelling at a uniform speed of 50 km/ hr . draw the distance time graph and hence find i. the constant of variation ii. How far will it travel in 90 minutes ? iii. The time required to cover a distance of 300 km from the graph (or)
b) Draw the graph of $xy = 24$, $x, y > 0$ using the graph find, i. y when $x = 3$ and ii . x when $y = 6$

*****all the best *****

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