

ROLL NO. 10208

ST. JAMES MATRIC. HR. SEC. SCHOOL, TRICHY-1.

II TERM EXAMINATION - 2021

STD:X

MATHEMATICS
PART-A (1 Mark)TIME: 3 Hrs.
MARKS : 100

15 × 1 = 15

I. Choose the Best Answer. (Answer all the questions).

- A = {a, b, p} and B = {2, 3} and = {p, q, r, s} then n [(AUC) × B]
 - a)8
 - b)20
 - c)12
 - d)16
- The range of the relation R = {(x, x²) / x is a Prime number less than 13} is ____
 - a){2, 3, 5, 7}
 - b){2, 3, 5, 7, 11}
 - c){4, 9, 25, 49, 121}
 - d){1, 4, 9, 25, 49, 121}
- If the ordered pairs (a+2, 4) and (5, 2a + b) are equal then (a, b) is ____
 - a)(2, -2)
 - b)5, 1)
 - c)(2, 3)
 - d)(3, -2)
- If the HCF of 65 and 117 is expressible in the Form of 65m - 117 then the value of m is
 - a)4
 - b)2
 - c)3
 - d)1
- If 6 times of 6th term of an AP is equal to 7 times the 7th term, then the 13th term of an A.P. is ____
 - a)0
 - b)6
 - c)7
 - d)13
- The next term of the sequence $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}, \dots$ is
 - a) $\frac{1}{24}$
 - b) $\frac{1}{27}$
 - c) $\frac{2}{3}$
 - d) $\frac{1}{81}$
- Given F₁ = 1, F₂ = 3 and F_n = F_{n-1} + F_{n-2}, then F₅ is ____
 - a)3
 - b)5
 - c)8
 - d)11
- The solution of (2x-1)² = 9 is equal to
 - a)-1
 - b)2
 - c)-1, 2
 - d)None of these
- Which of the following should be added to make x⁴ + 64 a perfect square
 - a)4x²
 - b)16x²
 - c)8x²
 - d)-8x²
- If (x-6) is the HCF of x² - 2x - 24 and x² - kx - 6, then the value of k is ____
 - a) 3
 - b)5
 - c)6
 - d)8
- Graph of linear equation is a ____
 - a)straight line
 - b)circle
 - c)parabola
 - d)hyperbola
- The area of triangle formed by the points (-5, 0), (0, -5) and (5, 0) is ____
 - a)0 sq.units
 - b)25 sq.units.
 - c)5 sq.units
 - d)None of these
- If (5, 7), (3, p), (6, 6) are collinear, the value of p is ____
 - a)3
 - b)6
 - c)9
 - d)12
- The point of intersection of 3x - y = 4 and x + y = 8 is ____
 - a)(5, 3)
 - b)(2, 4)
 - c)(3, 5)
 - d)(4, 4)
- How many tangents can be drawn to the circle from an exterior point?
 - a)One
 - b)Two
 - c)infinite
 - d)zero

(23 + 0 + 0) - (0 - 25 - 0) PART-B (2 Marks)

10 × 2 = 20

II. Answer any Ten of the following : (Q.No.27 is compulsory).

- Let A = {1, 2, 3}, B = {x / x is a prime Number Less than 10} 1, 2, 3, 5, 7
Find B × A
- Let A = {1, 2, 3, 4, ..., 45} and R be the relation defined as "is square of a number" on A. Write R as a subset of A × A, also find Domain and range.
- Prove that the product of the two consecutive positive integers is divisible by 2.
- For what vales of natural numbers n, 4ⁿ can end with digits 6?
- Find the number of terms in the AP : 3, 6, 9, 12, ..., 111.
- Which term of an AP 16, 11, 1, ..., is -54?
- Find the excluded values of $\frac{t}{t^2 - 5t + 6}$
- Find LCM of p²3p+2 and p²-4
- Find the sum and product of 2x² + 5x + 7 = 0.
- Find the slope of the line joining the given points (-6, 1) and (-3, 2).
- If three points (3, -1), (a, 3), (1, -3) are collinear. Find 'a'
- Find the equation of a line passing through the point (3, -4) and having slope $-\frac{5}{7}$

PART-C (5 Marks)

III. Answer any 9 of the following : (Q.No. 38 is compulsory).

9 × 5 = 45

28. Let $A = \{x \in \mathbb{N} / 1 < x < 4\}$, $B = \{x \in \mathbb{W} / 0 \leq x < 2\}$ and $C = \{x \in \mathbb{N} / x < 3\}$.

Then verify that $A \times (B \cap C) = (A \times B) \cap (A \times C)$.

29. Represent of the given relation by

a) an arrow diagram b) a graph c) a set in roster. Whenever possible d) Domain

e) Range

$R = \{(x, y) / y = x + 3, x, y \text{ are natural numbers } < 10\}$

30. Find the GCD of the given polynomial $3x^4 + 6x^3 - 12x^2 - 24x$ and $4x^4 + 14x^3 + 8x^2 - 8x$.

31. There are 12 pieces of five, ten and twenty rupees currencies whose total is Rs. 135. When first 2 sorts are interchanged in their numbers its value will be increased by Rs. 21. Find the number of currencies in each sort.

32. Find the HCF of 396, 514, 636.

33. The sum of three consecutive terms that are in AP is 27 and their product is 288. Find the three terms.

34. Find the value of a and b. If $9x^2 + 12x^2 + 28x^2 + ax + b$ is a perfect square.

35. Find the equation of a line which passes through (5, 7) and makes intercepts on the axes equal in magnitude but opposite in sign.

36. Find the equation of median of ΔABC through A where the vertices are A (6, 2) B (-5, -1) and (1, 9).

37. Let A(3, -4) B(9, -4) C(5, -7) D(7, -7) Show that ABCD form a trapezium.

38. Find the value of K, if the area of a quadrilateral is 28 sq. units, whose vertices are taken in order.

(-4, -2) (-3, K), (3, -2) and (2, 3).

PART-D (10 Marks)

IV. Answer all the questions :

2 × 10 = 20.

39. a) Draw the two tangents from a point which is 5 cm away from the centre of a circle of Diameter 6 cm. also, measure the length of tangents.

(or)

b) Draw a circle of radius 4 cm. At a point L on it draw a tangent to the circle using the alternate segment.

40. a) Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{7}{4}$ of the corresponding sides of the triangle PQR. (Scale factor $\frac{7}{4} > 1$).

(or)

b) Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{2}{3}$ of the corresponding sides of the triangle PQR. (Scale factor $\frac{2}{3} < 1$).