

Ranipet District

COMMON THIRD REVISION TEST - 2023

Standard X
MATHEMATICS

Reg.No.

1	0	2	2	4
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Marks : 100

14 x 1 = 14

Time : 3.00 hrs

Part - I

I. Choose the correct answer:

- $f(x) = (x + 1)^3 - (x - 1)^3$ represents a function which is
a) linear b) cubic c) reciprocal d) quadratic
- The first term of an arithmetic progression is unity and the common difference is 4. Which of the following will be a term of this A.P.?
a) 4551 b) 10091 c) 7881 d) 13531
- The value of $(1^3 + 2^3 + 3^3 + \dots + 15^3) - (1 + 2 + 3 + \dots + 15)$ is
a) 14400 b) 14200 c) 14280 d) 14520
- $\frac{x}{x^2 - 25} - \frac{8}{x^2 + 6x + 5}$ gives
a) $\frac{x^2 - 7x + 40}{(x - 5)(x + 5)}$ b) $\frac{x^2 + 7x + 40}{(x - 5)(x + 5)(x + 1)}$ c) $\frac{x^2 - 7x + 40}{(x^2 - 25)(x + 1)}$ d) $\frac{x^2 + 10}{(x^2 - 25)(x + 1)}$
- Which of the following should be added to make $x^4 + 64$ a perfect square
a) $4x^2$ b) $16x^2$ c) $8x^2$ d) $-8x^2$
- For the given matrix $A = \begin{pmatrix} 1 & 3 & 5 & 7 \\ 2 & 4 & 6 & 8 \\ 9 & 11 & 13 & 15 \end{pmatrix}$ the order of the matrix A^T is
a) 2×3 b) 3×2 c) 3×4 d) 4×3
- A tangent is perpendicular to the radius at the
a) centre b) point of contact c) infinity d) chord
- 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)
- The equation of a line passing through the origin and perpendicular to the line $7x - 3y + 4 = 0$ is
a) $7x - 3y + 4 = 0$ b) $3x - 7y + 4 = 0$ c) $3x + 7y = 0$ d) $7x - 3y = 0$
- $(1 + \tan \theta + \sec \theta)(1 + \cot \theta - \operatorname{cosec} \theta)$ is equal to
a) 0 b) 1 c) 2 d) -1
- The height of a right circular cone whose radius is 5 cm and slant height is 13 cm will be
a) 12cm b) 10cm c) 13cm d) 5cm

- A frustum of a right circular cone is of height 16 cm with radii of its ends as 8 cm and 20 cm. Then, the volume of the frustum is
a) $3328\pi \text{ cm}^3$ b) $3228\pi \text{ cm}^3$ c) $3240\pi \text{ cm}^3$ d) $3340\pi \text{ cm}^3$
- The mean of 100 observations is 40 and their standard deviation is 3. The sum of squares of all observations is
a) 40000 b) 160900 c) 16000 d) 30000
- The probability of getting a job for a person is $\frac{x}{3}$. If the probability of not getting the job is $\frac{2}{3}$, then the value of x is
a) 2 b) 1 c) 3 d) 1.5

Part - II

- II. Answer any 10 questions. (Q.No.28 is compulsory) 10 x 2 = 20
- If $A \times B = \{(3,2), (3,4), (5,2), (5,4)\}$ then find A and B.
 - If $f(x) = 2x - 1$, $g(x) = \frac{x+1}{2}$, show that $f \circ g = g \circ f = x$.
 - Show that the square of an odd integer is of the form $4q + 1$, for some integer q.
 - Compute x, such that $10^4 = x \pmod{19}$
 - Find the sum of the following series: $1 + 2 + 3 + \dots + 60$
 - Find $\frac{14x^4}{y} \div \frac{7x}{3y^4}$
 - If $A = \begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{bmatrix}$, prove that $AA^T = I$.
 - A man goes 18 m due east and then 24 m due north. Find the distance of his current position from the starting point?
 - Show that the given points are collinear: $(-3, -4)$, $(7, 2)$ and $(12, 5)$
 - From the top of a rock $50\sqrt{3}$ m high, the angle of depression of a car on the ground is observed to be 30° . Find the distance of the car from the rock.
 - A cylindrical drum has a height of 20 cm and base radius of 14 cm. Find its curved surface area and the total surface area.
 - A garden roller whose length is 3 m long and whose diameter is 2.8 m is rolled to level a garden. How much area will it cover in 8 revolutions?
 - Find the range and coefficient of range of the following data: 25, 67, 48, 53, 18, 39, 44.
 - If $P(A) = \frac{2}{3}$, $P(B) = \frac{2}{5}$, $P(A \cup B) = \frac{1}{3}$ then find $P(A \cap B)$.

(3) X Maths
Part - III

III. Answer any 10 questions. (Q.No.42 is compulsory) 10 x 5 = 50

29. Let $A = \{1, 2, 3, 4\}$ and $B = \{2, 5, 8, 11, 14\}$ be two sets. Let $f: A \rightarrow B$ be a function given by $f(x) = 3x - 1$. Represent this function

- (i) by arrow diagram
- (ii) in a table form
- (iii) as a set of ordered pairs
- (iv) in a graphical form

30. The function 't' which maps temperature in Celsius (C) into temperature in Fahrenheit

(F) is defined by $t(C) = F$ where $F = \frac{9}{5}C + 32$. Find,

- (i) $t(0)$ (ii) $t(28)$ (iii) $t(-10)$ (iv) the value of C when $t(C) = 212$
 - (v) the temperature when the Celsius value is equal to the Fahrenheit value.
31. Raghu wish to buy a laptop. He can buy it by paying Rs.40,000 cash or by giving it in 10 installments as Rs.4800 in the first month, Rs.4750 in the second month, Rs.4700 in the third month and so on. If he pays the money in this fashion, find total amount paid in 10 installments.

32. Find the sum of the following series : $10^3 + 11^3 + 12^3 + \dots + 20^3$

33. Find the GCD of $6x^3 - 30x^2 + 60x - 48$ and $3x^3 - 12x^2 + 21x - 18$.

34. If $A = \begin{bmatrix} 5 & 2 & 9 \\ 1 & 2 & 8 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 7 \\ 5 & -1 \end{bmatrix}$, verify that $(AB)^T = B^T A^T$

35. Find the square root of the following polynomials by division method
 $121x^4 - 198x^3 - 183x^2 + 216x + 144$

36. State and Prove - Angle Bisector Theorem

37. 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 $(2, 3)$

38. $A(-3, 0)$, $B(10, -2)$ and $C(12, 3)$ are the vertices of ΔABC . Find the equation of the altitude through A and B.

39. From the top of a tree of height 13-m the angle of elevation and depression of the top and bottom of another tree are 45° and 30° respectively. Find the height of the second tree. ($\sqrt{3} = 1.732$)

40. A toy is in the shape of a cylinder surrounded by a hemisphere. The height of the toy is 25 cm. Find the total surface area of the toy if its common diameter is 12 cm.

(4) X Maths

41. Nathan, an engineering student was asked to make a model shaped like a cylinder with two cones attached at its two ends. The diameter of the model is 3 cm and its length is 12 cm. If each cone has a height of 2 cm, find the volume of the model that Nathan made.

42. Two unbiased dice are rolled once. Find the probability of getting
(i) a doublet (equal numbers on both dice) (ii) the product as a prime number
(iii) the sum as a prime number (iv) the sum as 1

Part - IV

IV. Answer all the questions. 2 x 8 = 16

43. a) Construct a ΔPQR which the base $PQ = 4.5$ cm, $\angle R = 35^\circ$ and the median RG from R to PG is 6 cm.

(OR)

b) Draw a circle of diameter 6 cm from a point P, which is 8 cm away from its centre. Draw the two tangents PA and PB to the circle and measure their lengths.

44. a) Draw the graph of $y = x^2 - 5x - 6$ and hence solve $x^2 - 5x - 14 = 0$

(OR)

b) A school announces that for a certain competitions, the cash prize will be distributed for all the participants equally as shown below:

No. of participants (x)	2	4	6	8	10
Amount for each participant in ₹ (y)	180	90	60	45	36

i) Find the constant of variation.

ii) Graph the above data and hence find, how much will each participant get if the number of participants are 12.

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Now I am Working in Orange International Matriculation Hr. Sec. School.,Aagaram Village ,Vinnamangalam Post, Aagaram Village ,Vinnamangalam Post , Arni -632316.,Tiruvannamalai district. & Sri Rajalakshmi Tuition Centre.,Arni -632301.,Tiruvannamalai district.