

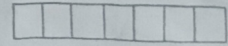
RM-1

FIRST REVISION TEST - 2025

MATHEMATICS

10 - Std

Time : 3.00 hrs.



Marks : 100

I Answer all the question.

14X1=14

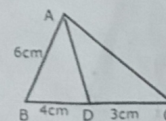
1. If there are 1024 relations from a set $A = \{1, 2, 3, 4, 5\}$ to set B, then the number of elements in B is
a) 3 ~~b) 2~~ c) 4 d) 8
2. If $f : A \rightarrow B$ is a bijective function and if $n(B) = 7$, then $n(A)$ is equal to
~~a) 7~~ b) 49 c) 1 d) 14
3. $f(x) = x^2 - x$ then, $f(x-1) - f(x+1) =$ a) $4x$ ~~b) $2 - 2x$~~ c) $2 - 4x$ d) $4x - 2$
4. Using Euclid's division lemma, if the cube of any positive integer is divided by 9, then the possible remainders are ~~a) 0, 1, 8~~ b) 1, 4, 8 c) 0, 1, 3 d) 1, 3, 5
5. If t_n is the n^{th} term of an A.P then $t_{8n} - t_n$ is
a) $(8n-1)d$ ~~b) $(8n-2)d$~~ c) $(7n-2)d$ d) $(7n)d$
6. A system of three linear equations in the three variables is inconsistent if their planes
a) intersect only at a point b) intersect in a line
c) coincide with each other ~~d) do not intersect~~
7. The GCD of a^m, a^{m+1}, a^{m+2} is a) a^m b) a^{m+1} c) a^{m+2} d) 1
8. If in $\triangle ABC$, $DE \parallel BC$, $AB = 3.6\text{cm}$, $AC = 2.4\text{cm}$ and $AD = 2.1\text{cm}$ then the length of AE is
~~a) 1.4cm~~ b) 1.8cm c) 1.2cm d) 1.05cm
9. The area of a triangle formed by 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
10. The slope of the line which is perpendicular to a line joining the points $(0, 0)$ and $(-8, 8)$ is
a) -1 b) 1 ~~c) $\frac{1}{3}$~~ d) -8
11. If $\sin\theta = \cos\theta$, then the value of $2\tan^2\theta + \sin^2\theta - 1$ is ~~a) $\frac{3}{2}$~~ b) $-\frac{3}{2}$ c) $\frac{2}{3}$ d) $-\frac{2}{3}$
12. The height of a right circular cone whose radius is 5cm and slant height is 13cm will be
~~a) 12cm~~ b) 10cm c) 13cm d) 5cm
13. If the standard deviation of x, y, z is p then the variance of $3x+5, 3y+5, 3z+5$ is
~~a) $3p + 5$~~ ~~b) $p^2 + 5$~~ c) $9p^2$ d) $9p+5$
14. A page is selected at random from a book. The probability that the digit at units place of the page number chosen is less than 7 is a) $\frac{3}{10}$ ~~b) $\frac{7}{10}$~~ c) $\frac{3}{9}$ d) $\frac{7}{9}$

II Answer any 10 questions. Q.No. 28 is compulsory.

10 X 2 = 20

15. If $B \times A = \{(-2, 3), (-2, 4), (0, 3), (0, 4), (3, 3), (3, 4)\}$ find A and B.
16. If $f(x) = 3x - 2$, $g(x) = 2x + k$ and if $f \circ g = g \circ f$, then find the value of k .
17. If $p^2 \times q^1 \times r^4 \times s^3 = 315000$ find p, q, r and s .
18. Which term of an A.P. 16, 11, 6, 1, ... is _____ - 54?
19. Find the excluded value of $\frac{7p+2}{8p^2+13p+5}$.
20. Determine the nature of the roots of the quadratic equation $15x^2 + 11x + 2 = 0$.

21. In the figure, AD is the bisector of $\angle A$. If $BD = 4\text{cm}$, $DC = 3\text{cm}$ and $AB = 6\text{cm}$ find AC.



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22. Find the slope of a line joining the points $(5, \sqrt{5})$ with the origin.
23. Find the intercepts made by the line $3x - 2y - 6 = 0$ on the co-ordinate axes.
24. 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.
25. Find the volume of a cylinder whose height is 2m and whose base area is 250 sq.m.
26. Find the standard deviation of first 21 natural numbers.
27. What is the probability that a leap year selected at random will contain 53 Saturdays?
28. If $A = \begin{pmatrix} 7 & 5 & -3 \\ 2 & 0 & 5 \\ -4 & 3 & -1 \end{pmatrix}$, $B = \begin{pmatrix} 2 & 4 & 11 \\ -1 & 3 & 2 \\ 0 & 5 & 7 \end{pmatrix}$ then find the value of $2A + 3B$.

III Answer any 10 questions. Q.No. 42 is compulsory.

10 X 5 = 50

29. Let A = the set of all natural numbers less than 8, B = the set of all prime numbers less than 8, C = the set of even prime number. Verify that $A \times (B - C) = (A \times B) - (A \times C)$.
30. 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 iii) as a set of ordered pairs iv) in a graphical form.
31. Find the sum to n terms of the series $3 + 33 + 333 + \dots$.
32. Find the sum of $10^3 + 11^3 + 12^3 + \dots + 20^3$.
33. If α, β are the roots of $7x^2 + ax + 2 = 0$ and if $\beta - \alpha = -\frac{13}{7}$. Find the value of a.
34. If $A = \begin{pmatrix} 5 & 2 & 9 \\ 1 & 2 & 8 \end{pmatrix}$, $B = \begin{pmatrix} 1 & 7 \\ 1 & 2 \\ 5 & -1 \end{pmatrix}$ verify that $(AB)^T = B^T A^T$.
35. State and prove Pythagoras theorem.
36. Find the area of the quadrilateral formed by the points $(-9, 0)$, $(-8, 6)$, $(-1, -2)$ and $(-6, -3)$.
37. Find the equation of the median of ΔABC though a whose vertices are $A(6, 2)$, $B(-5, -1)$ and $C(1, 9)$.
38. A pole 5m high is fixed on the top of a tower. The angle of elevation of the top of the pole observed from a point "A" on the ground is 60° and the angle of depression to the point "A" from the top of the tower is 45° . Find the height of the tower. ($\sqrt{3} = 1.732$)
39. 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 3cm and its length is 12cm. If each cone has a height of 2cm, find the volume of the model that Nathan made.
40. The scores of a cricketer in 7 matches are 70, 80, 60, 50, 40, 90, 95. Find the standard deviation.
41. Two dice are rolled once. Find the probability of getting an even number on the first die or a total of face sum 8.
42. Find the square root of $64x^4 - 16x^3 + 17x^2 - 2x + 1$.

IV Answer all the questions.

2 X 8 = 16

43. a) Draw a triangle ABC of base BC = 8cm, $\angle A = 60^\circ$ and the bisector of $\angle A$ meets BC and D such that BD = 6cm. (OR)
b) Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{3}{5}$ of the corresponding sides of the triangle PQR. (Scale factor $\frac{3}{5} < 1$).
44. a) Draw the graph of $y = 2x^2 - 3x - 5$ and hence solve $2x^2 - 4x - 6 = 0$. (OR)
b) A garment shop announces a flat 50% discount on every purchase of items for their customers. Draw the graph for the relation between the marked price and the discount. Hence find i) the marked price when a customer gets a discount of Rs. 3250 (from graph)
ii) the discount when the marked price is Rs. 2500.