

STD: 10

SUB: MATHS

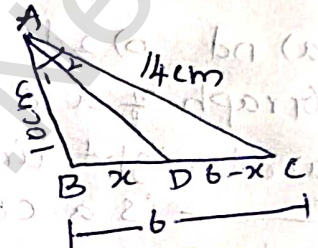
REVISION EXAM - 2024

MARKS: 100

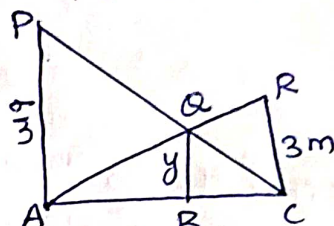
I. Choose the correct answer :-

14x1=14

1. If $n(A) = p$, $n(B) = q$ then the total number of relations that exist from A to B is ____
a) p^q b) q^p c) $2^{pq} - 1$ d) 2^{pq}
2. Two positive integers are said to be relatively prime or co prime if their HCF is ____
a) 1 b) 2 c) 0 d) 4
3. If t_n is the n^{th} term of an A.P. then the value of $t_{n+1} - t_{n-1}$ is ____
a) nd b) $2d$ c) d d) 0.
4. Graph of a quadratic equation is a ____
a) straight line b) circle c) parabola d) hyperbola.
5. ____ is a cevian that divides the angles into two equal halves
a) Altitude b) median c) Angle bisector d) Menelaus theorem
6. The slope of a vertical line is ____
a) 0 b) 90° c) 1 d) ∞ (undefined)
7. If a line with slope m , $m \neq 0$ makes x intercept d , then the equation of the straight line is ____
a) $y = mx$ b) $y = mx + c$ c) $y = m(x - d)$ d) $y = b$
8. $(\tan 45^\circ + \cot 45^\circ) + (\sec 45^\circ \operatorname{cosec} 45^\circ)$ is ____
a) 2 b) $\frac{\sqrt{2}}{2}$ c) $\frac{1}{2}$ d) 4.
9. The C.S.A of right circular cylinder of equal radius and height is ____ the area of its base
a) 2 b) 1 c) 3 d) 4
10. If the volume and surface area of a sphere are numerically equal, then the radius of the sphere is ____
a) 3 b) 2 c) 1 d) 5
11. If the sum of 10 data values is 265 then their mean is ____
a) 2650 b) 26500 c) 2.65 d) 26.5
12. The range of first 10 prime numbers is ____
a) 29 b) 27 c) 25 d) 31
13. The probability of impossible event is ____
a) 0 b) 1 c) ϕ d) 2
14. If A is a 3×2 matrix and B is a 4×3 matrix, how many columns does AB have
a) 3 b) 4 c) 2 d) none of these.

- II. Answer any 10 questions. (Q.No. 28 is compulsory) $10 \times 2 = 20$.**
15. If the ordered pairs $(x^2 - 3x, y^2 + 4y)$ and $(-2, 5)$ are equal then find x and y .
 16. If $f(x) = 3x - 21$, then find $f(0) + 2f(-1)$.
 17. Today is Tuesday. My uncle will come after 45 days. In which day my uncle will be coming?
 18. Find the 12th term from the last term of the A.P. $-2, -4, -6, \dots, -100$.
 19. Solve: $9x^2 - 12x + 4 = 0$ (using completing the square method).
 20. If the difference between a number and its reciprocal is $\frac{24}{5}$, find the number.
 21. If $A = \begin{pmatrix} 1 & 3 & -2 \\ 5 & -4 & 6 \\ -3 & 2 & 9 \end{pmatrix}$, $B = \begin{pmatrix} 1 & 8 \\ 3 & 4 \\ 9 & 6 \end{pmatrix}$, find $A+B$.
 22. In the Fig: AD is the bisector of $\angle BAC$, if $AB = 10$ cm, $AC = 14$ cm and $BC = 6$ cm. Find BD and DC.
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23. Find the intercepts made by the line $4x - 9y + 36 = 0$ on the coordinate axes.
 24. The line through the points $(-2, a)$ and $(9, 3)$ has slope $-\frac{1}{2}$. Find the value of a .
 25. Prove that $\frac{\tan^2 \theta - 1}{\tan^2 \theta + 1} = 1 - 2\cos^2 \theta$.
 26. Find the value of the radius of a sphere whose surface area is 36π sq. units.
 27. A flower is selected at random from a basket containing 80 yellow, 70 red and 50 white flowers. Find the probability of selecting a yellow or red flower?
 28. If for a distribution $\sum (x-5) = 3$, $\sum (x-5)^2 = 43$, and total number of observations is 18, find the mean.

- III. Answer any 10 questions. (Q.No 42 is compulsory) $10 \times 5 = 50$.**
29. In an apartment, in selecting a house from door numbers 1 to 100 randomly, Find the probability of getting the door number of the house to be an even number or a perfect square number or a perfect cube number.
 30. Solve: $\frac{1}{3}(x+y-5) = y - z = 2x - 11 = 9 - (x+2z)$
 31. $A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$ and $I = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ Show that $A^2 - (a+d)A = (bc - ad)I_2$
 32. Prove that the equation $x^2(p^2 + q^2) + 2x(pr + qs) + r^2 + s^2 = 0$ has no real roots. If $ps = qr$, then show that the roots are real and equal.

33. Find x if $gf f(x) = fgg(x)$, given $f(x) = 3x+1$ and $g(x) = x+3$
34. If d is the Highest Common Factor of 32 and 60, find x and y satisfying $d = 32x + 60y$.
35. Find the G.P in which the 2nd term is $\sqrt{6}$ and 6th term is $9\sqrt{6}$.
36. Two vertical Poles of heights 6m and 3m are erected above a horizontal ground AC. Find the value of y .
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37. Find the area of a triangle formed by the lines $3x+y-2=0$, $5x+2y-3=0$ and $2x-y-3=0$.
38. Two ships are sailing in the sea on either side of the lighthouse. The angles of depression of two ships as observed from the top of the lighthouse are 60° and 45° respectively. If the distance between the ships is $200 \left[\frac{\sqrt{3}+1}{\sqrt{3}} \right]$ metres, find the height of the lighthouse.
39. Calculate the mass of a hollow brass sphere if the inner diameter is 14cm and thickness is 1mm, and whose density is 17.3 g/cm^3 . (Hint: mass = density $\times$ volume).
40. The volume of a cone is $1005 \frac{5}{7} \text{ cu. cm}$. The area of its base is $201 \frac{1}{7} \text{ sq. cm}$. Find the slant height of the cone.
41. Find the variance and standard deviation of the wages of 9 workers given below. ₹ 310, ₹ 290, ₹ 320, ₹ 280, ₹ 300, ₹ 290, ₹ 320, ₹ 310, ₹ 280
42. If $x \sin^3 \theta + y \cos^3 \theta = \sin \theta \cos \theta$ and $x \sin \theta = y \cos \theta$, then prove that $x^2 + y^2 = 1$.
- IV. Answer the following Questions:- $2 \times 8 = 16$
43. Draw a triangle ABC of base $BC = 5.6 \text{ cm}$, $\angle A = 40^\circ$ and the bisector of $\angle A$ meets BC at D such that $CD = 4 \text{ cm}$.
44. Draw the graph of $y = 2x^2$ and hence solve $2x^2 - x - 6 = 0$.