
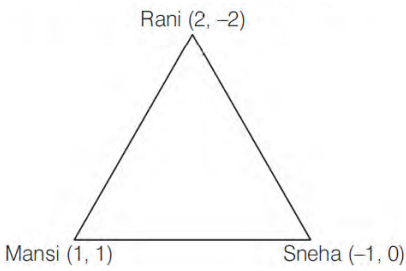


CBT CLASS XI MATHS DECEMBER-2024

GENERAL INSTRUCTION :

CHAPTER: SEQUENCES & SERIES AND STRAIGHT LINES

Sr.No	Question	Marks
	<p>Case Study 1</p> <p>A sequence of non-zero numbers is said to be a geometric progression, if the ratio of each term, except the first one, by its preceding term is always constant. Rahul being a plant lover decides to open a nursery and he bought few plants with pots. He wants to place pots in such a way that number of pots in first row is 2, in second row is 4 and in third row is 8 and so on....</p>  <p>Based on the above information, answer the following questions.</p>	
1	<p>The constant multiple by which the number of pots is increasing in every row is</p> <p>(a) 2 (b) 4 (c) 8 (d) 1</p>	1
2	<p>The number of pots in 8th row is</p> <p>(a) 156 (b) 256 (c) 300 (d) 456</p>	1
3	<p>The difference in number of pots placed in 7th row and 5th row is</p> <p>(a) 86 (b) 50 (c) 90 (d) 96</p>	1
4	<p>Total number of pots upto 10th row is</p> <p>(a) 1046 (b) 2046 (c) 1023 (d) 1024</p>	1
	<p>Case Study 2</p> <p>Three girls Rani, Mansi and Sneha are taking to each other while maintaining a social distance due to covid-19. They are standing on such a way that, their positions are form a triangle as given below figure:</p> 	

	Based on the above information answer the following questions.	
5	The equation of the line formed by Rani And Mansi is: (a) $3x - y = 4$ (b) $3x + y = 4$ (c) $x - 3y = 4$ (d) $x + 3y = 4$	1
6	Slope of equation of line formed by Rani And Sneha is : (a) $\frac{2}{3}$ (b) $\frac{-3}{2}$ (c) $\frac{-2}{3}$ (d) $\frac{1}{3}$	1
7	The equation of median line through Rani is : (a) $5x + 4y = 2$ (b) $5x - 4y = 2$ (c) $4x - 5y = 1$ (d) None of these	1
8	The equation of line passing through the Rani and parallel to line formed by Mansi and Sneha is: (a) $x - 2y = 4$ (b) $x + 2y = 6$ (c) $x - 2y = 6$ (d) $2x + y = 4$	1
	Directions: (Q.9 – Q.10) Each of these questions contains two statements: Assertion (A) and Reason (R). Each of these questions also has four alternative choices, any one of which is the correct answer . You have to select one of the options (a) , (b) , (c) and (d) given below : (a) A is true , R is true and R is a correct explanation for A (b) A is true , R is true and R is not a correct explanation for Assertion (c) A is true and R is false (d) A is false and R is true	
9	Assertion(A): If the sum of three numbers in G.P. is $\frac{3}{2}$ and their product is -1, then numbers are 2, -1, $\frac{1}{2}$. Reason(R): Four numbers in G.P. can be assumed as $\frac{a}{r^3}, \frac{a}{r}, ar, ar^3$ (a) (b) (c) (d)	1
10	Assertion(A): If the points (-2,3), (k,5) and (4,1) are collinear, then k = -8. Reason(R): Three points $(x_1, y_1), (x_2, y_2)$ and (x_3, y_3) are collinear if $x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2) = 0$ (a) (b) (c) (d)	1

Answer Key

Ans1	(a)
Feedback	Common ratio = $4/2=2$, so option (a) is correct.
Ans2	(b)
Feedback	8^{th} term of G.P = $2X(2)^7=256$,so option (b) is correct.
Ans3	(d)
Feedback	The difference = $2 X 2^{4(2^2 - 1)}= 96$,so option d is correct.
Ans4	(b)
Feedback	Sum of terms up to 10^{th} term = $a(r^n-1)/(r-1) = 2046$,so option (b) is correct.
Ans5	(b)
Feedback	Using two point form equation of line is $3x+y=4$,so option b is correct.
Ans6	(c)

Feedback	using slope formula $= \frac{y_2 - y_1}{x_2 - x_1} = -2/3$, so option c is correct.
Ans7	(a)
Feedback	Mid point of M & S is $(0, 1/2)$ hence equation of median using two point form is $5x+4y=2$.
Ans8	(c)
Feedback	Eq of line through mansi and rani is $x - 2y + 1 = 0$ and line parallel to this line is $x - 2y + K = 0$, putting $x = 2$ and $y = -2$ we get $k = -6$, so option c is correct.
Ans9	(b)
Feedback	$a/r + a + ar = 3/2$ and $a/r \cdot a \cdot ar = -1 \Rightarrow a = -1$ and $r = -1/2$ or -2 , A is true , R is true and R is not a correct explanation for Assertion so option (b) is correct answer.
Ans10	(a)
Feedback	Points are collinear so area of triangle is zero so (R) is true, and on solving area and equating with 0 we get $k = -8$ so (A) is also true so option (a) is correct answer.