Class 11: Revision Test: Sets and Sequence and Series

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Duration: 90mins **Maximum Marks: 40**

1 marks questions

1. Two finite sets have m and n elements. The number of subsets of the first set is 112 more than that of second set. The values of m and n are respectively:
   (a) 4, 7 (b) 7, 4 (c) 4, 4 (d) 7, 7
2. If the third term of G.P. is 4, then the product of its first 5 terms is:
   (a) 43 (b) 44 (c) 45 (d) none of these
3. Let A and B be two sets such that n(A) = 20, n(B) =10, n(A ∪ B) = 15. Then, n(A ∩ B) is equal to:
   (a) 30 (b) 40 (c) 15 (d) none of these
4. If A = {x : x is a multiple of 3} and, B = {x : x is a multiple of 5}, then A ∩ B is:
   (a) { x : x is a multiple of 3} (b) { x : x is a multiple of 5}
   (c) { x : x is a multiple of 15} (d) none of the above
5. 18th term from the end of the sequence 3, 6, 12,...25th term is:
   (a) 393216 (b) 393206 (c) 384 (d) 768
6. If X = {8n – 7n – 1 | n ∈ N} and Y = {49n – 49 | n ∈ N}. Then
   (a) X ⊂ Y (b) Y ⊂ X (c) X = Y (d) X ∩ Y = ϕ

2 marks questions

7. If X = {5, 6, 7, 8}, Y = {7, 8, 9, 10}, Z = {3, 4, 5, 6}. Find: (a) ((X ∩ Y) ∪ Z) (b) ((X ∪ Y) ∩ Z)
8. Insert five numbers between 8 and 26 such that resulting sequence is an A.P.
9. Find the sum of integers from 1 to 100 that are divisible by 2 or 5.

3 marks questions

10. Let A = {1, 2, 3, 4} B = {1, 2, 3} and C = {2, 4}. Find all sets of X satisfying each pair of conditions:
    (a) X ⊂ B and X ⊄ C
    (b) X ⊂ B, X ≠ B and X ⊄ C
    (c) X ⊂ A, X ⊂ B and X ⊂ C .
11. Let P and Q be sets, if P ∩ X = Q ∩ X = ϕ and P ∪ X = Q ∪ X for some set X. Show that P = Q
12. If the pth, qth and rth term of a G.P. are a, b, c respectively, prove that:
    $a^{q-r}.b^{r-p}.c^{p-q} = 1$

    OR

    The 5th, 8th and 11th term of a GP are p, q and s, respectively. Show that $q^2 = ps$

Solution to Test

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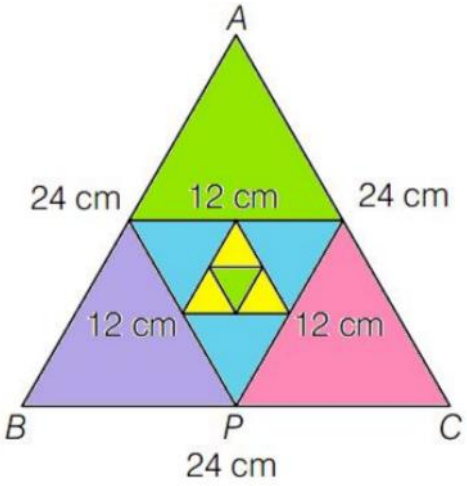
13. The sum of first three terms of a Geometric progression is $\frac{12}{13}$ and their product is -1. Find the common ratio and the terms.
14. Find the sum of 'n' terms of the series : 0.5 + 0.55 + 0.555 + ... n terms.

5 marks questions

15. If $\theta_1, \theta_2, \theta_{3\ldots} \theta_n$ are in AP whose common difference is d, the show that $\sec\theta_1 \sec\theta_2 + \sec\theta_2 \sec\theta_3 \ldots . + \sec\theta_{n-1} \sec\theta_n = \frac{(\tan\theta_n - \tan\theta_1)}{\sin d}$

Case Study 4 marks questions (1+1+2)

16. In a library, 25 students are reading books on physics, chemistry, and mathematics. It was found that 15 students were reading mathematics, 12 reading physics and 11 reading chemistry, 5 students reading both mathematics and chemistry, 9 students reading both physics and mathematics, 4 students reading both physics and chemistry, and 3 students reading all three subjects.
    (a) Find the number of students reading only Chemistry.
    (b) Find the number of students reading only Mathematics.
    (c) Find the number of students reading at least one of the subject and also find the number of students reading none of the subjects.
17. In Rangoli competition in school, Preeti made Rangoli in the equilateral shape. Each side of an equilateral triangle is 24 cm. The mid-point of its sides are joined to form another triangle. This process is going continuously infinite.



Based on above information, answer the following questions.
(a) Find the side of the 5th triangle is (in cm)
(b) Find the sum of perimeter of all triangle is (in cm)
(b) Find the area of all the triangle is (in sq cm).

Solution to Test

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