

9. Which of the following is not an A.P.?
 (a) 1, 4, 7, 10, (b) 3, 7, 12, 18,
 (c) 11, 14, 17, 20, (d) -5, -2, 1, 4, ...
10. If for an A.P. $a_5 = a_{10} = 5a$, then a_{15} is
 (a) 71 (b) 72 (c) 76 (d) 81

SECTION – B(2 marks each)

11. Explain why $7 \times 11 + 13 + 13$ and $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ are composite numbers.
12. Which term of the AP 9, 12, 15, 18,.... will be 39 more than its 36th term?
13. Find a cubic polynomial with the sum, sum of the product of its zeroes taken two at a time, and the product of its zeroes as 3, -1, -3 respectively.

SECTION – C(3 marks each)

14. Prove that $\sqrt{2} + \sqrt{3}$ is an irrational number.
15. Solve for x and y: $217x + 131y = 913$; $131x + 217y = 827$.
16. Solve: $\frac{1}{x-2} + \frac{1}{x-4} = \frac{4}{3}$, ($x \neq 2, 4$)
17. Find the sum of first 24 terms of the list of numbers whose n th term is given by $a_n = 3 + 2n$

SECTION – D(4 marks each)

18. If α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - 2x + 3$, then find a quadratic polynomial whose zeroes are $\frac{\alpha - 1}{\alpha + 1}$ and $\frac{\beta - 1}{\beta + 1}$.
19. Roohi travels 300 km to her home partly by train and partly by bus. She takes 4 hours if she travels 60 km by train and the remaining by bus. If she travels 100 km by train and the remaining by bus, she takes 10 minutes longer. Find the speed of the train and the bus separately.
20. 300 apples are distributed equally among a certain number of students. Had there been 10 more students, each would have received one apple less. Find the number of students.