

10th STANDARD

PART – I

$$1 \times 15 = 15$$

CHOOSE THE CORRECT ANSWER

1. The least number that is divisible by all the numbers from 1 to 10 (both inclusive) is

2. If the sequence $t_1, t_2, t_3, \dots$, are in A.P. then the sequence $t_6, t_{12}, t_{18}, \dots$ is

3. The sum of the exponents of the prime factors in the prime factorization of 1729 is

4. If $A = 2^{65}$ and $B = 2^{64} + 2^{63} + 2^{62} + \dots + 2^0$ which of the following is true?

5. Given $F_1 = 1$, $F_2 = 3$ and $F_n = F_{n-1} + F_{n-2}$ then F_5 is

6. Using Euclid's division lemma, if the cube of any positive integer is divided by 9 then the possible remainders are

7. If 6 times of 6th term of an A.P. is equal to 7 times the 7th term, then the 13th term of the A.P. is

8. $7^{4k} \equiv \underline{\hspace{2cm}} \pmod{100}$

9. If the HCF of 65 and 117 is expressible in the form of $65m - 117$, then the value of m is

- a) 4
b) 2
c) 1
d) 3

10. Euclid's division lemma states that for positive integers a and b, there exist unique integers q and r such that $a = bq + r$, where r must satisfy

- (a) $1 < r < b$ (b) $0 < r < b$
 (c) $0 \leq r < b$ (d) $0 < r \leq b$

11. The common ratio of the G.P. a^{m-n} , am , a^{m+n} is

- a) a^m b) a^{-m}
 c) a^n d) a^{-n}

PART - II

Answer the question (any 7)

$$7 \times 2 = 14$$

12. A brick staircase has a total of 30 steps. The bottom step requires 100 bricks. Each successive step requires two bricks less than the previous step.

13. Find the sum of $5^2 + 10^2 + 15^2 + \dots + 105^2$

14. Find the sum of $3 + 6 + 9 + \dots + 96$

15. First term a and common difference d are given below. Find the corresponding A.P.

$$a = 5, d = 6$$

16. Find the first term and common difference of the Arithmetic Progressions whose nth terms are given $t_n = -3 + 2n$

17. Find the least positive value of x such that $67 + x \equiv 1 \pmod{4}$

bricks less than the previous step.

18. 'a' and 'b' are two positive integers such that $a^b \times b^b = 800$. Find the 'a' and 'b'.

How many bricks are required to build the staircase?

19. If the Highest Common Factor of 210 and 55 is expressible in the form $55x - 325$, find x.

20. Find the sum of $1 + 3 + 5 + \dots + 55$

PART - IV

$$5 \times 5 = 25$$

Answer the following (any 5)

21. Find the HCF of 396, 504, 636.

22. Find the HCF of 252525 and 363636

23. A mother divides Rs. 207 into three parts such that the amounts are in A.P. and gives it to her three children. The product of the two least amounts that the children had Rs. 4623. Find the amount received by each child.

24. If 1th, mth and nth terms of an A.P are x, y, z respectively, then show that $(x - y)n + (y - z)m + (z - x)m = 0$

25. Find the sum to n terms of the series

$$3 + 33 + 333 + \dots \text{to } n \text{ terms}$$

26. Find the sum of the following series

$$10^3 + 11^3 + 12^3 + \dots + 20^3$$

27. Find the greatest number that will divide 445 and 572 leaving remainders 4 and 5 respectively.