K **COMMON FIRST MID - TERM TEST - 2019**

STANDARD - X

MATHEMATICS

Time : 1.30 hours *Marks: 50*

PART - A

I. Choose the correct answer: **8×1=8**

1. If $n(A \times B) = 6$ and $A = \{1, 3\}$ then $n(B)$ is

   a) 1 b) 2 c) 3 d) 6

2. If $f : A \to B$ is a bijective function and if $n(B) = 7$, then $n(A)$ is equal to

   a) 7 b) 49 c) 1 d) 14

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

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

4. The value of $(1^3 + 2^3 + 3^3 + \ldots\ldots + 15^3) - (1 + 2 + 3 + \ldots\ldots\ldots\ldots + 15)$ is

   a) 14400 b) 14200 c) 14280 d) 14520

5. If $(x - 6)$ is the HCF of $x^2 - 2x - 24$ and $x^2 - kx - 6$ then the value of k

   a) 3 b) 5 c) 6 d) 8

6. The square root of $\frac{256x^8y^4z^{10}}{25x^6y^6z^6}$ is equal to

   a) $\frac{16}{5}\left|\frac{x^2z^4}{y^2}\right|$ b) $16\left|\frac{y^2}{x^2z^4}\right|$ c) $16\left|\frac{y}{xz^2}\right|$ d) $\frac{16}{5}\left|\frac{xz^2}{y}\right|$

7. If in triangles ABC and EDF, $\frac{AB}{DE} = \frac{BC}{FD}$ then they will be similar, when

   a) $\angle B = \angle E$ b) $\angle A = \angle D$ c) $\angle B = \angle D$ d) $\angle A = \angle F$

8. In ΔLMN, $\angle L = 60^o$, $\angle M = 50^o$. If $\angle LMN \sim \Delta PQR$ then the value of $\angle R$ is

   a) 40^o b) 70^o c) 30^o d) 110^o

PART - B

II. Answer any 6 questions. Q.No. 15 is compulsory: **6×2=12**

9. A Relaxion R is given by the set $\{x, y / y = x + 3, x \in \{0, 1, 2, 3, 4, 5\}$. Determine its domain and range.

10. Let $A = \{-1, 1\}$ and $B = \{0, 2\}$. If the function $f : A \to B$ defined by $f(x) = ax + b$ is an onto function? Find a and b.

11. Find the largest number which divides 1230 and 1926 leaving remainder 12 in each case.

12. In a G.P. 729, 243, 81 ..... Find t_7.
13. Find the LCM of $16m, -12m^2n^2, 8n^2$.
14. Add : $\frac{x+2}{x+3} + \frac{x-1}{x-2}$
15. If A = {-2, -1, 0, 1, 2} and f : A→B is an onto function defined by $f(x) = x^2+x+1$ then find B. **(OR)**

    Find the sum first 15 terms of the A.P 8, 7¼, 6½, 5¾ .....

PART - C

III. Answer any 4 questions. Q.No. 21 is compulsory. **4×5=20**

16. Let f.: A → B be a function defined by $f(x) = \frac{x}{2} - 1$ where A = {2, 4, 6, 10, 12}; B = {0, 1, 2, 4, 5, 9} Represent f by i) set of ordered pairs ii) a table iii) an arrow diagram iv) a graph.
17. If f(x) = 2x + 3, g(x) = 1 - 2x and h(x) = 3x prove that fo (goh) = (fog)oh
18. The sum of first n, 2n and 3n terms of an A.P. are S_1, S_2 and S_3 respectively. Prove that $S_3 = 3(S_2 - S_1)$
19. Find the sum to n terms of the series 3 + 33 + 333 + ... to n terms.
20. Find the GCD of $x^4 + 3x^3 - x - 3$, $x^3 + x^2 - 5x + 3$
21. Find the square root of $x^4 - 12x^3 + 42x^2 - 36x + 9$. **(OR)**

    Rekha has 15 square colour papers of sizes 10cm, 11cm, 12cm ..... 24cm. How much area can be decorated with these colour papers?

PART - D

IV. Answer any one question: **1×10=10**

22. Draw the graph of the quadratic equation $x^2 - 9x + 20 = 0$ and State their nature of solutions. **(OR)**

    Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{2}{3}$ of the corresponding sides of the triangle PQR (Scale factor $\frac{2}{3}$)
