MATH PRACTICE PAPER - 1

Class 10 - Mathematics

Time Allowed: 1 hour **Maximum Marks: 37**

Section A

1. If a = ($2^2 \times 3^3 \times 5^4$) and b = ($2^3 \times 3^2 \times 5$) then HCF (a, b) = ? **[1]**

   a) 360 b) 90

   c) 180 d) 540

2. If $\frac{241}{4000} = \frac{241}{2^m \times 5^n}$, then **[1]**

   a) m = 3 and n = 2 b) m = 5 and n = 3

   c) m = 2 and n = 5 d) m = 4 and n = 5

3. The product of two numbers is 1600 and their HCF is 5. The LCM of the numbers is **[1]**

   a) 1600 b) 8000

   c) 1605 d) 320

4. If two numbers do not have common factor (other than 1), then they are called **[1]**

   a) prime numbers b) co-prime numbers

   c) composite numbers d) twin primes

5. If α and β are the zeroes of the polynomial $3x^2$ + 11x - 4, then the value of $\frac{1}{\alpha} + \frac{1}{\beta}$ is **[1]**

   a) $\frac{13}{4}$ b) $\frac{12}{4}$

   c) $\frac{11}{4}$ d) $\frac{15}{4}$

6. The zeroes of the polynomial $3x^2$ + 11x - 4 are: **[1]**

   a) $\frac{-1}{3}$, -4 b) $\frac{1}{3}$, -4

   c) $\frac{-1}{3}$, 4 d) $\frac{1}{3}$, 4

7. For what value of k, do the equations **[1]**

   3x – y + 8 = 0

   and 6x – ky = –16

   represent coincident lines?

   a) –2 b) 2

   c) $-\frac{1}{2}$ d) $\frac{1}{2}$

8. If a pair of linear equation is consistent, then the lines will be **[1]**

   a) always intersecting b) intersecting or coincident

   c) always coincident d) parallel

9. The roots of the quadratic equation $\frac{x^2-8}{x^2+20} = \frac{1}{2}$ are **[1]**

a) ± 3 b) ± 4

c) ± 2 d) ± 6

10. If the roots of the equation $(a - b)x^2 + (b - c)x + (c - a) = 0$ are equal. Then _____. **[1]**

a) $2c = a + b$ b) $2a = b + c$

c) $2b = a + c$ d) $\frac{1}{b} = \frac{1}{a} + \frac{1}{c}$

Section B

11. Find HCF of 44, 96 and 404 by prime factorization method. Hence find their LCM. **[2]**
12. The traffic lights at three different road crossings change after every 48 seconds, 72 seconds and 108 seconds respectively. If they change simultaneously at 7 a.m., at what time will they change together next? **[2]**
13. If α and β are the zeroes of a polynomial $x^2 - 4\sqrt{3}x + 3$, then find the value of $\alpha + \beta - \alpha\beta$ **[2]**
14. Find the zeroes of quadratic polynomial $4u^2 + 8u$ and verify the relationship between the zeroes and their coefficients. **[2]**
15. Solve for x and y: $x + y = 6$, $2x - 3y = 4$ **[2]**
16. Solve the following system of linear equation by substitution method: **[2]**

    $2x - y = 2$ ...(i)

    $x + 3y = 15$ ....(ii)
17. Determine the nature of the roots of quadratic equation: $12x^2 - 4\sqrt{15}x + 5 = 0$. **[2]**
18. Solve the quadratic equation by factorization: **[2]**

    $x^2 + \left(a + \frac{1}{a}\right)x + 1 = 0$

Section C

19. The sum of the squares of two consecutive odd positive integers is 394. Find them. **[3]**
20. Solve: $\frac{2}{(x+1)} + \frac{3}{2(x-2)} = \frac{23}{5x}, x \neq 0, -1, 2.$ **[3]**

Section D

21. A two-digit number is such that the product of its digits is 20. If 9 is added to the number, the digits interchange their places. Find the number. **[5]**