AllCanMath

CLASS 10 MATH TEST PAPER 2
Class 10 - Mathematics

Time Allowed: 1 hour   **Maximum Marks: 30**

Section A

1. If **p** and **q** are natural numbers and **p** is the multiple of **q**, then what is the HCF of **p** and **q**? **[1]**

   a) p   b) q

   c) pq   d) p + q

2. (HCF $\times$ LCM) for the numbers 70 and 40 is: **[1]**

   a) 280   b) 2800

   c) 10   d) 70

3. It is given that the difference between the zeros of $4x^2$ - 8kx + 9 is 4 and k > 0. Then, k =? **[1]**

   a) $\frac{1}{2}$ b) $\frac{3}{2}$

   c) $\frac{5}{2}$ d) $\frac{7}{2}$

4. The zeroes of the quadratic polynomial $16x^2$ - 9 are: **[1]**

   a) $\frac{9}{16}, \frac{9}{16}$ b) $-\frac{3}{4}, -\frac{3}{4}$

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

5. The pair of linear equations $\frac{3x}{2} + \frac{5y}{3}$ = 7 and 9x + 10y = 14 is: **[1]**

   a) consistent   b) inconsistent

   c) consistent with many solutions   d) consistent with one solution

6. If the pair of linear equations x - y = 1, x + ky = 5 has a unique solution x = 2, y = 1, then the value of k is: **[1]**

   a) 3   b) -2

   c) -3   d) 4

7. Which of the following is not a quadratic equation? **[1]**

   a) $x = x^2 + 3 + 4x^2$ b) $2(x-1)^2 = 4x^2 - 2x + 1$

   c) $\left(\sqrt{2}x + \sqrt{3}\right)^2 + x^2 = 3x^2 - 5x$ d) $2x - x^2 = x^2 + 5$

8. $9x^2$ + 12x + 4 = 0 have **[1]**

   a) Real and Distinct roots   b) No real roots

   c) Distinct roots   d) Real and Equal roots

9. **Assertion:** If both zeros of the quadratic polynomial x^2 - 2kx + 2 are equal in magnitude but opposite in sign then value of k is $\frac{1}{2}$ **[1]**

   Reason: Sum of zeros of a quadratic polynomial ax^2 + bx + c is $\frac{-b}{a}$

   a) Assertion and reason both are correct   b) Assertion and reason both are correct

statements and reason is correct explanation for assertion.

statements but reason is not correct explanation for assertion.

c) Assertion is correct statement but reason is wrong statement.

d) Assertion is wrong statement but reason is correct statement.

10. **Assertion (A):** $(2x - 1)^2 - 4x^2 + 5 = 0$ is not a quadratic equation. **[1]**

Reason (R): $x = 0, 3$ are the roots of the equation $2x^2 - 6x = 0$

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Section B

11. Find the HCF of 96 and 404 by prime factorisation method. Hence, find their LCM. **[2]**

12. Prove that $(7 - 2\sqrt{3})$ is an irrational number, given that $\sqrt{3}$ is an irrational number. **[2]**

13. If α and β are the zeros of the quadratic polynomial $f(t) = t^2 - 4t + 3$, find the value of $\alpha^4\beta^3 + \alpha^3\beta^4$. **[2]**

OR

Find the value of k such that the polynomial $x^2 - (k + 6)x + 2(2k - 1)$ has sum of its zeros equal to half of their product.

14. If α and β are the zeroes of the polynomial $f(x) = x^2 - 4x - 5$, then find the value of $\alpha^2 + \beta^2$ **[2]**

Section C

15. Two years ago father was five times as old as his son. Two years later, his age will be 8 years more than three times the age of the son. Find the present ages of father and son. **[3]**

OR

Determine by drawing the graphs, whether the system of linear equations has a unique solution or not:
$2x + 5y = 10$; $x - 3 = 0$

Section D

16. **Read the text carefully and answer the questions:** **[4]**

The below picture are few natural examples of parabolic shape which is represented by a quadratic polynomial. A parabolic arch is an arch in the shape of a parabola. In structures, their curve represents an efficient method of load, and so can be found in bridges and in architecture in a variety of forms.

(a) In the standard form of quadratic polynomial, $ax^2 + bx + c$, what are a, b and c?

(b) If the roots of the quadratic polynomial are equal, what is the discriminant D?

(c) If α and $\frac{1}{\alpha}$ are the zeroes of the quadratic polynomial are $2x^2 - x + 8k$, then find the value of k?

(d) What is the relation between zeros and coefficient for a quadratic polynomial?

Section E

17. A train takes 2 hours less for a journey of 300 km if its speed is increased by 5 km/hr from its usual speed. Find the usual speed of the train. **[5]**

OR

Swati can row her boat at a speed of 5 km/hr in still water. If it takes her 1 hour more to row the boat 5.25 km upstream than to return downstream, find the speed of the stream.