विद्या सर्वार्थि साधिका

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PERIODIC TEST – 1

Class: X

Subject: Mathematics (041) M.M: 40

Date : 16-07-2025 Time: 1 Hour 30 min

General Instructions:

1. The question paper consists of 22 questions divided into 3 sections A, B and C
2. All questions are compulsory.
3. Section A comprises of 10 questions of 1 mark each.
4. Section B comprises of 6 questions of 2 marks each. Internal choice has been provided in two questions.
5. Section C comprises of 6 questions of 3 marks each. Internal choice has been provided in two questions.

SECTION- A

1. Find the largest number which divides 865 and 255. (1)
   (A) 5 (B) 13 (C) 15 (D) 25

2. If '– 4' is a zero of the polynomials $x^2 - x - (2k + 2)$, find the value of k. (1)
   (A) 5 (B) – 5 (C) 9 (D) 1

3. If the LCM of X and 18 is 36 and HCF of X and 18 is 2 then X =_____? (1)
   (A) 18 (B) 10 (C) 5 (D) 2

4. For what value of k for which the equation $x^2 - 4x + k$ has two equal roots? (1)
   (A) 1 (B) 4 (C) 5 (D) 10

5. Let a and b be any two positive integers, then $HCF\ (a, b) \times LCM\ (a, b) =$ ____. (1)
   (A) a + b (B) a^b (C) ab (D) $a^2 + b^2$

6. The graph of the quadratic equation $ax^2 + bx + c$ is an upward open parabola if _____. (1)
   (A) $a > 0$ (B) $a < 0$ (C) $a = 0$ (D) $a = -1$

7. The value of k for which $kx + 2y = 5$ and $3x + y = 1$ have unique solution is _____. (1)
   (A) k = – 1 (B) $k \neq 6$ (C) k = 6 (D) k = 2

8. The sum and product of the zeroes of a quadratic equation are 3 and -10 respectively. Which equation of the following satisfies the given condition? (1)
   (A) $x^2 - 3x + 10$ (B) $x^2 - 3x - 10$ (C) $x^2 - 3x - 10$ (D) $x^2 + 3x + 10$

9. If $2x + 3y = 0, 4x - 3y = 0$ then, what is the value of $x + y$? (1)
   (A) 0 (B) – 1 (C) 1 (D) 2

   In the following question number 10, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.
   (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.

10. Assertion: The quadratic equation $x^2 - x + 1$ has no real solution. (1)
    Reason: The value of discriminant D > 0 then, solutions of quadratic equation is real and distinct.

SECTION- B

11. If the sum and product of the zeros of the polynomial $ax^2 - 6x + c$ is equal to 12 each, find the value of a and c. (2)

12. Solve for x *and* y: $99x + 101y = 499, \quad 101x + 99y = 501$. (2)

OR

There are 20 vehicles, some cars and some motorcycles, in a parking area. If there are total 56 wheels together, how many cars and motorcycles are there?

13. Find the discriminant of the quadratic equation $(x + 5)^2 = 2(5x - 3)$. (2)

14. Solve for x and y. If $3x - 2y = 5$ *and* $3y - 2x = 3$. Also find the value of $(x+y)$. (2)

15. If α and β are the roots of the equation $2x^2 - 6x + a = 0$ and $2\alpha + 5\beta = 12$, find the value of a? (2)

OR

If $(x^2 + y^2)(a^2 + b^2) = (ax + by)^2$. Prove that $\frac{x}{a} = \frac{y}{b}$.

16. The LCM of two number is 14 times their HCF. The sum of LCM and HCF is 600.If one number is 280, then find the other number. (2)

SECTION- C

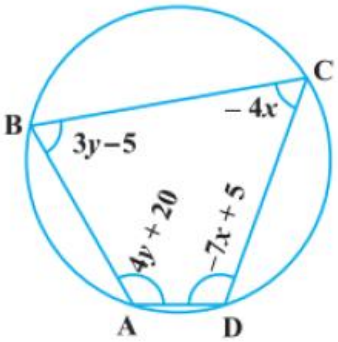
17. The sum of ages (in years) of a son and his father is 35 years and product of their ages is 150 years, find their ages. (3)

18. Show that $5 - \sqrt{3}$ is irrational. (3)

OR

Find the largest number that will divide 398, 436 and 542 leaving reminders 7, 11 and 15 respectively.

19. ABCD is a cyclic quadrilateral. Find the angles of the cyclic quadrilateral. (3)



20. If one zero of the polynomial $p(x) = 2x^2 - 4kx + 6x - 7$ is the negative of other, find the zeros of $x^2 - kx - 1$. (3)

OR

If p and q are the zeroes of the polynomial $6y^2 - 7y + 2$, find the value of p and q. Also find a quadratic polynomial whose zeroes are $\frac{1}{p}$ and $\frac{1}{q}$.

21. When the marbles in a bag are divided evenly between two friends, there is one marble left over When the same marbles are divided evenly among three friends, there is one marble left over. When the marbles are divided evenly among five friends, there is one marble left over. (3)
(i) What is the least possible number of marbles in the bag?
(ii) What is another possible number of marbles in the bag?

22. The squared difference of the zeroes of the quadratic polynomial $f(x) = x^2 + px + 45$ is equal to 144. Find the value of p. (3)