



विद्या सर्वार्थ साधिका

ANANDALAYA
PERIODIC TEST – 1
Class: X

Subject: Mathematics (041)
Date :23-07-2024

M.M:40
Time: 1hour 30 Minutes

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. For what value of k , the roots of the equation $x^2 + 4x + k = 0$ are real? (1)
(A) $k \leq 4$ (B) $k > 4$ (C) $k \leq -4$ (D) $k \neq 4$
2. The graph of $y = x^3 - 4x$ cuts x-axis at $(-2,0)$, $(0, 0)$ and $(2, 0)$. Then what are the zeros of $y = x^3 - 4x$. (1)
(A) $0, 0, 0$ (B) $2, 2, -2$ (C) $-2, 0, -2$ (D) $-2, 0, 2$
3. Which of the following pair of linear equations has a unique solution $x = 2$ and $y = -3$? (1)
(A) $x + y = -1; 2x - 3y = -5$ (B) $2x + 5y = -11; x + y = -1$
(C) $2x - y = 1; 3x + 2y = 0$ (D) $x - 4y - 14 = 0; 5x - y - 13 = 0$
4. What is the LCM of smallest prime number and the smallest composite number? (1)
(A) 1 (B) 2 (C) 4 (D) 8
5. If the sum of the zeros of the quadratic polynomial $kx^2 + 4x + 3k$ is equal to their product, then what will be the value of k ? (1)
(A) $-3/4$ (B) $3/4$ (C) $4/3$ (D) $-4/3$
6. Find c , if the system $cx + 3y + (3 - c) = 0$ and $12 + cy - c = 0$ has infinitely many solutions. (1)
(A) 1 (B) 2 (C) 4 (D) 6
7. If $x = 3$ is one root of the quadratic equation $x^2 - 2kx - 6 = 0$, then what is the value of $2k$? (1)
(A) 1 (B) 2 (C) $1/2$ (D) $1/3$
8. Match the column: (1)

(1)	$2x + 3y = 40;$	$6x + 5y = 10$	(α)	Coincident lines
(2)	$2x + 3y = 40;$	$6x + 9y = 50$	(β)	Intersecting lines
(3)	$2x + 3y = 10;$	$4x + 6y = 20$	(γ)	Parallel lines

- (A) (1) $\rightarrow \alpha$, (2) $\rightarrow \beta$, (3) $\rightarrow \gamma$ (B) (1) $\rightarrow \beta$, (2) $\rightarrow \alpha$, (3) $\rightarrow \gamma$
(C) (1) $\rightarrow \beta$, (2) $\rightarrow \gamma$, (3) $\rightarrow \alpha$ (D) (1) $\rightarrow \gamma$, (2) $\rightarrow \alpha$, (3) $\rightarrow \beta$
9. Total number of factors of a prime number are? (1)
(A) 1 (B) 0 (C) 2 (D) 3

In the following Q.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 (A): $3x^2 + 17x - 30 = 0$ have distinct roots. (1)
 Reason (R): The quadratic equation $ax^2 + bx + c = 0$ have distinct roots (real roots) if $D < 0$.

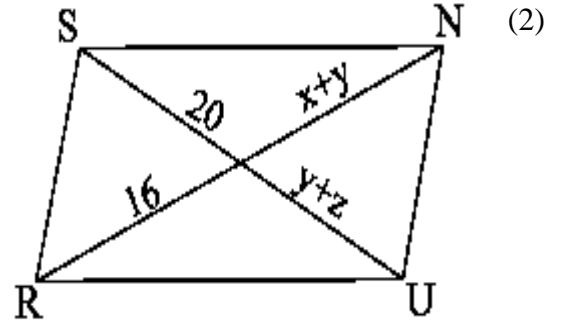
SECTION B

11. Find the HCF and LCM of 180 and 288 by prime factorisation method. (2)

OR

LCM of two numbers is 10 times their HCF. Sum of HCF and LCM is 495. If one number is 90, then find the other number.

12. In the given figure, SRUN is a parallelogram. If the value of $z = 7$. Find the value of x and y .



13. If one zero of the polynomial $p(x) = (k^2 + 4)x^2 + 13x + 4k$ is reciprocal of the other, then what is the value of k ? (2)

14. Solve for x and y : $x + 2y - 3 = 0$; $3x - 2y + 7 = 0$. (2)

15. Solve for x : $\frac{1}{x+4} - \frac{1}{x-7} = \frac{11}{30}$, $x \neq -4, 7$. (2)

OR

Solve the given equation using by quadratic formula: $x^2 + 5x + 5 = 0$.

16. There are 576 boys and 448 girls in a school that are to be divided into equal sections of either boys or girls alone. What is the total number of sections thus formed? (2)

SECTION C

17. Form the quadratic polynomial whose zeros are $\frac{3-\sqrt{3}}{5}$ and $\frac{3+\sqrt{3}}{6}$. (3)

18. Draw the graphs of the equations $x - y + 1 = 0$ and $3x + 2y - 12 = 0$. Determine the coordinates of the vertices of the triangle formed by these lines and the x-axis. (3)

OR

Form the pair of linear equations for the following problem, and find their solutions (if they exist) by the elimination method:

A lending library has a fixed charge for the first three days and an additional charge for each day thereafter. Saritha paid ₹ 27 for a book kept for seven days, while Susy paid ₹ 21 for the book had she kept for five days. Find the fixed charge and the charge for each extra day.

19. Prove that $15 + 17\sqrt{3}$ be an irrational number given that $\sqrt{3}$ is irrational number. (3)

20. Two numbers differ by 3 and their product is 504. Find the numbers. (3)

21. If one root of the quadratic polynomial $2x^2 - 3x + p$ is 3. Find the other root. Also find the value of p . (3)

OR

If α, β are the zeros of polynomial $p(x) = x^2 - p(x + 1) - c$ such that $(\alpha + 1)(\beta + 1) = 0$, find the value of c .

22. Find two consecutive odd natural numbers, the sum of whose squares is 394.

(3)