

ISLAMIAH MATRIC HR SEC SCHOOL-KILAKARAI

24.01.2022

FIRST REVISION TEST 2021-2022

TIME: 1.30 HRS

CLASS: X

MATHEMATICS

MARKS: 50

SECTION – A

ANSWER ALL THE QUESTIONS

6X1=6

- $A = \{a, b, p\}$ ,  $B = \{2, 3\}$ ,  $C = \{p, q, r, s\}$  then  $n[(A \cup C) \times B]$  is  
(A) 8 (B) 20 (C) 12 (D) 16
- The range of the relation  $R = \{(x, x^2) \mid x \text{ is a prime number less than } 13\}$  is  
(A)  $\{2, 3, 5, 7\}$  (B)  $\{2, 3, 5, 7, 11\}$  (C)  $\{4, 9, 25, 49, 121\}$  (D)  $\{1, 4, 9, 25, 49, 121\}$
- If the HCF of 65 and 117 is expressible in the form of  $65m - 117$ , then the value of  $m$  is  
(A) 4 (B) 2 (C) 1 (D) 3
- If 6 times of 6<sup>th</sup> term of an A.P. is equal to 7 times the 7<sup>th</sup> term, then the 13<sup>th</sup> term of the A.P. is  
(A) 0 (B) 6 (C) 7 (D) 13
- The values of  $a$  and  $b$  if  $4x^4 - 24x^3 + 76x^2 + ax + b$  is a perfect square are  
(A) 100, 120 (B) 10, 12 (C) -120, 100 (D) 12, 10
- If  $(x - 6)$  is the HCF of  $x^2 - 2x - 24$  and  $x^2 - kx - 6$  then the value of  $k$  is  
(A) 3 (B) 5 (C) 6 (D) 8

SECTION – B

ANSWER ANY SEVEN QUESTIONS: (Ques.no 16 is compulsory)

7x2=14

- A Relation  $R$  is given by the set  $\{(x, y) \mid y = x + 3, x \in \{0, 1, 2, 3, 4, 5\}\}$ . Determine its domain and range.
- Let  $A = \{1, 2, 3\}$  and  $B = \{x \mid x \text{ is a prime number less than } 10\}$ . Find  $B \times A$ .
- Find the first five terms of the following sequence.  

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- If  $3 + k$ ,  $18 - k$ ,  $5k + 1$  are in A.P. then find  $k$ .
- Find the LCM of  $x^3 - 27$ ,  $(x - 3)^2$ ,  $x^2 - 9$
- Simplify — —
- Discuss the nature of solutions of the following quadratic equations.  $x^2 + 2x + 5 = 0$
- ' $a$ ' and ' $b$ ' are two positive integers such that  $a^b \times b^a = 800$ . Find ' $a$ ' and ' $b$ '.
- Write down the quadratic equation in general form for which sum and product of the roots are — —
- If the difference between a number and its reciprocal is—, find the number.

**SECTION –C**

**ANSWER ANY FIVE QUESTIONS: (Ques.no 24 is compulsory)**

**5x5=25**

17. Represent each of the given relations by (a) an arrow diagram, (b) a graph and (c) a set in roster form, wherever possible.  
 $\{(x,y) \mid y = x+3, x, y \text{ are natural numbers } < 10\}$
18. Given  $A=\{1,2,3\}$ ,  $B = \{2,3,5\}$ ,  $C = \{3,4\}$  and  $D = \{1,3,5\}$ ,  
check if  $(A \cap C) \times (B \cap D) = (A \times B) \cap (C \times D)$  is true?
19. Find the HCF of 396, 504, and 636
20. The sum of three consecutive terms that are in A.P. is 27 and their product is 288. Find the three terms.
21. Find the GCD of the given polynomials  
 $3x^4 + 6x^3 - 12x^2 - 24x$ ,  $4x^4 + 14x^3 + 8x^2 - 8x$
22. If  $\alpha, \beta$  are the roots of the equation  $3x^2 + 7x - 2 = 0$ , find the values of  
i)  $\alpha + \beta$  ii)  $\alpha - \beta$
23. A passenger train takes 1 hr more than an express train to travel a distance of 240 km from Chennai to Virudhachalam. The speed of passenger train is less than that of an express train by 20 km per hour. Find the average speed of both the trains.
24. Find the values of  $m$  and  $n$  if the following polynomials are perfect squares  
 $x^4 - 8x^3 + mx^2 + nx + 16$

**SECTION – D**

**ANSWER ANY ONE OF THE FOLLOWING**

**5X1=5**

25. Discuss the nature of solutions of the following quadratic equations.  
 $x^2 + x - 12 = 0$
- (OR)
26. Graph the following quadratic equations and state their nature of solutions.  
 $x^2 - 9x + 20 = 0$

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