10th Standard

Maths

Exam Time : 02:30:00 Hrs   Total Mark
                                                                            14 x

1) The solution of $(2x - 1)^2 = 9$ is equal to
   (a) -1   (b) 2   (c) -1, 2   (d) None of these

2) If the roots of the equation $q^2x^2 + p^2x + r^2$ 0 are the quare of the root
   the equation $qx^2 + px + r = 0$, then q, p, r are in _____.
   (a) A.P   (b) G.P   (c) Both A.P and G.P   (d) none of these

3) If n(A x B) =6 and A = {1,3} then n(B) is
   (a) 1   (b) 2   (c) 3   (d) 6

4) A = {a,b,p}, B = {2,3}, C = {p,q,r,s} then n[(A U C) x B] is
   (a) 8   (b) 20   (c) 12   (d) 16

5) If A={1,2}, B={1,2,3,4}, C={5,6} and D={5,6,7,8} then state which of
   the following statement is true..
   (a) $(A \times C) \subset (B \times D)$ (b) $(B \times D) \subset (A \times C)$ (c) $(A \times B) \subset (A \times D)$
   (d) $(D \times A) \subset (B \times A)$

6) If there are 1024 relation from a   et A   {1, 2, 3, 4, 5} to a et B, then th
   number of elements in B is
   (a) 3   (b) 2   (c) 4   (d) 8

7) The range of the relation $R = \{(x,x^2) | x$ i a prime number le   than 13} i
   (a) {2,3,5,7}   (b) {2,3,5,7,11}   (c) {4,9,25,49,121}   (d) {1,4,9,25,49,1

8) Let n(A)   m and n(B)   n then the total number of non empty relation th
   can be defined from A to B is
   (a) m^n (b) n^m (c) $2^{mn}-1$ (d) 2^{mn}

9) If {(a,8),(6,b)}repre ent   an identity function, then the value of a and b ar
   respectively
   (a) (8,6)   (b) (8,8)   (c) (6,8)   (d) (6,6)

10) If the HCF of 65 and 117 is expressible in the form of 65m - 117 , then t
    value of m is
    (a) 4   (b) 2   (c) 1   (d) 3

11) The sum of the exponents of the prime factors in the prime factorization
    1729 is
    (a) 1   (b) 2   (c) 3   (d) 4

12) The first term of an arithmetic progression is unity and the common diff
is 4. Which of the following will be a term of this A.P.

(a) 4551   (b) 10091   (c) 7881   (d) 13531

13) If 6 times of 6th term of an A.P. is equal to 7 times the 7th term, then the
term of the A.P. is

(a) 0   (b) 6   (c) 7   (d) 13

14) An A.P con i t of 31 term   If it 16th term i m, then the um of all th
terms of this A.P. is

(a) 16 m   (b) 62 m   (c) 31 m   (d) $\frac{31}{2}$

ANSWER 10   10 x

15) Find A x B, A x A and B x A
A = {2,-2,3} and B={1,-4}

16) When the positive integers a, b and c are divided by 13, the respective
remainders are 9,7 and 10. Show that a+b+c is divisible by 13.

17) Let A = {3,4,7,8} and B = {1,7,10}. Which of the following sets are
relations from A to B?
R_1={(3,7), (4,7), (7,10), (8,1)}

18) ' a ' and ' b ' are two positive integers such that $a^b \times b^a = 800$. Find ' a
b'

19) Find the next three terms of the sequences.
$\frac{1}{2}, \frac{1}{6}, \frac{1}{14}$, ... ,

20) Which term of an A.P. 16,11,6,1,... is -54?

21) If 3 + k, 18 - k, 5k + 1 are in A.P. then find k.

22) Simplify
$\frac{x(x+1)}{x-2} + \frac{x(1-x)}{x-2}$

23) If the ordered pairs (x^2-3x, y^2+4y) and (-2,5) are equal, then find   and

24) The Cartesian product A x A ha 9 element among which (1, 0) and (
are found. Find the set A and the remaining elements of A x A.

25) Find the sum and product of the roots for each of the following
quadratic equations:
$x^2 + 8x - 65 = 0$

26) Solve $2m^2 + 19m + 30 = 0$

27) Find the square root of the following
$(4x^2 - 9x + 2)(7x^2 - 13x - 2)(28x^2 - 3x - 1)$

28) Find the value(s) of 'k' for which the roots of the following equations are
and equal.
$kx^2 + (6k + 2)x + 16 = 0$

ANSWER 10   10 x

29) Find the HCF of 396, 504, 636.

30) If A={5,6}, B={4,5,6}, C={5,6,7}, Show that A x A =(B x B) ∩ (C x C)

31) Let A ={x ∈ W| x < 2}, B={x ∈ N| < x ≤ 4} and C=(3,5). Verify that
A x (B ∪ C) = (A x B) ∪ (A x C)

32) If $p_1^{x_1} \times p_2^{x_2} \times p_3^{x_3} \times p_4^{x_4}$ = 113400 where p_1, p_2, p_3, p_4 are primes in asce
order and x_1, x_2, x_3, x_4 are integers, find the value of p_1, p_2, p_3, p_4 and x_1, x

33) Find the square root of $289x^4 - 612x^3 + 970x^2 - 684x + 361$

34) Solve the following y tem of linear equation in three variable 3   2y
2, 2x + 3y − z = 5, x + y + z = 6.

35) Find the GCD of $6x^3 - 30x^2 + 60x - 48$ and $3x^3 - 12x^2 + 21x - 18$.

36) Determine the general term of an A.P. whose 7th term is -1 and 16th ter
17.

37) In an A.P, um of four con ecutive term i 28 and their um of their c
is 276. Find the four numbers.

38) The sum of three consecutive terms that are in A.P i 27 and their prod
288. Find the three terms.

39) Find the sum of all natural numbers between 300 and 600 which are di
by 7.

40) If A = $\frac{2x+1}{2x-1}$, B = $\frac{2x-1}{2x+1}$ find $\frac{1}{A-B} - \frac{2B}{A^2-B^2}$

41) If $9x^4 + 12x^3 + 28x^2 + ax + b$ is a perfect square, find the values of a an

42) A pa enger train take 1 hr more than an e pre   train to travel a di t
of 240 km from Chennai to Virudhachalam. The speed of passenger trai
less than that of an express train by 20 km per hour Find the average p
both the trains.

43) Let A ={x ∈ W| x < 2}, B={x ∈ N| < x ≤ 4} and C = (3,5). Verify that
A x (B ∩ C) = (A x B) ∩ (A x C)

44) Find the square root of the following
$\left(2x^2 + \frac{17}{6}x + 1\right)\left(\frac{3}{2}x^2 + 4x + 2\right)\left(\frac{4}{3}x^2 + \frac{11}{3}x + 2\right)$

ANSWER ALL   2 x

45) Discuss the nature of solutions of the following quadratic equations.
$x^2 + x - 12 = 0$

46) Draw the graph of $y = x^2 - 4$ and hence solve $x^2 - x - 12 = 0$

47)a) Draw the graph of $y = x^2 + 4x + 3$ and hence find the roots of $x^2 + x$ ·

(OR)

b) Draw the graph of $y = (x - 1)(x + 3)$ and hence solve $x^2 - x - 6 = 0$

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