

# MODEL QUESTION PAPER

10<sup>th</sup> Standard  
Subject : Maths

Revision test-1

Total Marks : 100  
Time : 03: 00 Hrs

## Part- A

14x1=14

Answer all the questions

Choose the correct answer

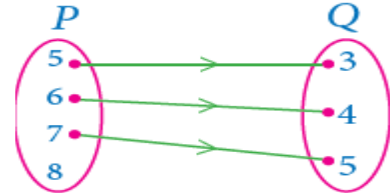
- $A = \{a, b, p\}$ ,  $B = \{2, 3\}$ ,  $C = \{p, q, r, s\}$  then  $n[(A \cup C) \times B]$  is  
(A) 8 (B) 20 (C) 12 (D) 16
- If there are 1024 relations from a set  $A = \{1, 2, 3, 4, 5\}$  to a set  $B$ , then the number of elements in  $B$  is  
(A) 3 (B) 2 (C) 4 (D) 8
- If the ordered pairs  $(a+2, 4)$  and  $(5, 2a+b)$  are equal then  $(a, b)$  is  
(A)  $(2, -2)$  (B)  $(5, 1)$  (C)  $(2, 3)$  (D)  $(3, -2)$
- 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)  $\{1, 4, 9, 25, 49, 121\}$
- Using Euclid's division lemma, if the cube of any positive integer is divided by 9 then the possible remainders are  
(A) 0, 1, 8 (B) 1, 4, 8 (C) 0, 1, 3 (D) 1, 3, 5
- The sum of the exponents of the prime factors in the prime factorization of 1729 is  
(A) 1 (B) 2 (C) 3 (D) 4
- The first term of an arithmetic progression is unity and the common difference is 4. Which of the following will be a term of this A.P.  
(A) 4551 (B) 10091 (C) 7881 (D) 13531
- 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 solution of the system  $x + y - 3z = -6$ ,  $-7y + 7z = 7$ ,  $3z = 9$  is  
(A)  $x = 1, y = 2, z = 3$  (B)  $x = -1, y = 2, z = 3$   
(C)  $x = -1, y = -2, z = 3$  (D)  $x = 1, y = -2, z = 3$
- 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
- If the roots of the equation  $q^2x^2 + p2x + r^2 = 0$  are the squares of the roots of 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
- The solution of  $(2x - 1)^2 = 9$  is equal to  
(A) -1 (B) 2 (C) -1, 2 (D) None of these
- . Graph of a linear equation is a \_\_\_\_\_  
(A) straight line (B) circle (C) parabola (D) hyperbola
- If  $\Delta = b^2 - 4ac$  is the discriminant of the quadratic equation  $ax^2 + bx + c = 0$ . where  $a \neq 0$ . Then the axis of the quadratic equation is ----  
(A)  $-\frac{b}{a}$  (B)  $\frac{-2b}{a}$  (C)  $\frac{c}{a}$  (D)  $\frac{2c}{a}$

**Part-B**

**10 x 2 = 20**

Answer any 10 questions and Qn No. 28 is compulsory

15. If  $A = \{1,3,5\}$  and  $B = \{2,3\}$  then (i) find  $A \setminus B$  and  $B \setminus A$ . (ii) Is  $A \times B = B \times A$ ?
16. If  $B \times A = \{(-2, 3), (-2, 4), (0, 3), (0, 4), (3, 3), (3, 4)\}$  find  $A$  and  $B$ .
17. The arrow diagram shows the Figure a relationship between the sets  $P$  and  $Q$ .



- Write the relation in (i) Set builder form  
(ii) Roster form (iii) What is the domain and range of R.
18. Let  $A = \{1,2,3,4,\dots,45\}$  and  $R$  be the relation defined as “is square of a number” on  $A$ . Write  $R$  as a subset of  $A \times A$ . Also, find the domain and range of  $R$ .
19. 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.
20. ‘ $a$ ’ and ‘ $b$ ’ are two positive integers such that  $a^b \times b^a = 800$ . Find ‘ $a$ ’ and ‘ $b$ ’.
21. Find the  $n^{\text{th}}$  term of the following sequences (i) 2,5,10,17,... (ii) 3, 8,13,18,...
22. If  $3+k, 18-k, 5k+1$  are in A.P. then find  $k$ .
23. Solve  $2x-3y=6, x+y=1$
24. Find the excluded values of the following expression  $\frac{x}{x^2+1}$
25.  $\frac{4x^2y}{2z^2} \times \frac{6xz^3}{20y^4}$
26. Solve  $2x^2 - 2\sqrt{6}x + 3 = 0$
27. Determine the nature of the roots for the following quadratic equation  $\sqrt{2}t^2 - 3t + 3\sqrt{2} = 0$
28. Find the 12<sup>th</sup> term from the last term of the A. P -2,-4,-6,...-100.

**Part-C**

**10 x 5 = 50**

Answer any 10 questions and Qn No. 42 is compulsory

29. Let  $A = \{x \in \mathbb{N} \mid 1 < x < 4\}$ ,  $B = \{x \in \mathbb{W} \mid 0 \leq x < 2\}$  and  $C = \{x \in \mathbb{N} \mid x < 3\}$ . Then verify that (i)  $A \times (B \cup C) = (A \times B) \cup (A \times C)$  (ii)  $A \times (B \cap C) = (A \times B) \cap (A \times C)$
30. Let  $A =$  The set of all natural numbers less than 8,  
 $B =$  The set of all prime numbers less than 8,  $C =$  The set of even prime number.  
Verify that (i)  $(A \cap B) \times C = (A \times C) \cap (B \times C)$  (ii)  $A \times (B - C) = (A \times B) - (A \times C)$
31. Represent each of the given relations by (a) an arrow diagram, (b) a graph and (c) a set in roster form, wherever possible. (i)  $\{(x,y) \mid x = 2y, x \in \{2,3,4,5\}, y \in \{1,2,3,4\}\}$   
(ii)  $\{(x,y) \mid y = x+3, x, y \text{ are natural numbers} < 10\}$
32. Find the HCF of 396, 504, 636.
33. Find the greatest number consisting of 6 digits which is exactly divisible by 24,15,36?
34. Find the first five terms of the following sequence.  $a_1 = 1, a_2 = 1, a_n = \frac{a_{n-1}}{a_{n-2} + 3}; n \geq 3, n \in \mathbb{N}$
35. In an A.P., sum of four consecutive terms is 28 and their sum of their squares is 276. Find the four numbers.

36. In a winter season let us take the temperature of Ooty from Monday to Friday to be in A.P.  
The sum of temperatures from Monday to Wednesday is  $0^{\circ}$  C and the sum of the temperatures from Wednesday to Friday is  $18^{\circ}$  C. Find the temperature on each of the five days.
37. Vani, her father and her grand father have an average age of 53. One-half of her grand father's age plus one-third of her father's age plus one fourth of Vani's age is 65. Four years ago if Vani's grandfather was four times as old as Vani then how old are they all now ?
38. Find the GCD of the polynomials  $x^3 + x^2 - x + 2$  and  $2x^3 - 5x^2 + 5x - 3$ .
39. If  $9x^4 + 12x^3 + 28x^2 + ax + b$  is a perfect square, find the values of  $a$  and  $b$ .
40. A bus covers a distance of 90 km at a uniform speed. Had the speed been 15 km/hour more it would have taken 30 minutes less for the journey. Find the original speed of the bus.

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

42. If  $\alpha$  and  $\beta$  are the roots of the polynomial  $f(x) = x^2 - 2x + 3$ , find the polynomial whose roots are (i)  $\alpha + 2, \beta + 2$  (ii)  $\frac{\alpha-1}{\alpha+1}, \frac{\beta-1}{\beta+1}$

**Part-D**

**2 x 8 = 16**

**Answer all questions**

43. Discuss the nature of solutions of the following quadratic equations.  $x^2 + x - 12 = 0$
44. Draw the graph of  $y = x^2 + x$  and hence solve  $x^2 + 1 = 0$

Prepared by

S.SOOSAINAYAKAM M.Sc., M.Ed., CHELLAMMAL MAT.HR.SEC.SCHOOL  
THIRUVERAMBUR, TRICHY-13.

Mob: 6385742207, 9443682105