MODEL QUESTION PAPER 2027

MATHEMATICS (PART I) — ALGEBRA

Std. X (S.S.C.) · Maharashtra State Board

Time: 2 Hours **Max. Marks: 40**

General instructions:

(1) All questions are compulsory.
(2) Use of a calculator is not allowed.
(3) The numbers to the right of the questions indicate full marks.
(4) For every MCQ [Q. 1(A)], only the first attempt will be evaluated.
(5) Draw proper figures wherever necessary.

Q. 1.

(A) Choose the correct alternative and write its alphabet: **4**

(i) One of the roots of the equation $x^2 + mx - 5 = 0$ is 2, find the value of m. (a) -2 (b) -1/2 (c) 1/2 (d) 2

(ii) From the following numbers which number cannot represent a probability ? (A) 0.6 (B) 2.0 (C) 0.15 (D) 0.75

(iii) To draw the graph of $4x + 5y = 19$, find the value of y when x = 1. (A) 4 (B) 3 (C) 2 (D) -3

(iv) Out of the following equations which one is not a quadratic equation ? (A) $x^2 + 4x = 11 + x^2$ (B) $x^2 = 4x$ (C) $5x^2 = 90$ (D) $2x - x^2 = x^2 + 5$

(B) Solve the following subquestions: **4**

(i) When two coins are tossed simultaneously, write the sample space 'S'.

(ii) If $15x + 17y = 21$ and $17x + 15y = 11$, then find the value of $x + y$.

(iii) The value of the determinant |5 3; -7 -4| is ____ (A) -1 (B) -41 (C) 41 (D) 1

(iv) Write the following quadratic equation in the form $ax^2 + bx + c = 0$: $2y = 10 - y^2$.

Q. 2.

(A) Complete and write any TWO of the following activities: **4**

(i) Solve the following quadratic equation by factorisation method: $25m^2 = 9$.

(ii) Solve the following simultaneous equations: $5x + 3y = 9$; $2x - 3y = 12$.

(iii) Complete the following table to draw the graph of the equation $x - y = 1$ (find missing x, y and (x, y) values).

(B) Solve any FOUR of the following subquestions: **8**

(i) Given A.P. is 12, 16, 20, 24, ... Find the 24th term of this progression.

(ii) Form the quadratic equation whose roots are 3 and -10.

(iii) If one die is rolled, complete the activity to find the probability of the event that the number on the upper face is prime.

(iv) Complete the following table by writing suitable numbers and words for shares (FV, Share is at Par/Premium/Discount, MV).

(v) Pushpmala has invested Rs. 24,000 and purchased shares of FV Rs. 20 at a premium of Rs. 4. Complete the activity to find the number of shares she purchased.

Q. 3.

(A) Complete and write any ONE of the following activities: **3**

(i) Solve the following quadratic equation by formula method: $x^2 - 3x - 2 = 0$.

(ii) Solve the following simultaneous equations by Cramer's rule: $x + 2y = -1$; $2x - 3y = 12$.

(B) Solve any TWO of the following subquestions: **6**

(i) The table shows the funds collected by 105 students for flood affected people (classes 10-20 ... 70-80). Find the median of the data.

(ii) Draw a histogram of the following data: Height of Students (cm) 135-140, 140-145, 145-150, 150-155 with number of students 4, 12, 16, 8.

(iii) Two numbers differ by 3. The sum of twice the smaller number and thrice the greater number is 19. Find the numbers.

(iv) A two digit number is formed using digits 2, 3, 5, 7, 9 without repetition. What is the probability that the number formed is (a) an odd number (b) a multiple of 5 ?

Q. 4.

Solve any TWO of the following subquestions: **8**

(i) The table shows the classification of percentages of marks of students and the number of students (30-40 ... 90-100). Draw a frequency polygon from the table.

(ii) The sum of the squares of five consecutive natural numbers is 1455. Find the numbers.

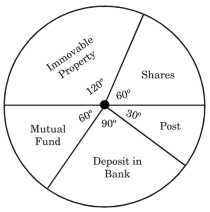
(iii) If the first term of an A.P. is 'p', second term is 'q' and last term is 'r', then show that the sum of all terms is (p + r)(q + r - 2p) / 2(q - p).

Q. 5.

Solve any ONE of the following subquestions: **3**

(i) A share is sold for the market value of Rs. 2,000. Brokerage is paid at the rate of 0.5%. What is the amount received after the sale ?

(ii) The annual investments of a family are shown in a pie diagram. (a) If the investment in shares is Rs. 2,000, find the total investment. (b) How much amount is invested in the Post ?



(a) If the investment in the shares is Rs. 2,000, find the total

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