Mathematics Part I (Algebra)

SSC Board Exam March 2027 – Practice Paper

Practice Question Paper

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

(1) All questions are compulsory.
(2) Use of calculator is not allowed.
(3) The numbers to the right of the questions indicate full marks.
(4) In case of MCQs [Q. No. 1(A)], only the first attempt will be evaluated and will be given credit.
(5) For every MCQ, the correct alternative (A), (B), (C) or (D) with sub-question number is to be written as an answer.

Q.1 (A) Four alternative answers are given for every sub-question. Select the correct alternative and write its alphabet with the sub-question number. **[4]**

(i) The graph of the equation $3x - 4y = 12$ intersects the Y-axis at the point .....

(A) (4, 0) (B) (0, 3)
(C) (0, −3) (D) (−3, 0)

(ii) The sum of the roots of the quadratic equation $3x^2 - 12x + 7 = 0$ is .....

(A) −4 (B) 4
(C) 7/3 (D) −7/3

(iii) For the A.P. 7, 11, 15, 19, ..., the value of t_{10} is .....

(A) 43 (B) 47
(C) 39 (D) 40

(iv) A shopkeeper in Pune charges GST at 18% on a mixer grinder. The rate of SGST charged is .....

(A) 18% (B) 36%
(C) 4.5% (D) 9%

Q.1 (B) Solve the following sub-questions. **[4]**

(i) Find the value of the determinant: $\begin{vmatrix} 7 & 3 \\ -2 & 5 \end{vmatrix}$

(ii) Find the common difference of the A.P. 3/2, 1, 1/2, 0, ...

(iii) A card is drawn at random from 25 cards numbered 1 to 25. Find the probability that the number on the card is a multiple of 6.

(iv) The market value of a share is ₹250 and the rate of brokerage is 0.2%. Find the brokerage paid per share.

Q.2 (A) Complete and write any two activities from the following. **[4]**

(i) Complete the following activity to form the quadratic equation whose roots are 3 and −5.

Activity: Let $\alpha = 3$ and $\beta = -5$.

$\alpha + \beta = 3 + (-5) =$ ☐

$\alpha \times \beta = 3 \times (-5) =$ ☐

The quadratic equation is $x^2 - (\alpha + \beta)x + \alpha\beta = 0$

$\therefore x^2 - ($☐$)x + ($☐$) = 0$

$\therefore$ ☐ $= 0$

(ii) Complete the following activity to solve the simultaneous equations $43x + 27y = 59$ and $27x + 43y = 11$.

Activity: Adding the two equations,

$\square x + \square y = 70$

$\therefore x + y = \square$ ...(I)

Subtracting the second equation from the first,

$16x - 16y = \square$

$\therefore x - y = 3$ ...(II)

Adding (I) and (II), $2x = \square$ $\therefore x = \square$ and $y = \square$

(iii) Sneha bought 100 shares of face value ₹10 at a market value of ₹50 through a broker in Pune. The brokerage is 0.2% and GST is 18% on brokerage. Complete the activity to find the total amount she paid.

Activity: Purchase value of shares = 100 × $\square$ = ₹5000

Brokerage = 5000 × 0.2/100 = ₹$\square$

GST on brokerage = $\square$ × 18/100 = ₹$\square$

Total amount paid = 5000 + $\square$ + $\square$ = ₹$\square$

Q.2 (B) Solve any four sub-questions. **[8]**

(i) Solve the simultaneous equations: $3x + 2y = 29$; $5x - y = 18$

(ii) Solve the quadratic equation by factorisation: $6x^2 - 7x - 3 = 0$

(iii) In an auditorium in Pune, the first row has 5 seats, the second row has 9 seats, the third row has 13 seats, and so on. Which row has 85 seats?

(iv) A bag contains 5 red, 4 green and 3 blue balls. One ball is drawn at random. Find the probability that the ball drawn is (a) green (b) not red.

(v) The table shows the time (in minutes) taken by 20 students to reach school. Find the mean time by direct method.

Class (minutes)	0–10	10–20	20–30	30–40
No. of students	3	5	8	4

Q.3 (A) Complete and write any one activity from the following. **[3]**

(i) A dealer in Pune bought a refrigerator for a taxable value of ₹20,000 and sold it to a customer for a taxable value of ₹22,500. The rate of GST is 18%. Complete the activity to find the CGST and SGST payable by the dealer.

Activity: Input tax credit (ITC) = 20,000 × 18/100 = ₹$\square$

Output tax = 22,500 × 18/100 = ₹$\square$

GST payable = Output tax − ITC = $\square$ − 3600 = ₹$\square$

CGST payable = SGST payable = $\square$ ÷ 2 = ₹$\square$

(ii) The daily time (in minutes) that 50 students of a Pune school spend on a mobile phone is given below. Complete the activity to find the median.

Class (minutes)	Frequency	Cumulative frequency (less than type)
0–20	6	6
20–40	10	☐
40–60	18	34
60–80	9	☐
80–100	7	50
	N = 50	

Activity: N = 50 ∴ N/2 = ☐
Median class = ☐
L = ☐, f = ☐, cf = ☐, h = 20
Median = L + [(N/2 − cf)/f] × h = ☐ + [(25 − ☐)/☐] × 20 = ☐ minutes

Q.3 (B) Solve any two sub-questions. **[6]**

(i) Solve the following simultaneous equations by Cramer's rule: $4x + 3y = 18$; $3x - 2y = 5$

(ii) Solve the quadratic equation using the formula: $2x^2 - 4x - 3 = 0$

(iii) Two dice are rolled simultaneously. Find the probability of each event:
(a) A: the sum of the numbers on the upper faces is 8
(b) B: both dice show the same number
(c) C: the product of the numbers is 12

(iv) Riya saves ₹100 in the first week, and each week she saves ₹25 more than the week before. How much will she have saved in total in 20 weeks?

Q.4 Solve any two sub-questions. **[8]**

(i) A car travels 150 km from Pune to Mumbai at a uniform speed. If the speed had been 10 km/hr more, the journey would have taken 30 minutes less. Find the original speed of the car.

(ii) A housing society in Pune plants 120 trees in the first year of a green drive, and every year it plants 15 trees more than the previous year.
(a) In which year will the society plant 300 trees?
(b) How many trees will be planted in total in the first 10 years?

(iii) Mr. Patil invested ₹25,000 in shares of face value ₹100 when the market value was ₹125. The company declared a dividend of 15%. (Ignore brokerage while buying.)
(a) Find the number of shares he bought, the dividend he received, and his rate of return.
(b) Later he sold all the shares at a market value of ₹140, paying 0.2% brokerage and 18% GST on brokerage. Find the amount he received.

Q.5 Solve any one of the following sub-questions. **[3]**

(i) Two straight cycle tracks in a park are represented by the equations $x + y = 6$ and $x - y = 2$. Draw the graphs of both equations on the same graph paper. Write the coordinates of the point where the tracks cross, and find the area of the triangle formed by the two lines and the Y-axis.

(ii) The monthly expenditure of a family in Pune is ₹36,000, as given below. Represent the information by a pie diagram.

Item	Food	House rent	Education	Transport	Savings
Expenditure (₹)	10,800	9,000	7,200	3,600	5,400

All the best for your exam!