Mathematics Part I (Algebra)

SSC Board Exam March 2027 – Practice Paper No. 2

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) If the discriminant of a quadratic equation is −7, then the roots of the equation are .....

(A) real and equal (B) real and unequal
(C) not real (D) real and negative

(ii) While solving the simultaneous equations $2x - 3y = 4$ and $x + y = 7$ by Cramer's rule, the value of D_x is .....

(A) 5 (B) 25
(C) 10 (D) −17

(iii) A die is rolled once. The probability that the number on the upper face is a factor of 6 is .....

(A) 1/2 (B) 2/3
(C) 1/3 (D) 5/6

(iv) Which of the following sequences is an arithmetic progression?

(A) 2, 4, 8, 16, ... (B) 1, 4, 9, 16, ...
(C) 10, 7, 4, 1, ... (D) 1, 1/2, 1/3, 1/4, ...

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

(i) The point (x, −1) lies on the graph of the equation $2x - 3y = 11$. Find the value of x.

(ii) The face value of a share is ₹10 and it is available at a premium of ₹35. Find its market value.

(iii) Check whether $x = -2$ is a root of the quadratic equation $x^2 - 3x - 10 = 0$.

(iv) In a pie diagram showing the favourite sports of 500 students, the central angle of the sector for kabaddi is 72°. How many students chose kabaddi?

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

(i) The names of the seven days of a week are written on seven chits, and one chit is picked at random. Complete the activity to find the probability of each event.

Activity: S = {Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday} ∴ n(S) = ☐

Event A: the day comes just before or just after Sunday. A = {☐, ☐} ∴ n(A) = 2

P(A) = n(A)/n(S) = ☐

Event B: the day comes between Monday and Friday (excluding both). B = {Tuesday, ☐, ☐} ∴ n(B) = ☐

P(B) = n(B)/n(S) = ☐

(ii) Complete the activity to find the nature of the roots of the equation $3x^2 - 8x + 5 = 0$.

Activity: Comparing with $ax^2 + bx + c = 0$, $a = 3$, $b =$ ☐, $c =$ ☐

$b^2 - 4ac = (\square)^2 - 4 \times 3 \times 5$

$= \square - 60$

$= \square$

Since $b^2 - 4ac$ ☐ 0, the roots of the equation are ☐.

(iii) Complete the activity to find the sum of the first 15 terms of the A.P. 6, 10, 14, ...

Activity: $a = 6$, $d =$ ☐, $n = 15$

$S_n = n/2\ [2a + (n - 1)d]$

$S_{15} = 15/2\ [2 \times 6 + (15 - 1) \times \square]$

$= 15/2\ [12 + \square]$

$= 15/2 \times \square$

$= \square$

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

(i) Solve the simultaneous equations: $x/3 + y/4 = 4$; $x/2 - y/4 = 1$

(ii) Solve the quadratic equation by completing the square: $x^2 - 10x + 16 = 0$

(iii) The taxable value of a school bag sold by a shop in Nagpur is ₹1250 and the rate of GST is 12%. Find the CGST, the SGST and the amount the customer pays for the bag.

(iv) Each letter of the word MAHARASHTRA is written on a separate card, and the 11 cards are mixed. One card is drawn at random. Find the probability that the card shows (a) the letter A (b) the letter R.

(v) The weights of parcels received at a courier office in Nagpur on one day are given below. Find the mode of the weights.

Weight (kg)	0–5	5–10	10–15	15–20	20–25
No. of parcels	8	15	27	19	7

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

(i) Complete the activity to solve the simultaneous equations $2/x + 3/y = 2$ and $4/x - 9/y = -1$.

Activity: Let $1/x = m$ and $1/y = n$.

The equations become $2m + 3n = 2$ ...(I) and $4m - 9n = -1$ ...(II)

Multiplying (I) by 3: $6m + 9n =$ ☐ ...(III)

Adding (II) and (III): ☐$m = 5 \therefore m =$ ☐

Substituting m in (I): $2 \times$ ☐ $+ 3n = 2 \therefore n =$ ☐

$1/x = m \therefore x =$ ☐ and $1/y = n \therefore y =$ ☐

(ii) The monthly mobile data (in GB) used by 40 customers of a shop in Kolhapur is given below. Complete the activity to find the mean data used by the assumed mean method, taking A = 35.

Data (GB)	Class mark x_i	$d_i = x_i - A$	Frequency f_i	$f_i d_i$
10–20	15	−20	5	−100
20–30	25	☐	8	☐
30–40	35 → A	0	12	0
40–50	45	10	10	☐
50–60	55	20	5	100
			$\Sigma f_i = 40$	$\Sigma f_i d_i$ = ☐

Activity: $\bar{d} = \Sigma f_i d_i / \Sigma f_i$ = ☐ /40 = ☐

Mean $\bar{x} = A + \bar{d} = 35 +$ ☐ = ☐ GB

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

(i) The length of a rectangular vegetable plot in Nashik is 7 m more than its breadth, and its area is 228 m^2. Find the length and breadth of the plot.

(ii) The 5th term of an A.P. is 26 and its 12th term is 61. Find the A.P. and its 20th term.

(iii) Mrs. Deshpande sold 240 shares of face value ₹10 when the market value was ₹65 per share. The rate of brokerage is 0.5% and GST is 18% on brokerage. Find (a) the sale value of the shares (b) the brokerage and the GST on it (c) the amount she received.

(iv) A box contains 30 tokens numbered 21 to 50. One token is drawn at random. Find the probability that the number on the token is (a) a multiple of 7 (b) a perfect square (c) a prime number.

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

(i) At a stationery shop in Satara, Anuja bought 4 notebooks and 3 pens for ₹190, and Mihir bought 3 notebooks and 5 pens of the same kind for ₹170. Form simultaneous equations and find the price of one notebook and one pen using Cramer's rule.

(ii) A rectangular painting 24 cm long and 16 cm wide is fixed in a frame of uniform width all around it. The area of the painting together with the frame is 560 cm^2. Find the width of the frame and the area of the frame alone.

(iii) A manufacturer in Nashik sold water purifiers to a wholesaler for a taxable value of ₹32,000. The wholesaler sold them to a retailer for a taxable value of ₹36,500, and the retailer sold them to a customer for a taxable value of ₹40,000. GST is 18% at every stage (all within Maharashtra).
(a) Find the GST payable by the wholesaler and by the retailer, and the CGST and SGST payable by each.
(b) Find the total amount paid by the customer.

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

(i) The daily steps (in thousands) of 60 morning walkers in a Thane park are given below. Draw a frequency polygon for the data without drawing a histogram, and write the class in which the largest number of walkers lies.

Daily steps (thousands)	2–4	4–6	6–8	8–10	10–12
No. of walkers	6	14	20	12	8

(ii) Preparing for a cycle rally, Om rides 3 km on the first day, 5 km on the second day, 7 km on the third day, and so on. In how many days will he have ridden a total of 120 km, and how far will he ride on the last of these days?

All the best for your exam!