2025_26_PB_II

EDUTECH ACADEMY
NURTURING THE FUTURE....

SET : EAS_A

— SCHOOL SECTION —

STD : X SSC

PRELIM EXAM - 2

TIME : 2:00 Hrs

SUB : MATHS I (ALG)

DATE : 19th January, 2026

MM : 40

(i) All questions are compulsory.
(ii) Use of calculator is not allowed.
(iii) Total marks are shown on the right side of the question.

Q.1 (A) Choose the correct alternative: **4**

(1) 8 girls and 12 boys can finish work in 10 days while 6 girls and 8 boys can finish it in 14 days. Frame linear equations for calculating time taken by the one girl alone(x) that by one boy alone (y) to finish the work.

a) $8\left(\frac{1}{x}\right)+12\left(\frac{1}{y}\right)=\frac{1}{10}; 6\left(\frac{1}{x}\right)+8\left(\frac{1}{y}\right)=\frac{1}{14}$

b) $8x+12y=10; 6x+8y=14$

c) $8\left(\frac{1}{x}\right)+12\left(\frac{1}{y}\right)=10; 6\left(\frac{1}{x}\right)+8\left(\frac{1}{y}\right)=14$

d) $8x+12y=\frac{1}{10}; 6x+8y=\frac{1}{14}$

(2) The sum of first n positive integers is:
(a) $n(n+1)/2$ (b) $n(n-1)/2$ (c) $n^2/2$ (d) None of these

(3) Cumulative frequencies in a grouped frequency table are useful to find . . .
(a) Mean (b) Median (c) Mode (d) All of these

(4) A confectionary shop applies 12% CGST rate on a chocolate bar of Rs. 90/-. What is the CGST amount?
(a) Rs. 120/- (b) Rs. 10.80/- (c) Rs. 12/- (d) Rs. 10/-

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

(1) Which of the following sequences are A.P. ? If they are A.P. find the common difference: 127, 132, 137, . . .

(2) Find the value of the following determinant.

$$A = \begin{vmatrix} 5 & 3 \\ 7 & 9 \end{vmatrix}$$

(3) Complete the following table using given information.

Sr. no.	FV	Share is at	MV
(i)	Rs. 10	Premium of Rs. 7	
(ii)	Rs. 25		Rs. 16
(iii)		At par	Rs. 5

(4) Fill in the gaps and complete: If α, β are roots of quadratic equation,

$2x^2 - 4x - 3 = 0$

→ $\alpha + \beta =$ _____

→ $\alpha \times \beta =$ _____

Q.2 (A) Complete the following activities:(Any TWO) **4**

(1) If one die is rolled, then to find the probability of an event to get prime number on upper face,
complete the following activity.

One die is rolled.

'S' is sample space.

$S = \{ \square \}$

$\therefore \quad n(S) = 6$

Event A: Prime number on the upper face.

$A = \{ \square \}$

$\therefore \quad n(A) = 3$

$\therefore \quad P(A) = \frac{\square}{n(S)}$ …….. (formula)

$\therefore \quad P(A) = \square$

(2) Find the value of the following determinant.

$$\begin{vmatrix} -1 & 7 \\ 2 & 4 \end{vmatrix}$$

$= (-1) \times 4 - \square$

$= -4 - \square$

$= \square$

$\therefore \begin{vmatrix} -1 & 7 \\ 2 & 4 \end{vmatrix} = \square$

(3) Solve the following quadratic equation by completing the square method: $2y^2 + 9y + 10 = 0$

First divide the equation by 2 so that coefficient of y^2 becomes 1.

$\rightarrow \frac{2}{2} y^2 + \frac{9}{2} y + \square = \frac{0}{2}$

$\rightarrow y^2 + \frac{9}{2} y + 5 = 0$

To solve the quadratic equation $y^2 + \frac{9}{2} y + 5 = 0$ by method of completing square, add and subtract square of the half of coefficient of 'y'

Added/ Subtracted value $= \left(\frac{1}{2} x \frac{9}{2}\right)^2$

$= \square^2$

$\therefore y^2 + \frac{9}{2} y + \left(\frac{9}{4}\right)^2 - \left(\frac{9}{4}\right)^2 + 5 = 0$

$\rightarrow y^2 + \square\left(\frac{9}{4}\right) + \left(\frac{9}{4}\right)^2 = -\left(\frac{9}{4}\right)^2 - 5$

$\rightarrow (y + \frac{9}{4})^2 = \square - 5$

$\rightarrow (y+\frac{9}{4})^2=\left(\frac{1}{4}\right)^2$

Taking square roots

$\rightarrow y+\frac{9}{4}=\frac{1}{4}$ or $y+\frac{9}{4}=-\frac{1}{4}$

$\rightarrow y=\frac{1}{4}-\frac{9}{4}$ or $y=-\frac{1}{4}-\frac{9}{4}$

$\rightarrow y=\frac{-8}{4}$ or $y=\frac{-10}{4}$

$\rightarrow y=-2$ or $y=\frac{-5}{2}$

$\therefore$ -2 and $\frac{-5}{2}$ are roots of the quadratic equation

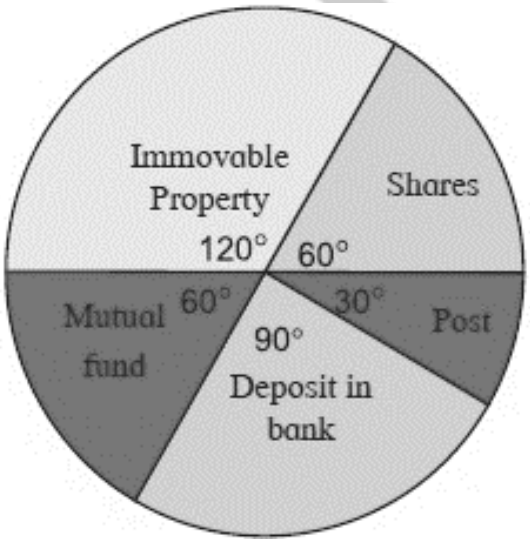
(B) Solve the following: (Any FOUR) **8**

(1) Solve the following simultaneous equations by Cramer's method.
X + y = 7, 2x - 3y = 9

(2) Find the 19th term of the following A.P. 7, 13, 19, 25, . . .

(3) Obtain a quadratic equation whose roots are -3 and -7.

(4) The annual investments of a family are shown in the below pie diagram. With the help of the diagram find the amount invested in post?



(5) 'Chetana Store' paid total GST of Rs. 1,00,500 at the time of purchase and collected GST Rs. 1,22,500 at the time of sale during 1st of July 2017 to 31st July 2017. Find the GST payable by Chetana Stores.

Q.3 (A) Complete the following activity:(Any ONE) **3**

(1) Solve the following quadratic equation by factorisation: $3x^2 - 2\sqrt{6}\,x + 2 = 0$

$3x^2 - 2\sqrt{6}x + 2 = 0$

$\rightarrow 3x^2 - \square - \sqrt{6}x + \square = 0$

$\rightarrow \sqrt{3}x(\sqrt{3}x - \sqrt{2}) - \sqrt{2}(\square - \sqrt{2}) = 0$

$\rightarrow (\sqrt{3}x - \sqrt{2})(\sqrt{3}x - \sqrt{2}) = 0$

$\rightarrow (\sqrt{3}x - \sqrt{2}) = 0$ or $(\square - \sqrt{2}) = 0$

$x = \frac{\square}{\sqrt{3}}$ or $x = \frac{\sqrt{2}}{\sqrt{3}}$

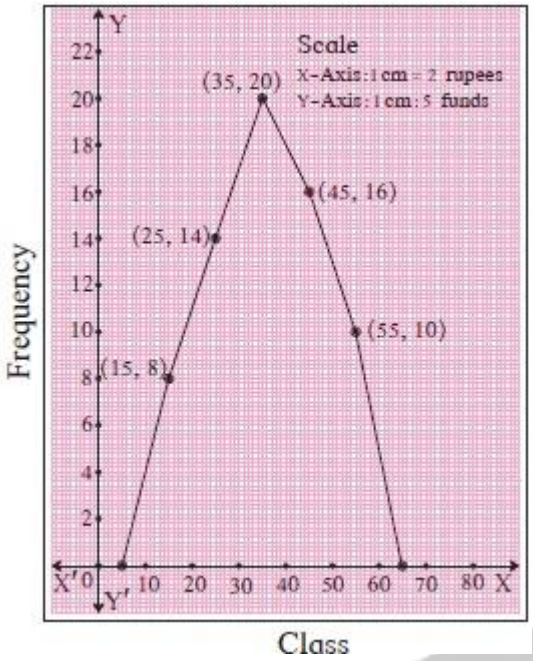
$x = \frac{\square}{3}$ or $x = \frac{\sqrt{6}}{3}$

(2) Write sample space 'S' and number of sample point n(S) for each of the following
experiments. Also write events A, B, C in the set form and write n(A), n(B), n(C): Three coins are tossed simultaneously.
Condition for event A : To get at least two heads.
Condition for event B : To get no head.
Condition for event C : To get head on the second coin.

Experiment is 3 coins are tossed simultaneously
S = {HHH, HHT, HTH, ☐ HTT, THT, TTH, TTT}
n(S) = ☐
Condition for event A → To get at least 2 heads
⇒ 2 or more heads
A = {HHT, HTH, ☐ HHH}
n(A) = ☐
Condition for event B → To get no heads
B = {☐}
n(B) = ☐
Conditions for event C → To get head on 2nd coin
C = {HHH, HHT, THH, THT}
n(C) = 4

(B) Solve the following: (Any TWO) **6**

(1) Answer the following questions based on the frequency polygon given in the below figure.



(1) Write frequency of the class 50-60.
(2) State the class whose frequency is 14.
(3) State the class whose class mark is 55.
(4) Write the class in which the frequency is maximum.
(5) Write the classes whose frequencies are zero.

(2) A card is drawn at random from a pack of well shuffled 52 playing cards. Find the probability that the card drawn is -
(1) an ace. (2) a spade.

(3) Solve the following simultaneous equations.

$$\frac{1}{3}x + y = \frac{10}{3}; 2x + \frac{1}{4}y = \frac{11}{4}$$

(4) Draw a histogram of the following data.

Height of student (cm)	135 - 140	140 - 145	145 - 150	150 – 155
No. of students	4	12	16	8

Q.4 Solve the following: (Any TWO) **8**

(1) Solve:

$$9\left(x^2 + \frac{1}{x^2}\right) - 3\left(x - \frac{1}{x}\right) - 20 = 0$$

(2) By selling at Rs. 92, some 2.5% Rs. 100 shares and investing the proceeds in 5% Rs. 100 shares at Rs. 115, a person increased his annual income by Rs. 90. Find:
(i) the number of shares sold
(ii) the number of shares purchased
(iii) the new income
(iv) the rate percent which he earns on his investment.

(3) A man repays a loan of Rs. 3250 by paying Rs. 305 in the first month and then decreases the payment by Rs 15 every month. How long will it take to clear his loan?

Q.5 Solve the following: (Any ONE) **3**

(1) The distribution given below shows the marks obtained by 25 students in an aptitude test.

a) Find the mean.

b) Find the median.

c) Find mode of the distribution.

Marks	No. of students
50-60	4
60-70	8
70-80	14
80-90	19
90-100	5

(2) Draw graph of linear equations y = 2(x-1) and 4x + y = 4. Also, write the coordinate of the points where these lines meet x-axis and y –axis.

....All The Best....