Sussess Test Series

Class : Xth | **Preliminary Exam paper No. 1** | **(NEW PATTERN)**

Time : 2 Hours | **MATHEMATICS PART I** | **Max. Marks :40**

Note : i) All questions are compulsory.

ii) Use of calculator is not allowed.

iii) Figures to the right of questions indicate full marks.

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

i) Rate of GST on brokerage is :

(A) 5% (B) 12%

(C) 18% (D) 28%

ii) In the finite sequence last term denoted by :

(A) t_n (B) S_n

(C) First tem a (D) Common difference d

iii) In standard form of linear equation $ax^2 + bx + c = 0$ the value of a is :

(A) Natural number one (B) Whole number Zero

(C) None zero real number (D) Negative integers

iv) Which number cannot represent a probability ?

(A) $\frac{2}{3}$ (B) 1.5

(C) 15% (D) 0.7

(B) Solve the following questions. **4**

i) If $\sum f_i u_i = 85$, $\sum f_i = 100$, A = 35, g = 10, then find $\overline{U}$ and mean $\overline{X}$.

ii) For an A. P. if a = 3 and d = – 2 then find first four terms.

iii) If two coins are tossed then write sample space 'S' and n(S).

iv) If (a, 3) is the point lying on the graph of the equation 5x + 2y = – 4

Then find the value of a.

2. (A) Complete the following activity. (any two) **4**

i) The taxable value of a wrist watch belt is Rs 586. Rate of GST is 18% then what is the price of the belt for the costumer ?

Activity : Taxable value = Rs ☐, Rate of GST = ☐ %

$$\text{GST} = \frac{\square}{\square} \times \square = \text{Rs } 105.48$$

Total price of belt = ☐ + ☐

= ☐ + ☐ = Rs ☐

ii) If the value of determinant $\begin{vmatrix} x & -4\sqrt{2} \\ 5\sqrt{3} & 2 \end{vmatrix}$ is $26\sqrt{6}$ then find the value of x.

Activity: $\begin{vmatrix} x & -4\sqrt{2} \\ 5\sqrt{3} & 2 \end{vmatrix} = 26\sqrt{6}$

$\therefore \quad x \times 2 - \square \times \square = \square$

$\therefore \quad 2x + \square = \square$

$\therefore \quad x = \square$

iii) Find the twenty fifth term of A.P. 12, 16, 20, 24, ……..

Activity : a = ☐, d = ☐, n = ☐

$\therefore \quad t_n = \square + (n - 1)\square$

$\therefore \quad t_{25} = 12 + \square \times \square$

$\therefore \quad t_{25} = \square$

(B) Solve the following questions. (any four) **8**

i) A coin is tossed. Find the probability of the events

(a) getting a head (b) getting a tail.

ii) Determine the nature of the roots of quadratic equation $2y^2 - 7y + 2 = 0$.

iii) Ram purchased a share of FV Rs. 100 for MV of Rs. 120. Company declared 15% dividend on the share. Find the rate of return.

iv) Reduce the given equations in the pair of linear equations.

$\frac{16}{x+y} + \frac{2}{x-y} = 1$; $\frac{8}{x+y} - \frac{12}{x-y} = 12$

v) Find the median if $\frac{N}{2} = 35.5$, $cf = 22$, L = 30, $f = 18$, h = 10.

3. (A) Complete the following activity. (any one) **3**

i) Solve the following equations by cramer's method.

$x + y = 20$; $x - 2y = 2$

D = $\begin{vmatrix} & \\ & \end{vmatrix}$ = ☐ | D_x = $\begin{vmatrix} & \\ & \end{vmatrix}$ = ☐ | D_y = $\begin{vmatrix} & \\ & \end{vmatrix}$ = ☐

$\therefore$ according to cramer's rule

$x = \frac{\square}{\square} = \square$; $y = \frac{\square}{\square} = \square$

$\therefore$ (x , y) = (☐ , ☐) is the solution.

ii) Solve using formula $3m^2 + 2m - 7 = 0$.

Activity : camparing with ☐

a = ☐ , b = ☐ , c = ☐

$\therefore$ $b^2 - 4ac$ = ☐

$\therefore$ $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$= \frac{\square \pm \square}{\square}$

$\therefore$ x = ☐ or x = ☐ are the roots.

(B) Solve the following questions. (any two) **6**

i) The following table shows the number of students and time they utilized daily for their studies. Find the mean time spent by students for their studies by direct method.

Time (hrs)	0 – 2	2 – 4	4 – 6	6 – 8	8 – 10
No.of students	7	18	12	10	3

ii) Rahul purchased 100 shares of MV Rs 40. Brokerage paid at the rate of 0.5% and rate of GST on brokerage is 18% . find the total amount he paid for the share purchase.

iii) If the roots of the equation $x^2 + px + q = 0$ differ by 1, then prove that $p^2 = 1 + 4q$.

iv) A card is drawn at random from a pack of well shuffled 52 playing card. Find the probability that the card drawn is (a) A king (b) Not a red diamond.

4. Solve the following questions. (any two) **8**

i) The following table shows the age distribution of persons in a particular region. Find the median of age of persons.

Age (in the years)	Below 10	Below 20	Below 30	Below 40	Below 50	Below 60	Below 70
No. of persons (in thousand)	2	5	9	12	14	16	20

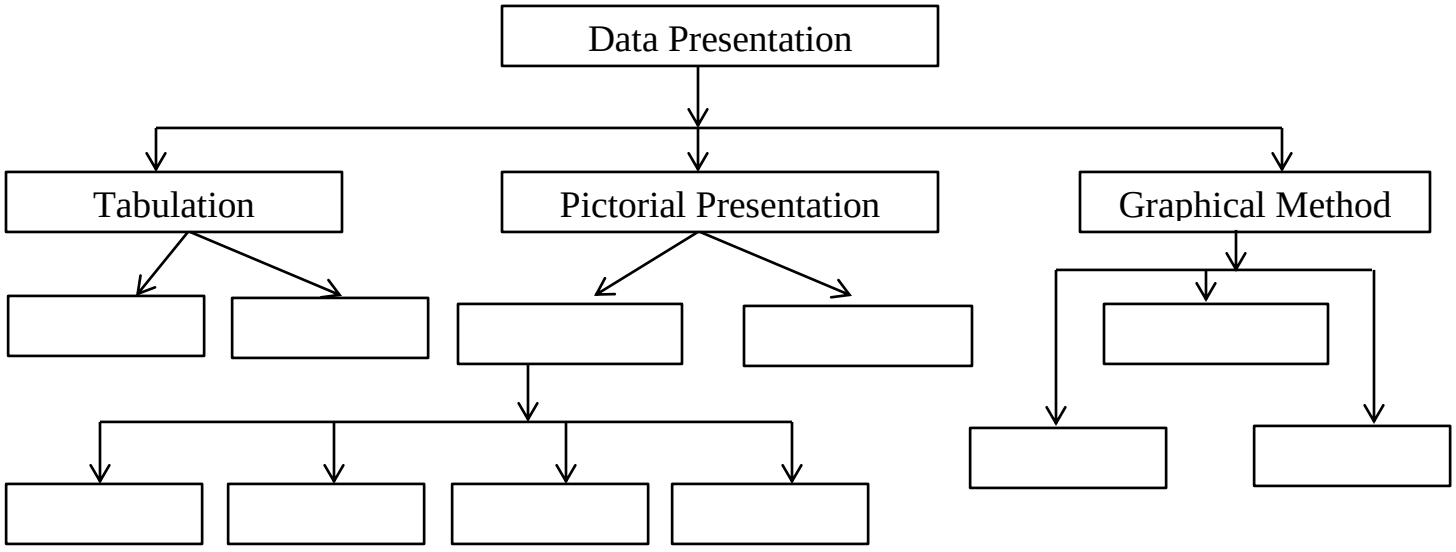
ii) Find the three consecutive terms in A. P. whose sum is -3 and product of their cubes is 512.

iii) If the roots of the quadratic equation $ax^2 + bx + c = 0$ are in the ratio p:q then show that

$$\sqrt{\frac{p}{q}} + \sqrt{\frac{q}{p}} + \sqrt{\frac{c}{a}} = 0$$

5. Solve the following questions. (any one) **3**

i) The tree chart below shows different methods of data interpretation. Complete the three chart.



ii) x and y are acute and obtuse angle of a rhombus respectively. Thus $y = 2x + 30$. Frame an application on above information and solve it. (use two variables).

*****