

Higher Secondary Plus Two 2026 Mathematics Question Paper (Memory Based)

Time Allowed :2 Hour 30 Mins	Maximum Marks :80	Total Questions :20
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General Instructions

Read the following instructions very carefully and strictly follow them:

- The exam lasts 150 minutes (2 hours 30 minutes), including a 15-minute "cool-off time".
- Use the 15-minute "cool-off time" to read the question paper and plan your answers. You are not allowed to write during this period.
- The total score for the theory paper is 80 marks.
- There is no negative marking for incorrect answers; therefore, it is advisable to attempt all questions.
- The question paper is divided into multiple sections (A, B, C, and D) featuring very short, short, and long answer types.
- Internal choices are provided in most sections, such as "answer any 6 out of 8" or "any 3 out of 4".
- Question papers are available in both English and Malayalam versions.
- Calculators, mobile phones, and other electronic gadgets are strictly prohibited inside the examination hall.
- All rough work should be done on the space provided in the answer sheet itself.

1. Express the matrix $A = \begin{bmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{bmatrix}$ as a sum of symmetric and skew-symmetric matrices.

2. Find the shortest distance between the lines $\vec{r} = (\hat{i} + 2\hat{j} + 3\hat{k}) + \lambda(\hat{i} - 3\hat{j} + 2\hat{k})$ and $\vec{r} = (4\hat{i} + 5\hat{j} + 6\hat{k}) + \mu(2\hat{i} + 3\hat{j} + \hat{k})$.

3. Solve the LPP graphically: Minimize $Z = 5x + 10y$ subject to $x + 2y \leq 120$, $x + y \geq 60$, $x, y \geq 0$.

4. Prove that the function $f(x) = |x|$ is continuous but not differentiable at $x = 0$.

5. Evaluate $\int \frac{dx}{\sqrt{x^2 + 2x + 2}}$.

6. Find the area of the region bounded by the curve $y^2 = x$ and the lines $x = 1$, $x = 4$ and the x -axis.

7. If $P(E) = 0.6$, $P(F) = 0.3$ and $P(E \cap F) = 0.2$, find $P(E|F)$ and $P(F|E)$.

8. Solve the differential equation $\frac{dy}{dx} + \frac{y}{x} = x^2$.
