

Mathematics-IX-ICSE

Full Marks: 36

Time: 1 ½ hrs

Each question carries 4 marks:

1. Solve the equations by by factorization method i) $2x^2 - x + \frac{1}{8} = 0$ ii)

$$\frac{1}{x(a+b+x)} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}; a+b \neq 0$$

2. Discuss the nature of roots of the quadratic equation $4x^2 + 4\sqrt{3}x + 3 = 0$
3. Find the value of k for which the equation $k^2x^2 - 2(k-1)x + 4 = 0$ has equal roots.
4. P is the solution set of $8x - 1 > 5x + 2$ and Q is the solution set of $7x - 2 \geq 3(x + 6)$ where $x \in N$. Find $P \cap Q$ and $P \cup Q$.
5. In drilling world's deepest hole, it was found that the temperature T in degree Celsius, x km below the surface of the earth, was given by $T = 30 + 25(x - 3), 3 \leq x \leq 15$. At what depth will the temperature be between $200^\circ C$ and $300^\circ C$?
6. If I is the identity matrix of order 2, what is the value of I^{50} ? Given reason for your answer.
7. $A = \begin{bmatrix} 1 & 2 \\ -1 & 0 \end{bmatrix}$, Show that $A^2 - A + 2I = O$.
8. Find matrices A and B if $2A + 3B = \begin{bmatrix} 8 & 3 \\ 7 & 6 \end{bmatrix}$ and $A - B = \begin{bmatrix} 3 & 1 \\ 3 & 3 \end{bmatrix}$

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