

Mathematics

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Time: 3 hrs.

Full Marks: 100

Pass Marks: 35 (For partial students only)

Attempt all questions.

Group 'A'

5 × 3 × 2 = 30

1. a. Find the truth value of the biconditional statement of p and q where p represents '2 is an even number' and q represents '4 is an even number'.
- b. If $f: \mathbb{R} \rightarrow \mathbb{R}$ be defined by $f(x) = 2x - 3$, find f^{-1}
- c. Test the even or odd nature and symmetricity of the function $y = 8x^2$
2. a. Express $\tan^{-1}x$ in terms of inverse of sin function.
- b. Prove by mathematical induction: $1 + 3 + 5 + \dots + (2n - 1) = n^2$
- c. Find the adjoint of the matrix $\begin{pmatrix} 2 & 5 \\ 3 & -7 \end{pmatrix}$
3. a. Using Cramer's rule, solve: $3x + 2y + 9 = 0$, $2x - 3y + 6 = 0$
- b. Express $\sqrt{3} + i$ in polar form.
- c. If one root of the equation $ax^2 + bx + c = 0$ be twice the other, show that $2b^2 = 9ac$
4. a. Find the equation of the straight line that has y -intercept '2' and is parallel to $4x - 8y + 3 = 0$
- b. Find the equation of the circle which passes through origin and makes equal intercepts on both axes.
- c. Evaluate: $\lim_{x \rightarrow 0} \frac{1 - \cos nx}{1 - \cos mx}$

Contd...

Mid Year Exam 2013 Math Question Paper

Sasha Hu



Mid Year Exam 2013 Math Question Paper:

Mid Year Exam 2013 Math Question Paper Book Review: Unveiling the Power of Words

In a world driven by information and connectivity, the energy of words has become more evident than ever. They have the capability to inspire, provoke, and ignite change. Such may be the essence of the book **Mid Year Exam 2013 Math Question Paper**, a literary masterpiece that delves deep into the significance of words and their effect on our lives. Published by a renowned author, this captivating work takes readers on a transformative journey, unraveling the secrets and potential behind every word. In this review, we shall explore the book's key themes, examine its writing style, and analyze its overall effect on readers.

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