

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...

Mathematics Paper November 2012 Question 4

Karen Morrison, Nick Hamshaw



Mathematics Paper November 2012 Question 4:

Reviewing **Mathematics Paper November 2012 Question 4**: Unlocking the Spellbinding Force of Linguistics

In a fast-paced world fueled by information and interconnectivity, the spellbinding force of linguistics has acquired newfound prominence. Its capacity to evoke emotions, stimulate contemplation, and stimulate metamorphosis is actually astonishing. Within the pages of "**Mathematics Paper November 2012 Question 4**," an enthralling opus penned by a highly acclaimed wordsmith, readers embark on an immersive expedition to unravel the intricate significance of language and its indelible imprint on our lives. Throughout this assessment, we shall delve in to the book is central motifs, appraise its distinctive narrative style, and gauge its overarching influence on the minds of its readers.

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