

## Examination report – December 2014 series

### 2730-020 Advanced Mathematics 1

Section 1 – Areas of good performance
<p>Syllabus reference: 1.18 – Identify the general form and signs of the binomial expansion terms, with their numerical coefficients (Pascal's triangle). Pascal's triangle was well attempted by most candidates.</p> <p>Syllabus reference: 1.6 / 1.7 / 1.9 / 1.31 / 1.35 / 1.36 – Linear law fitting. Complex numbers. Good marks were obtained by many candidates on direct proportion.</p> <p>Syllabus reference: 1.71 / 1.72 / 1.73 / 1.74 – Permutations and combinations; probability. Some candidates obtained some marks for the binomial distribution and probability calculations.</p> <p>Syllabus reference: 1.10 / 1.11 / 1.12 / 1.13 / 1.14 / 1.15 – Linear law fitting. Straight line graph plotting and calculations of gradient and intercept was reasonably well understood.</p> <p>Syllabus reference: 1.55 / 1.59 / 1.60 – Calculus Differentiation was well attempted by many candidates.</p> <p>Syllabus reference: 1.62 / 1.63 / 1.68 / 1.70 – Permutations and combinations; probability. Permutation and combination was well attempted by many candidates.</p> <p>Syllabus reference: 1.23 / 1.24 – Graphs. Changing a logarithmic term to a straight line form and calculation was reasonably well attempted by some candidates.</p>
Section 2 – Areas for development
<p>Syllabus reference: 1.49 / 1.50 - Trigonometry In general sine wave calculations were fairly poor. Radians were needed.</p> <p>Syllabus reference: 1.2 / 1.4 – Solve quadratic equations with real roots by factorisation and by quadratic formula. Apply quadratic equations to practical problems such as linearly accelerated motion and second order chemical reactions. Solving a quadratic by factorisation poorly attempted. Solving a quadratic by formula was poorly attempted by many candidates.</p> <p>Syllabus reference: 1.6 / 1.7 / 1.9 / 1.31 / 1.35 / 1.36 – Linear law fitting. Complex numbers. Calculation in polar and Cartesdian forms was poorly understood.</p> <p>Syllabus reference: 1.31 / 1.32 / 1.33 / 1.36 – Complex numbers. Poor marks were obtained by most candidates on Cartesian and polar forms.</p> <p>Syllabus reference: 1.55 / 1.59 / 1.60 – Calculus Evaluating gradient was poorly attempted. Proof of r.m.s. value was not understood by the majority of candidates.</p> <p>Syllabus reference: 1.62 / 1.63 / 1.68 / 1.70 – Permutations and combinations; probability. Probability calculations were poorly attempted.</p>

Syllabus reference: 1.41 / 1.45 / 1.46 / 1.47 / 1.48 – Trigonometry.

Trigonometric proof was attempted by a few candidates. Graph sketching was very poor.

Solving of a trigonometric equation was not understood by most candidates.