

Given name and surname: _____

Student No: _____

Signature: _____

INSTRUCTIONS:

1. Please write everything in **ink**.
2. This quiz is a 'closed book' test, duration **20** minutes.
3. Only non-programmable calculators are permitted.
4. The text has two pages, and it contains two questions. Read the question carefully. Fill in answers in designated spaces. Your work must justify the answer you give. Answers without supporting work will **not** be given credit.

GOOD LUCK!

Question 1 Let ${}_t p = (1 - t/\omega)^\alpha$ where $0 \leq t < \omega$ and $\alpha > 0$. Derive $\mu_x(t)$ and $\overset{\circ}{e}_x := \mathbb{E}[T(x)]$ for $x \geq 0$ and $t \in \mathbb{R}_+$.

Question 2 Show that, for a positive RV $T(x)$, $x \geq 0$, we have

$$\overset{\circ}{e}_x = \int_0^\infty {}_t p_x dt$$

(hint: integration by parts).