



Department of Mathematics, King Saud University

COURSE : **Actuarial Mathematics 1, ACTU 362**
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1. Solve exercises 2.1, 2.2 and 2.3 page 36. For questions f) and g) in exercises 2.1, can be done later.
2. Solve exercises 2.8, 2.9 and 2.10 page 37-38.
3. a) Show that when $\mu_x = Bc^x$, we have

$${}_t p_x = g^{c^x(c^t - 1)}$$

Where g is a constant that you should identify.

b) For a mortality table constructed using the above force of mortality, you are given that ${}_{10}p_{50} = 0.861716$ and ${}_{20}p_{50} = 0.718743$. Calculate the value of B and c .

4. You are given:
 - i. ${}_2 p_x = 0.98$
 - ii. $p_{x+2} = 0.985$
 - iii. ${}_5 q_x = 0.0775$

Calculate the following:

- a) ${}_3 p_x$
- b) ${}_2 p_{x+3}$
- c) ${}_{2|3} q_x$

5. You are given:

i. ${}_3 p_{70} = 0.95$; ii. ${}_2 p_{71} = 0.96$; iii. $\int_{71}^{75} \mu_x dx = 0.107$

Calculate: ${}_5 p_{70}$