

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

DEPARTMENT OF MATHEMATICS & STATISTICS

AS381 – Section 01 (Term 171)

Date: December 07, 2017

Test 3

Duration: 50 minutes

Family Name: _____ ID #: 201_____0 Serial #: ____

1. You are given:

(i) $A_x = 0.145$

(ii) $q_x = 0.08$

(iii) $i = 0.03$

Calculate the following:

(a) \ddot{a}_x

(b) a_{x+1}

(3 + 5 = 8 points)

2. You are given:

(i) The following excerpt of a life table:

x	96	97	98	99	100
l_x	100	75	50	25	0

(ii) $i = 0.04$

Calculate the following:

(a) \ddot{a}_{96}

(b) $\ddot{a}_{97:\overline{2}|}$

(c) $a_{96:\overline{2}|}$

(d) $(I\ddot{a})_{97}$

(e) ${}_2|\ddot{a}_{96}$

(f) ${}^2\ddot{a}_{96}$

(5 + 3 + 4 + 5 + 4 + 5 = 26 points)

3. You are given:

- (i) Mortality follows the Illustrative Life Table
- (ii) Deaths are uniformly distributed over each year of age.
- (iii) $i = 6\%$

Calculate the following:

(a) ${}_{10|\ddot{a}}_{55}$

(b) ${}_{10|\bar{a}}_{55}$

(c) $\ddot{a}_{55:\overline{5}|}^{(2)}$

(4 + 5 + 7 = 16 points)