SOA Course6ExamC PDF

Exam C, Fall 2005FINAL ANSWER KEYQuestion # Answer Question # Answer1 D 19 B2 A 20 A3 E 21 B4 B 22 A5 E 23 E6 E 24 B and C 7 A 25 C8 D 26 C9 B 27 A10 D and E 28 B11 D 29 C12 C 30 D13 C 31 B14 C 32 B15 A 33 E16 D 34 A17 D 35 E18 AExam C: Fall 2005 - 1 - GO ON TO NEXT PAGE**BEGINNING OF EXAMINATION**1. A portfolio of policies has produced the following claims: 100 100 100 200 300 300 300 400 500 600Determine the empirical estimate of H (300).(A) Less than 0.50(B) At least 0.50, but less than 0.75(C) At least 0.75, but less than 1.00(D) At least 1.00, but less than 1.25(E) At least 1.25Exam C: Fall 2005 - 2 - GO ON TO NEXT PAGE2. You are given:(i) The conditional distribution of the number of claims per policyholder is Poisson withmean .(ii) The variable has a gamma distribution with parameters and .(iii) For policyholders with 1 claim in Year 1, the credibility estimate for the number ofclaims in Year 2 is 0.15.(iv) For policyholders with an average of 2 claims per year in Year 1 and Year 2, thecredibility estimate for the number of claims in Year 3 is 0.20.Determine .(A) Less than 0.02(B) At least 0.02, but less than 0.03(C) At least 0.03, but less than 0.04(D) At least 0.04, but less than 0.05(E) At least 0.05Exam C: Fall 2005 - 3 - GO ON TO NEXT PAGE3. A random sample of claims has been drawn from a Burr distribution with known parameter = 1 and unknown parameters and . You are given:(i) 75% of the claim amounts

in the sample exceed 100. (ii) 25% of the claim amounts in the sample exceed 500. Estimate by percentile matching. (A) Less than 190 (B) At least 190, but less than 200 (C) At least 200, but less than 210 (D) At least 210, but less than 220 (E) At least 220 Exam C: Fall 2005 - 4 - GO ON TO NEXT PAGE 4. You are given: (i) $f(x)$ is a cubic spline with knots $(0, 0)$ and $(2, 2)$. (ii) $f'(0) = 1$ and $f'(2) = -24$ Determine $f(1)$. (A) 1 (B) 4 (C) 6 (D) 8 (E) 10 Exam C: Fall 2005 - 5 - GO ON TO NEXT PAGE 5. For a portfolio of policies, you are given: (i) There is no deductible and the policy limit varies by policy. (ii) A sample of ten claims is: 350 350 500 500 500 1000 1000 1000 1200 1500 where the symbol indicates that the loss exceeds the policy limit. (iii) $\hat{S}_1(1250)$ is the product-limit estimate of $S(1250)$. (iv) $\hat{S}_2(1250)$ is the maximum likelihood estimate of $S(1250)$ under the assumption that the losses follow an exponential distribution. Determine the absolute difference between $\hat{S}_1(1250)$ and $\hat{S}_2(1250)$. (A) 0.00 (B) 0.03 (C) 0.05 (D) 0.07 (E) 0.09 Exam C: Fall 2005 - 6 - GO ON TO NEXT PAGE 100Test