Web Courses   Online Cou   👤 ALI DUMAN   85 ▼

🏠 | Tests, Surveys, and Pools   Tests   **Test Canvas : Final** | Edit Mode is: ● **ON**   ?

Test Canvas: Final

The Test Canvas lets you add, edit, and reorder questions, as well as review a test. More Help

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Description	
Instructions	
Total Questions	15
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☐ **1. Multiple Choice: An insurer has data on losses for fou...**   Points: [1]

Question	An insurer has data on losses for four policyholders for seven years. X_{ij} is the loss from the ith policyholder for year j. You are given
	$$\sum_{i=1}^{4}\sum_{j=1}^{7}(X_{ij}-\overline{X_i})^2 = 40 \text{ and } \sum_{i=1}^{4}(\overline{X_i}-\overline{X})^2 = 4$$
	Calculate Buhlman credibility factor for an individual policyholder using non-parametric empirical Bayes estimation.

Answer	✅ 0.82
	0.95
	0.73
	0.86
	0.78

2. Multiple Choice: You are given the following distribut...

Points: 1

Question	You are given the following distribution:

	θ=0	θ=1
X=0	0.4	0.1
X=1	0.1	0.2
X=2	0.1	0.1

For a given value of θ and sample size of 20 for X: $\sum_{i=1}^{20} x_i = 40$.

Determine the Buhlman credibility premium.

Answer

✅ 1.6

1.4

1.2

1.8

2

3. Multiple Choice: You are given: Claim size, X, has...

Points: 1

Question   You are given:

- Claim size, X, has mean μ and variance 500,
- The random variable μ has a mean of 1000 and variance 50.
- The following four claims were observed: 500, 1000, 1500, 2000.

Calculate the expected size of the next claim using Buhlman credibility.

Answer

✅ 1071

1059

1035

1181

1223

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4. Multiple Choice: For portfolio of insurance risks, agg...

Points: 1

Question	For portfolio of insurance risks, aggregate losses per year per exposure follow a normal distribution with mean θ and standard deviation 1000, with θ varying by class as follows:

Class	θ	Percent of Risks in Class
X	2000	60%
Y	3000	30%
Z	4000	10%

A randomly selected risk has the following experience over three years:

Year	Number of Exposures	Aggregate Losses
1	30	24,000
2	30	36,000
3	40	28,000

Calculate the Buhlman-Straub estimate of the mean aggregate losses per year per exposure in Year 4 for this risk.

Answer	✅ 916

880

1138

2362

2500

☐ **5. Multiple Choice: You are given n years of claim data o...**   Points: 1

Question	You are given n years of claim data originating from a large number of policies. Yo are asked to use the Buhlman-Straub credibility model to estomate the expected number claims in year n+1. Which of the following conditions are required by the model? I. All policies must have equal number of exposure units. II. Each policy must have Poisson claim distribution. III. There must be at least 1082 exposure unit.
Answer	✅ None of them
	All of them
	II and III
	I and III
	Only III

☐ **6. Multiple Choice: You are given: Claim counts follo...**   Points: 1

Question	You are given: • Claim counts follows Poisson distribution with mean θ. • Claim sizes follow exponential distribution with mean 10θ. • Claim counts and claim sizes are independent given θ. • PDF of prior distribution is $\pi(\theta)=5(\theta^{-6})$, $\theta>1$. Calculate Buhlman's k for aggregate losses.
Answer	✅ 2.25
	2.15
	2.75
	2.65
	2.55

☐ 7. Multiple Choice: For a group of insureds you are given...

Points: **1**

Question	For a group of insureds you are given:
	• The amount of a claim is uniformly distributed but will not exceed a certain unknown limit θ.
	• The prior distribution of θ is $\pi(\theta) = \dfrac{500}{\theta^2}$, $\theta > 500$.
	• Two independent claims of 400 and 600 are observed.
	Determine the probability that the next claim will exceed 500.

Answer	✅ 0.375
	0.325
	0.3125
	0.3525
	0.395

☐ 8. Multiple Choice: You are given: Losses on ...

Points: **1**

Question	You are given:
	• Losses on a company's insurance policies follow a Pareto distribution with probability density function: $f(x\,|\,\theta) = \dfrac{\theta}{(x+\theta)^2}$, $0 < x < \infty$.
	• For half of the company's policies θ= 1, while for the other half θ= 3 .
	For a randomly selected policy, losses in Year 1 were 5.
	Determine the posterior probability that losses for this policy in Year 2 will exceed 8.

Answer	✅ 0.21
	0.11
	0.15
	0.27

0.19

☐ **9. Multiple Choice: You are given: The prior distribu...**   Points: 1

Question	You are given:

- The prior distribution of the parameter Θ has probability density function:

$$\pi(\theta) = \frac{1}{\theta^2}, \ 1 < \theta < \infty.$$

- Given $\Theta = \theta$, claim sizes follow a Pareto distribution with parameters $\alpha = 2$ and θ.

A claim of 3 is observed. Calculate the posterior probability that Θ exceeds 3.

Answer	✅ 0.44

0.33

0.50

0.56

0.66

☐ **10. Multiple Choice: You are given the following informati...**   Points: 1

Question   You are given the following information about six coins:

Coin	Probability of Heads
1-4	0.5
5	0.25
6	0.75

A coin is selected at random and then flipped repeatedly. X_i denotes the outcome of the i-th flip, where "1" indicates heads and "0" indicates tails. The following sequence is obtained;

$$S = \{X_1, X_2, X_3, X_4\} = \{1, 1, 0, 1\}$$

Determine $E(X_5 \mid S)$ using Bayesian analysis.

Answer   ✅ 0.56

0.53

0.51

0.58

0.61

☐ **11. Multiple Choice: You are given: Each risk has at m...**   Points: 1

Question	You are given:

- Each risk has at most one claim each year.

Type of Risk	Prior probability	Annual Claim Probability
I	0.7	0.1
II	0.2	0.2
III	0.1	0.4

One randomly chosen risk has three claims during Years 1-6.

Determine the posterior probability of a claim for this risk for Year 7.

Answer   ✅ 0.28

0.21

0.33

0.43

0.46

☐ **12. Multiple Choice: You are given: Xp =pure premium c...**   Points: 1
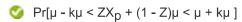
Question

You are given:

- X_p =pure premium calculated from partially credible data
- $\mu = E[X_p]$
- Fluctuations are limited to $\pm k\mu$ of the mean with probability P
- Z = credibility factor

Which ofthe following is equal to P?

Answer	
✅	$Pr[\mu - k\mu < ZX_p + (1 - Z)\mu < \mu + k\mu]$
	$Pr[1- k < ZX_p + (1 - Z)\mu < 1+ k]$
	$Pr[Z\mu - \mu < ZX_p < Z\mu + \mu]$
	$Pr[Z\mu - k < ZX_p < Z\mu + k]$
	$Pr[\mu - k\mu < X_p < \mu + k\mu]$

☐ **13. Multiple Choice: On an auto-collision coverage, you ar...**   Points: 1

Question	On an auto-collision coverage, you are given:
	- The number of claims per year per individual has the following distribution: $f(0)=0.7$, $f(1)=0.2$ and $f(2)=0.1$. - Loss sizes are exponentially distributed with mean 1200. - Loss sizes and claim counts are independent. An ordinary deductible of 500 is applied to each loss. Calculate the probability that aggregate claim payments for a year will be greater than 150, using normal approximation.

Answer	
✅	0.57
	0.52
	0.59
	0.61
	0.51

☐ **14. Multiple Choice: Loss sizes follow spliced distributio...**   Points: 1

Question	Loss sizes follow spliced distribution. The probability density function of this distribution below 200 is a multiple q of the probability density function of a exponential distribution with $\theta = 300$. The probability density function above 200 is the same for an exponential distribution with $\theta = 400$. Let X be loss size. Calculate $Pr(X<150)$

Answer	✅ 0.32
	0.22
	0.27
	0.37
	0.42

                    Points: 1

☐ **15. Multiple Choice: Thye number of claims on a homeowner'...**

Question	Thye number of claims on a homeowner's policy has a binomial distribution with parameters m = 2 and q. The parameter q varies by policyholder and has a uniform distribution on [0,0.5]. Calculate the probability of no claims for a policy.

Answer	✅ 0.58
	0.55
	0.51
	0.45
	0.61

Select: All None | Select by Type: - Question Type - ✔

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