

Name:

ID #:

Section:

Q1: The distribution of a loss, X , is a 2-point mixture:

- (i) With probability 0.6, X_1 is a Pareto distribution with parameters $\alpha = 3$ and $\theta = 900$
- (ii) With probability 0.4, X_2 is a Pareto distribution with parameters $\alpha = 5$ and $\theta = 1500$

Determine $\Pr(X > 1000)$

Q2: You are given the following empirical distribution of losses suffered by policyholders Prevent Dental Insurance Company:

94, 104, 104, 104, 134, 134, 180, 180, 180, 180, 210, 350, 524.

Let X be the random variable representing the losses incurred by the policyholders. The insurance company issued a policy with an ordinary deductible of 105.

Calculate $E(X \wedge 105)$ and the cost per payment $e_X(105)$:

Q3: A loss random variable X has a survival function

$$S(x) = \left(\frac{\theta}{x + \theta} \right)^2, x > 0$$

Find θ given that $\pi_{0.75} = 0.40$:
